

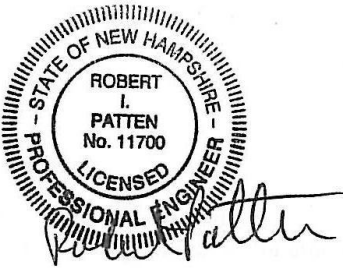
**DES Waste Management Division
29 Hazen Drive; PO Box 95
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**ANALYSIS OF BROWNFIELDS CLEANUP
ALTERNATIVES/
REMEDIAL ACTION PLAN**

Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street
Lebanon, New Hampshire 03766
NHDES Site No. 198801003 and 201704036

Project Type: Cleanup

Prepared For:
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March 18, 2025

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March 18, 2025

Mr. Andrew Fuller
New Hampshire Department of Environmental Services
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Mr. Jonathan Livadas
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**Subject: Analysis of Brownfields Cleanup Alternatives/Remedial Action Plan
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire 03766
NHDES Site No. 198801003 and 201704036**

Dear Mr. Fuller and Mr. Livadas:

This Analysis of Brownfields Cleanup Alternatives/Remedial Action Plan has been prepared and updated to present the work plan for the remedial measures that will be implemented to address known environmental contamination at the above referenced property (Site).

Please do not hesitate to contact me at (207) 828-1272 ext. 15 if you have any questions, comments, or require additional information regarding this investigation.

Sincerely,
CREDERE ASSOCIATES, LLC

Allison Drouin, PG, LG
Senior Project Manager/Geologist

Rip Patten, PE
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Enclosure: Analysis of Brownfields Cleanup Alternatives/Remedial Action Plan



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Analysis of Brownfields Cleanup Alternatives/Remedial Action Plan

**Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street & 25 Mechanic Street
Lebanon, New Hampshire 03766
NHDES Site No. 198801003 & 201704036**

Prepared for:
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Prepared by:
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March 18, 2025

In Reference to: Project No. 21001623



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1. INTRODUCTION

Creder Associates, LLC (Creder) was retained by LWM Residential, LLC (Owner) to prepare this Analysis of Brownfields Cleanup Alternatives (ABCA)/Remedial Action Plan (RAP) for the Kleen Laundry Former Dry-Cleaning facility located at 1 Foundry Street and 25 Mechanic Street in the City of Lebanon, Grafton County, New Hampshire (Site). A Site Location Map is provided as **Figure 1**. The purpose of this ABCA/RAP is to address documented environmental conditions identified through prior assessment activities and present the identified presumptive remedies, evaluate additional remedial alternatives, justify the selected remedial action, and detail the work plan for the remedial activities. Environmental media to be addressed in this ABCA/RAP includes soil, groundwater, sub-slab soil vapor, indoor air, and building materials.

Considering prior Site investigation activities, this ABCA/RAP serves to provide the approach to address the following:

- a. Remove or treat the source of contamination, Env Or 606.10(d)(3)a.
- b. Contain the contamination source to limit the impact to groundwater, surface water, and soil to the extent feasible, Env-Or 606.10(d)(3)b.
- c. Protect human health from exposure through the indoor air exposure pathway, Env-Or 606.10(d)(3)c.
- d. Protect human health from exposure through the direct contact exposure pathway, Env-Or 606.10(d)(3)d.
- e. Contain contaminated groundwater within the limits of a groundwater management zone, Env-Or 606.10(d)(3)e.
- f. Restore groundwater quality to Ambient Groundwater Quality Standards (AGQS), Env-Or 606.10(d)(3)f.
- g. Restore soil quality to the Soil Remediation Standards (SRSs) S-1 soil cleanup standards, Env-Or 606.10(d)(3)g, where practical.

On February 8, 2022, LWM Residential LLC was notified of the Site's eligibility for participation in the Brownfields Covenant Program. Therefore, this ABCA/RAP will serve to outline the planned remedial approach for the Site for New Hampshire Department of Environmental Services' (NHDES's) review and approval to ensure continued eligibility for the liability protection afforded by the program.

1.1 SITE DESCRIPTION

The Site comprises three adjoining parcels totaling 5.137 acres including: 25 Mechanic Street (0.537 acres), 1 Foundry Street (3.5 acres), and an undeveloped parcel on Water Street (identified as the River Island; 1.1 acres). Site parcels are shown on the Detailed Site Map provided as **Figure 2**. The Site is improved with three vacant buildings, including one 13,527-sf office/storage building, and one 59,565-sf mill building most recently used for high-volume dry-cleaning operations (e.g., hospital linens). The mill building has a subgrade basement that daylight on the



eastern side to the river and has an earthen crawl space beneath the central portion mill building. An approximately 2,000-sf boiler house is attached to the mill building by only a subgrade corrugated tunnel accessed from the basement of the mill building. The boiler house extends subgrade on the western side of the building; however, on the eastern side closest to the river, the foundation is on piers with a crawl space beneath the floor. One 4,699-square foot (sf) retail building where small volume cleaning was performed onsite was recently demolished in February 2024. Only the concrete foundation remains.

Granite stairs lead from the office/storage building to the former retail building, which was located at an elevation approximately 30 feet above the office/storage and mill building. The remainder of the exterior portion of the Site is vegetated or grassy areas. Paved parking areas are located southwest of the former retail building and along Foundry Street between the mill building and office/storage building. A former liquid propane storage area with gravel base is present within a chain-link fenced area south of the mill building. Vehicle access to the office/storage building, mill building, and boiler house is via Foundry Street and Blacksmith Street.

The River Island parcel is undeveloped and overgrown with vegetation. A distributary channel of the Mascoma River flows north to south between the River Island parcel and 1 Foundry Street parcel. There is no foot or vehicle access to the river island parcel and no known historical development or use; therefore, this parcel will not be further discussed in this ABCA/RAP.

Public water and sewer are available to the Site and vicinity through the City of Lebanon.

1.2 SITE HISTORY

25 Mechanic Street

By 1894, the 25 Mechanic Street Site parcel was developed with two residential dwellings. This Site parcel would later become a livery and residential dwellings by 1899. The retail dry-cleaning building was constructed by 1987. This Site building was reportedly operated by Lebanon Laundromat (aka Kleen Laundry) from the late 1980s until September 2019. The Site retail building was vacant until February 2024, when it was demolished as part of redevelopment plans and in accordance with interim remedial action authorized by NHDES per the Notification of Planned Site Work Letter dated October 16, 2023. The concrete basement slab remains and is covered with protective polyethylene sheeting.

1 Foundry Street

By 1884, the onsite former mill building was operated by Shoddy Mill. Reviewed records do not indicate when this building was originally constructed. Several residential dwellings were onsite along with at least one shed and storage house. Likely as a result of the Lebanon fire of 1887, by 1889, Shoddy Mill was replaced with the Lebanon Woolen Mill until 1899, when Site operations transferred to Carter & Rogers Woolen Mill who constructed the coal shed by 1904 (existing boiler house building). Carter & Rogers Woolen Mill kept expanding through the years, including construction of a storage house by 1924.



By 1949, the Site was operated again by Lebanon Woolen Mills, along with the former American Woolen Mill across the Mascoma River, and a bridge was constructed to connect the two properties. The southern portion of the mill building was reconstructed to include a dye house between the coal shed and remainder of the building. The dye house was removed circa 1965.

The current office/storage building was constructed by 1949 attached to the previously constructed storage house. The storage house was removed by 1987, leaving the current office/storage building that remains today.

The Gosselin family (owners of Kleen Laundry and former owners of the Site) acquired the former Lebanon Woolen Mills buildings (the former mill building, office/storage building, and former boiler house) in 1965 and began operations as a commercial dry-cleaning business. Kleen Inc. operated the Site buildings at 1 Foundry Street until September 2019. The Site buildings have been vacant since.

1.3 SURROUNDING LAND USE AND HISTORY

By 1884, the surrounding area to the east/northeast across the Mascoma River was occupied by woolen mills and other manufacturing through 1949, by which point the mill was acquired by Lebanon Woolen Mill. Lebanon Woolen Mill operated until sometime around 2005. These buildings are now utilized for commercial/office businesses.

Properties just north and northwest of the Site were historically used as a machine shop, iron foundry and storage houses and later a filling and oil station (to both the north adjoining and west across Mechanic Street) and auto repair (northwest adjoining), with various underground storage tanks (USTs) and aboveground storage tanks (ASTs) in use throughout the years. Significant releases of petroleum have occurred related to these USTs/ASTs that resulted in offsite remediation efforts and widespread petroleum in groundwater dating to as recently as 2022. Petroleum contamination related to these offsite sources has been confirmed to be migrating onto the Site with ongoing assessment and remediation.

The surrounding area to the southwest and west was consistently residential development, which increased in density through the years and is currently a mixture of residential and commercial properties.

1.4 FUTURE SITE USE

The mill building is intended to be developed with multi-family housing with demolition of the office/storage building and boiler house. The retail building was demolished in February 2024. Detailed design plans are not yet developed but conceptual plans are incorporated on figures where applicable.

For purposes of this ABCA/RAP, the following assumptions are made regarding future Site use:

- Mill building will remain intact in the general current configuration. The basement will be sealed with a new floor poured above the existing elevation to seal off subgrade drains, trenches, and the raceway. The basement will generally include a limited number of



residential units, a gym, and storage. Upper floors will be renovated as needed for redevelopment into residential space.

- The office/storage building is planned to be demolished for potential new building construction within the existing footprint of the building.
- The retail building was demolished with regrading of the parcel for potential future new construction. The parcel is planned for new building construction with interior building access at street level and a parking deck beneath and extending toward the former office/storage building. The deck will be partially on piers and partially built into the steep topography that is present at the 25 Mechanic Street parcel. The footprint of the new building overlies the footprint of the former retail building.
- There are plans for new construction of a residential/commercial building in the southern portion of the Site. This building is planned for partially subgrade parking on the lowest level and occupiable space above.



2. SUMMARY OF PREVIOUS INVESTIGATIONS

The following section summarizes the pertinent findings of previous investigations conducted for the Site. Data for historical groundwater results and recent soil and soil vapor investigations (i.e., 2017 through the present) are summarized in **Tables 1 through 8**. Historical soil data from the 1990s is available in various historical reports.

2.1 NHDES SITE NO. 198801003 (1 FOUNDRY ST) PRIOR ENVIRONMENTAL REPORTS

Tank Removal Letter, Kleen Laundry and Drycleaning Services, Inc. (Kleen Laundry), December 3, 1987

Mr. James Gosselin, Treasurer for Kleen Laundry, documented in a letter to the NHDES that Tanks #2, #3, and #4 under Permit #0113117 were removed and disposed offsite by Total Waste Management Corporation of Newington, New Hampshire. Tanks #2 and #3 were 20,000-gallon No. 6 fuel oil USTs, and Tank #4 was a 1,000-gallon gasoline UST. No laboratory assessment was completed as part of removal activities. The letter did not specify that associated piping was also removed. In addition, no figure was provided depicting the location of the USTs; therefore, it is presumed they were located in the same general vicinity to the 20,000-gallon tanks whose approximate location is depicted in later reports. The letter did not indicate the disposition of tanks, soil, or groundwater at the time of the removal work.

Tank Removal Letter, Les A. Cartier and Associates, Inc., December 30, 1987

Les. A Cartier and Associates, Inc. removed one 20,000-gallon No. 6 fuel oil UST (surmised to be Tank #1 under Permit #0113117) and all associated piping from the Site in October 1987. The letter indicated “gross contamination” was noted in tank grave soil. One soil and one groundwater sample were collected from the tank grave. The laboratory analysis for the water sample indicated concentrations of several volatile organic compounds (VOCs) were detected above the most current New Hampshire AGQS while only trace detections were reported in the soil sample. No soil was removed as part of these tank removal activities. A figure indicating the location of Tank #1 was not included in the closure documentation; however, it is surmised to be in the vicinity of Tanks #2, #3, and #4. It is unclear if the associated piping removed was solely Tank #1 piping or if it included piping for Tanks #2, #3, and #4.

Kleen Laundry Site Assessment, Wagner, Heindel, and Noyes, Inc. (WH&N), October 19, 1988

A Site Assessment was conducted by Wagner, Heindel, and Noyes, Inc. (WH&N) to assess the extent of contamination in response to the VOCs detected in the soil and groundwater sampled as part of removal of Tank #1 (20,000-gallon No. 6 fuel oil UST). Four soil borings/monitoring wells (MW-1 through MW-4) were completed.

Oil saturated soil was observed at approximately 10 feet below ground surface (bgs) in MW-2 and MW-3 and laboratory soil samples indicated concentrations of 1,1,2,2-tetrachloroethane and PCE were detected in the MW-2 borehole above current New Hampshire Code of Administrative Rules



Env-600 Contaminated Sites Management SRSs. Only trace detections below applicable standards were documented for the MW-3 borehole soil sample.

Groundwater samples were collected from MW-1 through MW-4 in April and June 1988 and results from the April sampling round indicated concentrations of chlorinated solvents (1,2,2-tetrachloroethane and PCE) were detected in MW-3 and MW-4 at levels above New Hampshire AGQS. Laboratory results from the June sampling round indicated concentrations of benzene, 1,1-dichloroethane, 1,1,1-trichloroethane, and trichloroethylene (TCE) were detected in MW-2, and PCE was detected in MW-3 above AGQS. MW-1 and MW-4 did not have any detectable concentrations of analyzed compounds.

In addition, a tar-like substance was observed in the western intermittent stream channel of the river and in a storm drain leading to southeastern edge of the Site parcel discharging to the river; however, this substance was not sampled for laboratory analysis.

Based on these results, WH&N concluded the detected petroleum and chlorinated VOCs (CVOCs) appeared to be associated with the removed UST and that PCE in groundwater had migrated from the area of the USTs. As there were no immediate human receptors, WH&N recommended continued monitoring of the monitoring wells and assessment of the downgradient river water.

Tank Closure Letter and Subsequent Correspondence, (“old”) Tank #5, Lee’s Oil Service, August 30, 1989, and September 12, 1989

The August 30, 1989, letter documents that Lee’s Oil Service abandoned in place one 20,000-gallon No. 6 fuel oil UST (“old” Tank #5) from the west side of the boiler house. No evidence of a release from the UST was reported during this work. One soil sample was collected for laboratory analysis; however, results are not included in this letter. A subsequent letter dated September 12, 1989, documents that the Fire Prevention Officer for the City of Lebanon observed the tank closure and saw no evidence of a release from this UST.

Based on the summary of events provided in the subsequent Site Assessment Phase II, a groundwater sample (not soil sample as the tank closure letter incorrectly states) was then collected for laboratory analysis. Results indicated no detectable concentrations of VOCs. Old Tank #5 was then replaced with a new 20,000-gallon No. 6 fuel oil UST (also identified as Tank #5 in the report and will be further referred to as ‘New Tank #5’ herein) on the north side of the boiler house, as indicated in the November 1988 Information Form for the Installation of New and Replacement Underground Petroleum Storage Tanks and approved under Permit #0113904.

Site Assessment Phase II Contaminant Remediation Plan, WH&N, November 1, 1989

In response to New Hampshire Department of Environmental Services (NHDES’s) request for additional investigation following the 1988 Site Assessment, WH&N performed additional characterization of soil and groundwater.



Tar-Like Substance Sampling

The previously observed tar-like substance in the storm drain was thought to have originated from either the permanently closed Old Tank #5 or the newly installed New Tank #5; however, soil samples from both UST areas and the storm drain sludge indicated no correlation of contaminants. In general, chlorinated solvents were detected in the sludge sample, while petroleum compounds were detected in the UST areas. WH&N identified several potential sources for the contamination identified in the storm drain sludge sample including a release of at least 40 gallons of PCE to the lower parking lot of 1 Foundry Street (this was also depicted to be near the loading dock on historical plans) that occurred on February 16, 1989, during a delivery of PCE at Kleen Laundry, the yearly application of waste oil to the parking area each summer for dust control prior to it being paved circa 1977, and the prior uses of the Site buildings for paint stripping and the woolen and textile industry, as well as use of adjacent properties for refrigeration and printing operations.

The source of the tar-like substance in the storm drain was attempted to be traced; however, physical constraints of the storm drain culvert (i.e., size) prevented a detailed investigation. The storm drain water was sampled in May and July of 1989 for laboratory analysis of VOCs; the first sampling event was conducted during a rainstorm, while the second sampling event was conducted after several days of clear weather. Higher concentrations of petroleum VOCs were detected in the sample collected during a rainstorm, indicating overland runoff may be contributing to the observed contamination. In addition, WH&N suggested the storm drain culvert system may be intercepting groundwater surges, which could be another potential source of the additional contamination observed in the sample collected during the rain event.

Bedrock groundwater monitoring wells MW-5 and MW-6 were installed in May 1989 adjacent to MW-2 and MW-3, respectively. Bedrock was encountered at 24 and 16 feet bgs, respectively. All onsite permanent monitoring wells (MW-1 through MW-6) were sampled for laboratory analysis of VOCs in May 1989. A layer of oil free product was observed in MW-2; therefore, this well was also sampled for laboratory analysis of semi-volatile organic compounds (SVOCs). Laboratory results indicated MW-1, MW-4, and MW-6 contained no or trace detectable levels of contaminants, while MW-2, MW-3, and the newly installed MW-5 contained concentrations of VOCs and SVOCs in exceedance of today's AGQS.

One oil seep sample was collected (TB-1) from 5.5 feet bgs in the southeast portion of the Site for laboratory analysis VOCs. Results indicated PCE was detected above SRSs.

Based on these results, WH&N recommended excavation of impacted soil in the vicinity of the former USTs.

Supplementary Test Pit Investigation (Tank Site and Storm Drain System), WH&N, August 14, 1990

To further understanding of the source of the tar-like substance in the storm drain system, previously removed 20,000-gallon No. 6 fuel oil USTs, and the river bottom conditions of the river channel, WH&N performed a supplemental test pit investigation in May 1990.



Storm Drain Excavation

During the test pit investigation at the storm drain system, a 750-gallon former No. 2 fuel oil UST was discovered with approximately 1-foot of product remaining in the tank, which was subsequently removed. The excavation work around the storm drain system also revealed a conduit holding steam and fuel oil lines. Lastly, storm drain tiles were encountered approximately 8 feet bgs with the tar-like substance present and extending towards the north end of Old Tank #5, where a brick manhole around the fill pipe was discovered. The manhole was filled with oil-saturated rags and soils, which WH&N concluded was due to spillage during refueling and not from a leak in the tank itself. It was reported that this contamination was to be removed during remediation of the contaminated soil associated with Tanks #2 and #3, although this could not be confirmed in later reports.

Ten soil samples were collected during the storm drain investigation, of which five were sent to the laboratory for analysis of VOCs. Results indicated concentrations of detected contaminants were below the most current SRSs, with the exception of the sample collected of the 750-gallon UST contents, which contained concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) supporting WH&N's conclusion the tank contained No. 2 fuel oil.

Previously Removed 20,000-gallon No. 6 Fuel Oil USTs

A total of 13 test pits (TP-1 through TP-13) were excavated in the vicinity of the former 20,000-gallon No. 6 fuel oil USTs, some of which were sampled based on observed contamination (e.g., saturated soils). Results indicated concentrations of TCE and trans-1,2-dichloroethylene were detected in one test pit at concentrations above today's SRSs, and several petroleum VOCs were detected below today's SRSs. After further visual investigation, WH&N concluded between 200 and 350 cubic yards of petroleum and CVOC contaminated soil required remediation, and a Remedial Action Plan (RAP) was included in this report.

River Bottom Investigation – River Channel

To evaluate the extent of the previously observed tar-like substance into the Mascoma River believed to originate from the storm drain system outfall at the boiler house, soil samples were collected downstream of the material and results indicated concentrations of analyzed constituents below today's SRSs. Based on lack of correlation of compounds from the contaminated sludge deposit observed in the storm drain and stream bed, and compounds and observation in the former UST location, the stream bottom materials were associated with the storm drains and not the UST release, and no further action was recommended for the river. No further assessment of the source of the tar-like substance in the storm drains and river was completed.

Results of Contaminated Soil Removal and Composite Sidewall and Bottom Sampling and Analysis, WH&N, October 11, 1990

WH&N removed the petroleum and hazardous-contaminated soil from the Tank #2 and #3 UST area (1,300 cubic yards) and stockpiled onsite prior to biological composting treatment in September 1990. A total of six composite soil samples were collected from the excavation and submitted for laboratory analysis of VOCs: one from each sidewall, and one from each distinct



tank grave bottom (identified as upper and lower). Results indicated no detection of contaminants above laboratory reporting limits with the exception of PCE, which was detected below the current SRSs.

NHDES approved backfilling of the excavation with clean fill in a letter dated October 12, 1990.

The onsite stockpile was placed in a plastic-lined earthen berm containment area constructed in the paved parking area of the Site. The stockpile was also reportedly covered with plastic sheeting and maintained until remediation took place.

During excavation of the contaminated soils, MW-2, MW-3, MW-5, and MW-6 were removed. After backfilling was complete, the wells were replaced with WQ-1, WQ-2, and WQ-3, installed on September 8, 1992. Groundwater sample results of the newly installed wells from September 8, 1992, indicated chlorinated solvents (PCE and TCE) were detected in WQ-2 and WQ-3 above today's AGQS.

Stockpiled Soil Removal, WH&N, August & September 1995

WH&N oversaw the removal of the contaminated soil from the Site in August and September 1995. A total of 2,371.50 tons of soil was removed. After removal, the berm that the soil stockpile was resting on was discovered to be contaminated. An additional 156.40 tons of contaminated soil was removed on October 6, 1995.

File Closeout, NHDES, December 16, 1996

NHDES issued the File Closeout of the contamination associated with the leaking UST at the Site, documenting that Site remediation was complete; however, groundwater monitoring was to continue.

Closure of New Tank #5, Kleen Inc., October 15, 2002, and UST Permit Renewal, NHDES, April 2009

The onsite active 20,000-gallon No. 6 fuel oil UST (New Tank #5) was inspected by NHDES on October 10, 2002, resulting in a failing inspection. Kleen Inc. corrected the identified deficiencies and decided to temporarily close New Tank #5 as indicated in a letter dated October 15, 2002. Reportedly less than 1-inch of product remained in the tank at the time of temporary closure.

During the next compliance inspection in 2009, the Permit to Operate the New Tank #5 was not renewed by NHDES because more than 1-inch of liquid was observed in the tank during the compliance inspection. Kleen Inc. subsequently contracted Clean Harbors to remove the excess liquid on April 27, 2009, and the Permit to Operate was renewed on May 1, 2009. Based on available information, there is no indication this tank was ever placed back into use after reissuing this permit.



UST System Closure Report, Antonia Design, LLC, September 30, 2017

New Tank #5 (i.e., the newer tank north of the boiler house) was permanently closed in place in August 2017 due to the 2013 updated state regulation requiring any UST facilities temporarily closed for more than one year to be permanently closed. The tank was uncovered, the top was removed, the interior contents were removed and cleaned, and the tank was inspected for holes or corrosion and backfilled. A minor release was noted around the spill bucket, but oil was observed to be viscous and contained to a small area. Approximately one 55-gallon drum of soil was removed to address the identified release. All associated piping was also removed.

Four soil samples were collected as part of the closure assessment including the following:

- 5-point composite from below the double walled oil piping
- 3-point composite from below the UST (obtained by cutting holes in the bottom of the tank prior to backfilling)
- 6-point composite from adjacent to the UST fill spill contained near the top of the UST
- One discrete sample from below the UST at the fill end of the tank corresponding to the highest photoionization detector (PID) reading observed

The soil samples were submitted for laboratory analysis of VOCs and total petroleum hydrocarbons (TPH). Results indicated no VOCs were detected and limited TPH was detected below SRSs.

Based on the field observations and confirmatory sample results, Antonia Design indicated no contamination remained associated with the New Tank #5.

Groundwater Monitoring, WH&N/Heindel and Noyes, Inc./Waite-Heindel Environmental Management, 1993 – 2021, and Credere, 2022 – 2024

To monitor the remaining CVOC concentrations in WQ-2 and WQ-3 following the soil removal, NHDES issued the Groundwater Management Permit (GMP) GWP-198801003-L-001 on October 26, 1993. This GMP was renewed generally every 5 years, the most recent GMP being GWP-198801003-L-006, which expired in May 2022. In January 2021, the GMP was transferred to the new owner (LWM Residential, LLC) as a result of the sale of 1 Foundry property. An application for renewal of the GMP was submitted by Credere in February 2022; however, the GMP has not been reissued by NHDES.

The GMP requirements have been altered through the years based on laboratory analytical results for optimization. The most recent GMP, which is still being complied with under the assumed reissuance of a GMP with a 2027 expiration date, requires sampling of MW-1, MW-4, WQ-1, WQ-2, and WQ-3 biennially in November for laboratory analysis of VOCs. NHDES also requested per- and polyfluoroalkyl substances (PFAS) be analyzed in a minimum of two wells for screening purposes in response to the November 2018 Compliance Groundwater Monitoring Report.



As of the latest Periodic Summary Report dated January 2024, summarizing the November 2022 sampling event, Credere reported results show there is a relative stability of PCE concentrations in source area wells WQ-2 and WQ-3 since 2014; concentrations remain above today's AGQS. TCE, cis-1,2-DCE, 1,1-DCE, and 1,1,1-TCE were also detected in at least one of the two wells but were below applicable AGQS. The remaining wells did not have detectable levels of contaminants, with the exception of chloroform in MW-1. Cumulative groundwater monitoring results for this GMP are summarized in **Table 8A** for VOCs and **Table 8B** for PFAS.

2.2 NHDES SITE NO. 201704036 (25 MECHANIC ST) PRIOR ENVIRONMENTAL REPORTS

Limited Phase II ESA Report, Waite-Heindel, April 11, 2017

Waite-Heindel completed a Limited Phase II ESA for the owners of the Site, 1 Foundry Street Properties LLC, to support due diligence for the sale of the Site. The objectives included assessment of the RECs identified in a private Phase I ESA completed for a potential buyer including historical use of the Site as a dry-cleaner.

To screen for the presence of dry-cleaning related contaminants of interest, three sub-slab soil vapor points were installed in the basement of the former retail building (VP-1, VP-2, and VP-3). Air samples were submitted for laboratory analysis of VOCs. Results indicated the chloroform, TCE, and/or PCE were detected at concentrations in exceedance of the NHDES Waste Management Division Table 1 Vapor Intrusion Screening Levels, Revised February 2013, Commercial Soil Gas Screening Levels (Commercial SGSs) in VP-1, VP-2, and VP-3. Due to dilution, the laboratory detection limit was above several VOC SGSs; therefore, it is unclear if additional contaminants were present in the soil vapor samples.

Waite-Heindel concluded a release of PCE beneath the Site building had been confirmed, and the full extent of the release and associated vapor plume was not known. Differential pressure between the sub-slab and indoor environment indicates there was the potential for vapor intrusion. Waite-Heindel recommended notification to NHDES and discussion of the need for further assessment.

Site Investigation Report, Waite-Heindel, April 13, 2018

Based on the results of the 2017 Limited Phase II ESA, NHDES requested a Site Investigation (SI) to further assess the extent of CVOCs at the Site and assess other RECs identified in the prior Phase I ESA, including the offsite petroleum releases to the west and northwest. As part of this investigation, 15 soil borings (SB-A through SB-O) were advanced through the Site. Two of the soil borings were completed as groundwater monitoring wells (MW-1-25 and MW-2-25). Three additional soil borings were completed as soil vapor probes (VP-4, VP-5, and VP-6) and a fourth soil vapor probe was installed (VP-7), and two indoor air samples were collected.

Soil Analytical Results

Three soil samples were collected for laboratory analysis from the borings associated with installation of each of the groundwater monitoring wells and one soil gas vapor probe (VP-4). Results indicated 1,2,4-trimethylbenzene was detected in the VP-4 above the SRS (naphthalene



exceeded the SRS at the time but does not exceed the current Risk Characterization Management Policy [RCMP] Method 1 standard). The presence of CVOCs in soil at or above the SRS could not be dismissed based on elevated reporting due to reporting of only high-level VOC analysis. Soil results are summarized in **Table 6**.

Groundwater Analytical Results

Groundwater samples of the newly installed monitoring wells and existing MW-4 were collected on December 4, 2017, and submitted for laboratory analysis of VOCs. VOC concentrations were below AGQS in MW-1-25 and MW-4, while several CVOCs and petroleum compounds were detected in MW-2-25 at concentrations above the AGQS. Groundwater results are summarized in **Table 8C**.

Soil Vapor Analytical Results

Soil vapor samples from the existing and newly installed soil vapor probes were collected on December 4, 2017, and submitted for laboratory analysis of VOCs. The following VOCs were detected in exceedance of the Commercial SGSLs in at least one of the soil vapor samples:

Compound	VP-1	VP-2	VP-3	VP-4	VP-6	VP-7
Chloroform	ND *	X	ND *	ND *	D	D
TCE	X	X	X	ND	ND	ND
PCE	X	X	X	ND	D	D
Ethylbenzene	ND *	ND	ND	X	ND	ND
1,2,4-Trimethylbenzene	ND *	ND	X	X	ND	ND

X – detected above Commercial SGSLs

* - laboratory detection limit Commercial SGSLs

D – detected less than SGSL ND – not detected

Results indicated laboratory reporting limits above multiple VOC SGSLs for the samples collected from VP-1 through VP-4 due to dilution for other elevated compounds. Specific COPCs with elevated limits are indicated in the above table. Other compounds, such as benzene and ethylbenzene, have at least one non-detect result (either March or November 2017) below the reporting limits. However, 1,2-dichloroethane, 1,1,2-trichloroethane, ethylene dibromide, 1,1,2,2-tetrachloroethane, 1,4-dichlorobenzene, and naphthalene cannot be dismissed based on available results. VP-5 could not be sampled due to water present in the sample line.

Indoor Air Analytical Results

Two indoor air samples were collected on December 4, 2017, (IAS-1 and IAS-2) and submitted for laboratory analysis of VOCs. Results indicated TCE and 1,2,4-trimethylbenzene were detected at concentrations above the NHDES Waste Management Division Table 1 Vapor Intrusion Screening Levels, Revised February 2013, Commercial Indoor Air Screening Levels (IASLs) in both indoor air samples collected. This may indicate a complete pathway for vapor intrusion to the current building or may indicate residual background VOCs remain in indoor air from prior operations.

Based on the results of the investigation, Waite-Heindel further confirmed the release from the dry-cleaner and additionally concluded migration of petroleum from an offsite source onto the Site was likely because there is no known source of petroleum based on prior Site operations. Waite-Heindel recommended the following:

- Further attempt to sample VP-5 with possible reinstallation to avoid water intake
- Further delineation of PCE in groundwater downgradient of MW-2-25
- Pilot testing to support remedial planning for vapor mitigation in the retail building
- Assessment of the discharge location of the three floor drains

Soil vapor and indoor results are summarized in **Table 7**.

Supplemental Site Investigation Report, Waite-Heindel, January 16, 2020

To fulfill the recommendations of the SI, Waite-Heindel conducted a Supplemental Site Investigation according to the Work Plan for Supplemental Site Investigation dated November 9, 2018. This investigation included advancement of four additional soil borings (SB-X1 through SB-X4), which were completed as groundwater monitoring wells (MW-3-25 through MW-6-25, respectively). All existing soil vapor probes were resampled, and the indoor air was again sampled with the addition of an outdoor ambient air sample.

Soil Boring Analytical Results

Two soil samples were collected from SB-X2 and SB-X4 for laboratory analysis of VOCs. Results indicated contaminants were not detected above laboratory reporting limits. Reporting limits for these soil results compared to those in the SI were improved with CVOCs limits sufficient for comparison to the SRS. However, these are downgradient samples and are less likely to have soil impacts compared to the source area locations near the retail building. Therefore, no soil data is currently available to assess CVOCs in soil in the source area. Soil results are summarized in **Table 6**.

Groundwater Analytical Results

Groundwater samples from MW-1-25 through MW-6-25 and MW-4 were collected on September 9, 2019, for analysis of VOCs. Results indicated no contaminants were detected above laboratory reporting limits in MW-4, and detected concentrations in MW-3-25, MW-5-25 and MW-6-25 were below the AGQS. The following outlines the contaminants detected at concentrations above AGQS and the respective groundwater sample location:



- MW-1-25
 - o Benzene
- MW-4-25
 - o 1,2-Dichloroethane
 - o Benzene
 - o Naphthalene
- MW-2-25
 - o PCE
 - o TCE
 - o cis-1,2-Dichloroethene
 - o Vinyl chloride
 - o Benzene
 - o 1,2,4-Trimethylbenzene
 - o Naphthalene

Based on these results, Waite-Heindel considered the extent of CVOCs in groundwater delineated (by MW-1-25 in the upgradient position, MW-4-25 and MW-5-25 to the northeast, and downgradient by decreased concentrations in MW-3-25 and no detections in MW-4 and MW-6-25). The onsite petroleum detections were further attributed to the offsite upgradient source to the west and northwest.

Groundwater results are summarized in **Table 8C**.

Soil Vapor Results

Soil vapor samples were collected from all accessible soil vapor probes on March 6, 2019, (VP-6 was not accessible) and submitted for laboratory analysis of VOCs. Results indicated TCE and PCE were detected in VP-1, VP-2, and VP-3 at concentrations in exceedance of Residential and Commercial SGSLS. Reporting limits for 1,2-dichloroethane, 1,1,2-trichloroethane, ethylene dibromide, 1,1,2,2-tetrachloroethane, 1,4-dichlorobenzene, and naphthalene in VP-1 through VP-3 remain elevated due to dilution. As such, these compounds cannot be dismissed. Results for VP-4 were much lower than the December 2017 sampling round. Based on the multiple rounds of relatively consistent results, these results for VP-1 through VP-3 and VP-7 are considered acceptable to assess the soil vapor points. VOCs were detected in VP-4, VP-5, and VP-7, particularly PCE in VP-5 and VP-7 and TCE in VP-7 but were below Residential and Commercial SGSLS. Soil vapor results are summarized in **Table 7**.

Indoor Air Analytical Results

Indoor air samples were collected on March 6, 2019, and submitted for laboratory analysis of VOCs. Results indicated PCE and TCE were detected in IAS-1 and IAS-2 at concentrations in exceedance of Commercial IASLS (and residential considering future possible Site use). In addition, 1,2,4-trimethylbenzene was detected in IAS-1 in exceedance of Residential and Commercial IASLS. The outdoor ambient air sample contained several contaminants at concentrations below Commercial IASLS; however, 1,2,4-trichlorobenzene and naphthalene were detected at concentrations in exceedance of Residential and Commercial IASLS. Indoor air results are summarized in **Table 7**.

Floor Drain Investigation

Waite-Heindel performed an investigation of five floor drains in the basement of the retail building. Using a dye test, three of these floor drains were observed to discharge to the sewer



manhole located off the eastern property boundary. The remaining two floor drains appeared to be either blocked by debris or closed. The floor drains traced to the manhole were also identified as preferential pathways for vapor migration.

Conclusions

Based on the results of the Supplemental Site Investigation, Waite-Heindel concluded the PCE plume starts under the retail building based on sub-slab soil vapor results and extends in groundwater eastward toward 1 Foundry Street. Results also confirmed the suspected offsite, upgradient petroleum release previously observed. Based on the results of this continued monitoring, Waite-Heindel recommended the following:

- Evaluation of indoor air exposure mitigation options once a redevelopment plan is known pending the potential sale of the property
- Preparation of a Remedial Action Plan in conjunction with redevelopment planning and application for a GMP
- Continued groundwater monitoring to assess seasonable variability (Spring and Fall)

Supplemental Phase II ESA, Credere, August 13, 2021

Based on plans for potential demolition of the retail building and suggestion from NHDES that soil remediation beneath the retail building may be required if the building was removed, Credere performed a Supplemental Phase II ESA at the 25 Mechanic Street Site parcel following completion of the July 16, 2021, Draft Phase II ESA (finalized on October 18, 2021) to attempt to delineate CVOCs beneath the retail building with an objective of calculating the impacted soil volume that may require remediation. Borings were located based on previous soil vapor data including five interior borings through the foundation and four exterior borings around the outside of the building.

Field PID screening and laboratory results indicated a CVOC source area of PCE and TCE was on the northeast side of the Site building beneath a possible air/equipment vent. A second CVOC source area of TCE was identified beneath the southwest portion of the Site building. Both source areas were observed to be situated atop the bedrock interface/confining layer overlain by several feet of soil with no observed contamination. Soil analytical results from this Supplemental Phase II are included in **Table 6**.

The volume of CVOC-impacted soil that, if exposed or disturbed during redevelopment, would require remediation or removal from the Site as an F-listed hazardous waste, was conservatively estimated to be approximately 200 cubic yards.

Based on the above conclusions, Credere recommended preparation of a RAP to outline soil management practices during demolition and possible installation of a sub-slab depressurization system (SSDS) with any new construction.



Most recent April 2024 Groundwater Monitoring, Credere, May 2, 2024

The most recent groundwater monitoring of the 25 Mechanic Street Site parcel occurred on April 2, 2024, as part of a voluntary program not currently associated with a GMP but will be established in the future as part of this ABCA/RAP. The current voluntary program includes sampling of groundwater monitoring wells MW-1-25, MW-2-25, MW-3-25, MW-6-25, MW-4, and CA-MW-4. Analytical results from December 2017 to April 2024 show an overall stable or decreasing trend in chlorinated solvents concentrations in these wells, particularly along the inferred centerline of the plume in MW-2-25 and CA-MW-4. Benzene and sec-butylbenzene concentrations in several wells continue to be attributed to the offsite upgradient petroleum source (see NHDES Site No. 199107026). PFAS monitoring in select wells since April 2021 indicate PFAS-impacted groundwater at concentrations below AGQS in MW-1-25, MW-2-25, and MW-4. Pending results of the November 2024 cumulative groundwater sampling round (for 1 Foundry and 25 Mechanic Street), NHDES tentatively agreed to reduce the 25 Mechanic Street sampling to annual November sampling only if trends do not change. Cumulative groundwater monitoring results for 25 Mechanic Street and the downgradient area are summarized in **Table 8C**.

2.3 ENTIRE SITE (25 MECHANIC STREET, 1 FOUNDRY STREET, AND WATER STREET)

Phase I Environmental Site Assessment, Credere, April 14, 2021

Credere completed a Phase I ESA for UVLSRPC on behalf of Occom Properties, LLC for all three Site parcels: 25 Mechanic Street, 1 Foundry Street, and the River Island parcel (Water Street). This Phase I ESA was completed in accordance with ASTM Standard Practice E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for the purpose of environmental due diligence and identifying RECs at the Site in support of Occom Properties, LLC acquisition of the Site and redevelopment planning.

Based on review of historical sources, environmental databases, interviews, User provided information, Site reconnaissance, and judgment by the Environmental Professional, this assessment revealed the following RECs and VECs in connection with the Site:

- REC/VEC #1 – Documented onsite chlorinated solvent contamination (and possible PFAS) associated with historical use of the 25 Mechanic Street Site parcel for dry-cleaning operations
- REC/VEC #2 – Undocumented release(s) of hazardous substances (additionally PFAS) and/or petroleum associated with the historical industrial use of the mill building and office/storage building on the 1 Foundry Street parcel
- REC #3 – Documented petroleum soil contamination associated with a former UST (old Tank #5 west of the boiler house) on the 1 Foundry Street Site parcel
- REC #4 – Documented use of waste oil as a dust suppression method on the parking area of the 1 Foundry Street Site parcel prior to pavement circa 1977
- REC/VEC #5 – Documented onsite groundwater petroleum contamination from offsite upgradient sources



- REC #6 – Likely petroleum impacts to Site soil and groundwater associated with a 1987 1,400-gallon fuel oil release at adjoining 39 Mechanic Street

The following historical REC (HREC), which is defined as a past release of any hazardous substances or petroleum products that have occurred in connection with the property and have been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls, was identified for the Site:

- HREC #1 – Petroleum contamination associated with leaking USTs (Tanks #1, #2, and #3) on the 1 Foundry Street Site parcel

The following controlled REC (CREC), which is defined as RECs resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls, was identified for the Site:

- CREC #1 – Existing chlorinated solvent groundwater contamination at 1 Foundry Street parcel managed under a NHDES GMP

The following environmental findings, which do not meet the definition of a REC, HREC, CREC, or de minimis conditions (DMCs) as defined by ASTM E 1527-13; however, warrant the opinion of the environmental professional and may represent some degree of business environmental risk, were identified for the Site:

- Environmental Finding #1 – Suspect asbestos containing materials (ACMs) throughout the Site buildings
- Environmental Finding #2 – Suspect lead paint throughout the 1 Foundry Street Site buildings
- Environmental Finding #3 – Suspect polychlorinated biphenyl (PCB)-containing building materials throughout the 1 Foundry Street Site buildings

Based on the identified REC and environmental findings, Credere made the following recommendations:

- Perform a Phase II ESA to assess the following areas at the 1 Foundry Street parcel:
 - The manhole with free product and oil saturated rags at the north end of old Tank #5 (REC #3)
 - The soil conditions of the steep slope along the southwest Site boundary leading from the 39 Mechanic Street property (REC #6)
 - The subsurface conditions under the office/storage building and former mill building that have not yet been previously assessed (REC/VEC #2)
 - The surficial and subsurface soil and groundwater conditions immediately beneath a dry-cleaning exhaust vent at the former mill building (REC/VEC #2), if present



- o The surficial soil conditions immediately beneath the asphalt where waste oil was sprayed as a dust suppression method (REC #4)

Site-Specific Quality Assurance Project Plan, Credere, May 7, 2021

An SSQAPP was prepared to describe the Site conditions, established a preliminary conceptual Site model (CSM), defined the assessment's objectives, outlined proposed samples and justification, provided field activity methodology, and established the regulatory criteria for the Site. This SSQAPP was reviewed and approved by the EPA and NHDES prior to initiation of Phase II ESA field activities at the Site. A copy of the SSQAPP is included in **Appendix D**.

Phase II ESA, Credere, October 18, 2021

Credere prepared a Phase II ESA report to document the Site assessment activities performed in May and June 2021 at the Site. These Site assessment activities were conducted to assess the RECs, VECs, and environmental findings identified in the April 14, 2021, Phase I ESA. Site assessment included a geophysical survey, soil borings, soil sampling, monitoring well installation, groundwater sampling, indoor air sampling, sub-slab soil vapor sampling, and a hazardous building material survey. Sample locations are depicted on **Figures 2 through 8**.

Based on the results of environmental media sampling performed during this Phase II ESA, the following conclusions were developed in relation to the RECs and findings of the Phase I ESA:

- REC/VEC #1 – Documented onsite chlorinated solvent contamination (and possible PFAS) associated with historical use of the 25 Mechanic Street Site parcel for dry-cleaning operations was **PREVIOUSLY CONFIRMED** for CVOCs and **CONFIRMED BY OTHERS** for PFAS based on April 2021 groundwater monitoring event
- REC/VEC #2 – Undocumented release(s) of hazardous substances (additionally PFAS) and/or petroleum associated with the historical industrial use of the mill building and office/storage building on the 1 Foundry Street parcel was **CONFIRMED** for hazardous substances and PFAS and **DISMISSED** for petroleum
- REC #3 – Documented petroleum soil contamination associated with a former UST (old Tank #5 west of the boiler house) on the 1 Foundry Street Site parcel was further **CONFIRMED** but limited to residual evidence of petroleum and minor New Hampshire SRS exceedance just above bedrock refusal
- REC #4 – Documented use of waste oil as a dust suppression method on the parking area of the 1 Foundry Street Site parcel prior to pavement circa 1977 was **DISMISSED**
- REC/VEC #5 – Documented onsite groundwater petroleum contamination from offsite upgradient sources was **PREVIOUSLY CONFIRMED**
- REC #6 – Likely petroleum impacts to Site soil and groundwater associated with a 1987 1,400-gallon fuel oil release at adjoining 39 Mechanic Street was **DISMISSED** for soil and **PREVIOUSLY DISMISSED** for groundwater
- Environmental Finding #1 – Suspect ACMs throughout the Site buildings was **CONFIRMED** for the mill building and storage/office building and **DISMISSED** for the



boiler house and retail building. A summary of the ACM survey and results is provided in **Table 3**.

- Environmental Finding #2 – Suspect lead paint throughout the 1 Foundry Street Site buildings was **CONFIRMED**. A summary of the lead paint survey is provided in **Table 5A** through **Table 5C**.
- Environmental Finding #3 – Suspect PCB-containing building materials throughout the 1 Foundry Street Site buildings was **CONFIRMED** for Toxic Substances Control Act (TSCA)-Regulated Bulk Product Waste in the storage/office building and **CONFIRMED** for PCB concentrations above 1 mg/kg for the mill building and office/storage building; but **DISMISSED** for the boiler house. A summary of the PCB building material survey and results is provided in **Table 4**.
- Additional Finding #1 – PFAS-impacted groundwater associated with historical industrial operations of the Site and surrounding area was **CONFIRMED**. PFAS results are summarized in **Tables 8B and 8C**.
- Additional Finding #2 –PAH-impacted soil associated with historical industrial operations of the Site and surrounding area is **PRESUMED**

Based on the conclusions of this Phase II Investigation, Credere made the following recommendations:

- Continue groundwater sampling of the 1 Foundry Street monitoring wells in conformance with the existing GMP and include sampling for PFAS.
- Continue assessment of the release at the 25 Mechanic Street retail building in consultation with NHDES per the August 26, 2020, correspondence. Considering the plan for demolition of the building, additional delineation of PCE in soil beneath the slab is warranted to assess if a source is present. A Remedial Action Plan should be prepared in conjunction with redevelopment planning to properly remediate or prevent exposure to CVOCs beneath the retail building once the assessment is complete. (See summary of Supplemental Phase II ESA in **Section 2.2** above.)
- Prepare a RAP for the 1 Foundry Street Site parcel in conjunction with Site reuse planning to address the following:
 - Vapor intrusion (VI) of CVOCs (a supplemental remedial design assessment will likely be needed before this can be planned)
 - Soil management requirements during future redevelopment and maintenance to manage impacted soil (presumed to be all Site soil) related to historical industrial operations
 - Residual petroleum at the boiler house for the 1 Foundry Street building
 - Exposure to petroleum compounds from one or more offsite sources, including but not limited to:
 - Leaking historical USTs at Buskey's Property (1 Mechanic Street)



- Longtime historical auto repair operations at former Norm's Auto/Maheu's Auto (6 Mechanic Street)
- Historical fuel distribution operations that included four ASTs and two reported USTs at Evan's Motor Fuels (0 Foundry Street)
- Permit continued monitoring of onsite wells by offsite entities as part of the offsite GMPs.
- Abate identified ACM that will be impacted by demolition/renovation activities and manage and dispose of abated ACM by a licensed abatement contractor. Roof material on the Site buildings has not been sampled and must be assessed for asbestos prior to replacement or demolition. In addition, suspect materials uncovered during the renovation/demolition process must also be assessed or presumed ACM.
- Manage identified lead-containing paint (LCP) within/on the Site buildings in accordance with the Occupational Safety and Health Administration (OSHA) Lead in Construction Standards (29 CFR 1926.62) and implement proper worker notifications. PCBs less than 50 mg/kg must also be managed with similar safe work practices and disposal according to the NHDES Solid Waste Regulations.
- Further delineate TSCA-regulated PCB impacted paint and/or properly cleanup PCBs in accordance with 40 CFR 761. The identified TSCA-regulated PCB-impacted paint cannot remain in place and must be removed.
- Close floor drains, pits, raceway, and other floor penetrations in the buildings in accordance with applicable New Hampshire rules to prevent any future unpermitted discharge to the river.
- Cease discharge of water from office/storage building basement that may contain CVOCs or sample effluent to assess if CVOCs are present in the discharge.
- Properly dispose of equipment, debris, containers, chemicals and detergents throughout the building prior to renovation/demolition.

Phase I Environmental Site Assessment, Credere, September 30, 2021

Credere completed a Phase I ESA for LWM Residential, LLC and Occom Properties, LLC for 1 Foundry Street and 25 Mechanic Street Site parcels to update the prior April 14, 2021, Phase I ESA prior to acquisition of the Site. This Phase I ESA was completed in accordance with ASTM Standard Practice E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Based on review of historical sources, environmental databases, interviews, User provided information, Site reconnaissance, and judgment by the Environmental Professional, this assessment revealed the following RECs and VECs in connection with the Site:

- REC/VEC #1 – Documented onsite chlorinated solvent contamination associated with the historical use of the 25 Mechanic Street Site parcel for dry-cleaning operations



- REC/VEC #2 – Documented onsite chlorinated solvent contamination associated with the historical industrial use of the mill building and office/storage building on the 1 Foundry Street parcel
- REC #3 – Documented onsite residual petroleum soil contamination associated with a former UST (old Tank #5 west of the boiler house) on the 1 Foundry Street Site parcel
- REC #4 – Document onsite groundwater PFAS contamination
- REC/VEC #5 – Documented onsite groundwater petroleum contamination from offsite upgradient sources
- REC #6 – PAH-impacted surface soil at the 1 Foundry Street Site parcel associated with historical industrial operations of the Site and surrounding area

The following historical REC (HREC), which is defined as a past release of any hazardous substances or petroleum products that have occurred in connection with the property and have been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls, was identified for the Site:

- HREC #1 – Petroleum contamination associated with releases from Site USTs (Tanks #1, #2, and #3) on the 1 Foundry Street Site parcel

The following controlled REC (CREC), which is defined as RECs resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls, was identified for the Site:

- CREC #1 – Existing chlorinated solvent groundwater contamination at 1 Foundry Street parcel managed under a NHDES GMP

The following environmental findings, which do not meet the definition of a REC, HREC, CREC, or de minimis conditions (DMCs) as defined by ASTM E 1527-13; however, warrant the opinion of the environmental professional and may represent some degree of business environmental risk, were identified for the Site:

- Environmental Finding #1 – Documented ACMs throughout the mill building and office/storage building
- Environmental Finding #2 – Documented lead paint throughout the 1 Foundry Street Site buildings
- Environmental Finding #3 – Documented non-TSCA regulated PCB-containing building materials throughout the mill building and office/storage building and TSCA-regulated PCB-containing bulk product waste in the office/storage building



Supplemental Well Installation and Sampling Report, Credere, December 17, 2021

A Supplemental Well Installation and Sampling report was prepared to convey the results of assessment of the identified data gaps regarding the source(s) of CVOCs contamination and their migration at the Site. The primary objectives of the supplemental work included the following:

- Assess the spatial overburden groundwater data gap between MW-2-25 and CA-VP-6 to conclude if there appears to be one migrating source or two separate sources of CVOCs
- Assess the presence of CVOCs in bedrock
- Assess the office/storage building sump effluent for concentrations of CVOCs to inform if the surface discharge should cease immediately or if it is acceptable to continue the discharge until redevelopment plans for the office/storage building are better known.

During this assessment, one new monitoring well couplet was installed between the office/storage building and mill building to assess the connectivity of the two identified CVOC areas (CA-VP-6 and MW-2-25) as well as assess migration of CVOCs in shallow bedrock. In addition, a sample of the sump effluent from the basement of the office/storage building was collected. A summary of cumulative groundwater results for the 25 Mechanic Street release area is provided in **Table 8C**. Based on observations made during well installation and results of sampling, the following conclusions were made:

- The presence of PCE in newly installed overburden monitoring well CA-MW-4 exceeding NHDES AGQS and documented groundwater flow direction suggests a continuity of the plume from MW-2-25 on the 25 Mechanic Street Site parcel to CA-VP-6 on the 1 Foundry Street Site parcel beneath the mill building. Credere concludes that there appears to be one southeasterly migrating PCE plume.
- Bedrock groundwater results from CA-BR-4 with no CVOC detection and lack of bedrock observations of contamination indicate migration of the CVOC plume into shallow bedrock does not appear to have occurred.
- The sump effluent was confirmed to have trace detections of PCE. Therefore, the sump was turned off by the owner to stop the continued release of contaminated groundwater on November 2, 2021.

The results of this investigation with discussed with the Owner, Credere, and NHDES on November 16, 2021, and the group concluded sufficient information regarding the extent of the CVOC plume was available to move forward with preparation of a RAP.

Supplemental Remedial Design Investigation, Credere, October 2022 – April 2023

To support the remedial design and decision process, supplemental assessment in the office/storage building and mill building was necessary. The following identified data gaps were assessed. These items are reported herein as part of the remedial design and have not been reported elsewhere to date.



Subsurface conditions beneath the mill building

On April 3-4, 2023, five soil borings were advanced in the basement of the mill building. After using a hammer drill to core through the basement slab, a manual Geoprobe slide hammer was used to continuously sample the overburden with 1-inch diameter macrocore polyethylene liners. Use of a manual Geoprobe was necessary due to inaccessibility of the basement with an automated drill rig. Soil boring locations are shown on **Figure 4A**.

Concrete slab and overburden thickness were measured, and soil cores were logged for composition, saturation, and evidence of contamination, if any. Sub-slab conditions were observed to support any potential radon-style vapor mitigation design decisions. Soil was field screened for total VOCs using a Rae Systems ppb RAE 3000 PID with a 10.6 eV lamp calibrated with a 10 ppm_v isobutylene gas with a response factor of 1.0. In general, overburden thickness under the basement slab was observed to be approximately 1.5-2 feet thick across all soil borings based on manual Geoprobe refusal and weathered rock bits in the core tips. Soil immediately below the slab (0-1 foot bgs) generally composed fine to coarse sand and gravel typical of fill material used beneath building construction. Fill soil was underlain by denser till followed by a thin layer of fine silt alluvium above weathered bedrock.

In borings where any evidence of groundwater was encountered (though limited in all cases to thin wet zone above refusal), temporary piezometers were installed with an objective to further define the GMZ beneath the building and assess the relative groundwater concentrations compared to the previously most-downgradient well CA-MW-4. Piezometers were installed using 1-inch 0.010-inch slotted polyvinyl chloride (PVC) screen and the native material within the boreholes was allowed to collapse around the screen as a natural filter pack. Temporary piezometers were installed at CA-SB-13, CA-SB-14, and CA-SB-15; however, due to the shallow depth to refusal and minimal water column observed (less than 1 inch) in CA-SB-13 and CA-SB-14, these piezometers were dry and removed without being able to sample. The temporary piezometer CA-PZ-15 installed in CA-SB-15 was observed to have approximately 4 inches of water column. After limited development of pumping the piezometer dry three times, the piezometer was left to equilibrate overnight due to scheduling constraints.

On April 5, 2024, CA-PZ-15 was sampled via no-purge methodology as a stable flow rate could not be achieved using low-flow methods. Laboratory results from analysis of the sample for VOCs identified one detection of PCE under the AGQS, while all other compounds were non-detect. Analytical results are summarized in **Table 8D**.

Indoor air conditions in the upper floors of the mill building

On September 27-28, 2022, Credere collected indoor air samples from five locations on the first floor of the mill building and two locations on the second floor. Indoor air sample results were used to establish if vapors are present on the upper floors migrating from the basement and to what degree. Sample locations are shown on **Figure 5B** for the first floor and **Figure 5C** for the second floor. Samples were collected by positioning evacuated batch-certified 6-liter summa canisters equipped with a 24-hour regulator approximately 4 feet above the floor (i.e., within the breathing zone) when feasible or on the building floor when not. The canisters were opened and allowed to

fill until reaching a vacuum of between -2 and -5 inches of mercury (inHg) or a maximum of 25 hours, whichever came first. Samples were submitted to the laboratory for VOC analysis via TO-15 SIM.

Laboratory results indicated exceedance of the Residential IASL for carbon tetrachloride across all samples collected, which is consistent with results of previous indoor air samples throughout the building. Four out of five of the first-floor sample locations also exceeded the Residential IASL for chloroform, and five (four on first floor, one on second floor) also exceeded that for TCE. Carbon tetrachloride and chloroform concentrations are consistently trace concentrations where detected. However, TCE concentrations on the upper floors, although above the Residential IASL, are lower than the concentrations detected in the basement and are only just above the IASL (concentrations of 0.494 to 0.623 $\mu\text{g}/\text{m}^3$ compared to the Residential IASL of 0.4 $\mu\text{g}/\text{m}^3$). Therefore, these TCE concentrations are believed to be migrating upward through the building as a result of the complete pathway of TCE from the subsurface to indoor air. Results of these additional September 2022 samples are summarized in **Table 7**.

Confirmation of a complete vapor intrusion pathway from sub-slab soil vapor to indoor air in the mill building

On April 3, 2023, Credere resampled sub-slab soil vapor samples from five locations in the mill building basement to confirm a complete pathway to indoor air from sub-slab where previous sub-slab reporting limits were above corresponding indoor air detections. CA-VP/IA-5, CA-VP/IA-6, CA-VP/IA-11, and CA-VP/IA-12 were resampled and analyzed for VOCs by TO-15 SIM as compared to the standard TO-15 run during the first sampling event. The samples were collected from previously installed Vapor Pins, and the seal on each vapor point was tested using a water dam. Each SVP was then purged for 30 seconds using a peristaltic pump prior to sampling. At one location, CA-VP-8, water under the slab was observed in the sample tubing during sampling and the sample was immediately terminated to avoid damage to the canister.

Results for these April 2023 resampled locations are summarized in **Table 7**. In three out of the four samples (CA-VP-5, CA-VP-11, and CA-VP-12) analyzed for VOCs, concentrations of chloroform and carbon tetrachloride were similar to their collocated indoor air samples, indicating a consistent background source from within the building and an incomplete pathway for these analytes. At CA-VP-6, soil vapor reporting limits were again too high to compare to the corresponding indoor air concentrations, which is a result of the dilution needed to analyze high VOC concentrations in this sample. However, based on CVOC concentrations at this location, a VI completed pathway from sub-slab soil vapor to indoor air in the mill building for chlorinated solvents can be concluded. Concentrations in CA-VP-6 during this sampling round were much higher than the previous round (3,840 $\mu\text{g}/\text{m}^3$ PCE in May 2021 compared to 25,300 $\mu\text{g}/\text{m}^3$ in April 2023). Therefore, the objective for these resampled locations has been met.

Further delineation of the extent of PCB-containing building materials requiring handling as PCB Bulk Product Waste

On September 26, 2022, Credere collected an additional 15 suspect PCB-containing paint samples from the office/storage building. This work was completed in anticipation of selective



demolition/renovation of the office/storage building to further delineate the extent of TSCA-regulated PCB bulk product waste requiring remediation. Although substrate sampling was also planned, this work did not occur as the office/storage building is now planned to be completely demolished and disposed of as TSCA-regulated PCB bulk product waste. Results of this additional sampling are summarized in **Table 4**. Of the 15 samples tested, nine exceeded the 50 mg/kg criteria for TSCA-regulated disposal, and all 15 exceeded the 1 mg/kg criteria for disposal under NHDES Solid Waste Rules. PCB-containing paint is nearly ubiquitous throughout the entire office/storage building.



3. CONCEPTUAL SITE MODEL

A CSM was developed using the findings from prior environmental investigations and can be updated if new information becomes available. This CSM includes a Site description, Site history, description of the physical setting of the Site, source areas and contaminants of potential concern (COPCs), nature and extent of contamination, exposure pathways, and potential human and environmental receptors.

3.1 SITE DESCRIPTION

A detailed Site description consisting of Site use and surrounding land use and Site location, as depicted on **Figure 1**, is included in **Section 1.1**.

3.2 SITE HISTORY

A description of Site history as it relates to current environmental conditions at the Site is included in **Section 1.2**.

3.3 PHYSICAL SETTING

Topography

The Site is located on a steep eastern slope, with the 25 Mechanic Street Site parcel located at approximately 550 feet AMSL and 1 Foundry Street Site parcel located at approximately 520 feet AMSL. The Mascoma River flows past the Site's eastern boundary at an elevation of approximately 500 feet AMSL.

Based on Credere's Site observations and the United States Geological Survey (USGS) Topographic Map of the Hanover Quadrangle, topography at the Site and vicinity in non-paved areas slopes significantly downgradient to the southeast. A retaining wall is present to accommodate the significant elevation change west of the office/storage building. An excerpt from the USGS map is included as **Figure 1**.

There is an approximately 50-foot elevation decrease between Mechanic Street to the west and the Mascoma River to the east. The steep slopes in topography limited past Site investigation approaches as well as remedial approaches proposed herein.

Geology

Surficial Geology

Surficial geology at the 25 Mechanic Street Site parcel based on prior environmental investigations consists of coarse to medium-grained brown sand with interbeds of brown and grey fine sands. Varying percentages of silt were observed during the 2021 Supplemental Phase II ESA as well as brown clay between 8 and 12 feet bgs. Fill material was not observed on the 25 Mechanic Street Site parcel.



Surficial geology at the 1 Foundry Street Site parcel observed during the 2021 Phase II ESA generally consisted of sand textured soils, with no distinctive changes noted down to 13 feet bgs at the deepest boring (CA-SB-2). Surficial geology at the 1 Foundry Street Site parcel was observed during prior environmental investigations to comprise fine to coarse silt sands with granite rock chips and boulders. Brown clay was also observed between 7 and 14 feet bgs in the northern portion of this Site parcel, while no clay was encountered in soil borings and test pits advanced in the southern portion. Fill material comprising varying mixture of brick, metal, glass, wood, twine, and asphalt shingles was observed during prior assessments in surficial soil to depths between 12 and 17 feet bgs in TP-3, TP-6, and TP-13 in the southern portion of the 1 Foundry Street Site parcel. The steep bank leading from the mill building to the river channel was previously observed to contain fill material, with boulders at the base along the river's edge.

Overburden thickness at the 25 Mechanic Street Site parcel ranges from at least 20 feet bgs in the northwest portion, decreasing to approximately 12-15 feet bgs on the western edge, and decreasing again to between 3 and 8 feet bgs in the southwest portion of this Site parcel. Overburden thickness east of the former retail building ranges from 18 feet bgs in the northeast, decreasing to 10 feet bgs on the eastern boundary before the retaining wall. Overburden thickness in the southeast portion is unknown. During the 2021 Supplemental Phase II conducted for this Site parcel, 17 feet of overburden was observed near the northeast corner of the Site building in the vicinity of MW-2-25.

Overburden thickness in the vicinity of the mill building (general center of the 1 Foundry Street Site parcel) observed during the 2021 Phase II ESA ranged between 12 and 13 feet. Overburden thickness in the northern half of the 1 Foundry Street Site parcel was observed during prior investigations to range from 15-18 feet, decreasing to between 5.5 and 7 feet from south to the general center of the parcel (just north of the Site buildings). Overburden thickness in the southern half of the 1 Foundry Street Site parcel ranges from over 25 feet bgs in the southern portion to 15 feet bgs in the general center of the Site (just south of the Site buildings). During the April 2023 Supplemental Remedial Design Investigation, overburden thickness under the mill building basement slab was observed to be approximately 1.5-2 feet thick across all soil borings based on manual Geoprobe refusal. Soil immediately below the slab (0-1 foot bgs) generally composed fine to coarse sand and gravel typical of fill material used beneath building construction. Fill soil was underlain by denser till followed by a thin layer of fine silt alluvium above weathered bedrock.

Bedrock Geology

According to the Bedrock Geologic Map of New Hampshire, the western portion of the Site is underlain by late Ordovician pink, weakly to moderately foliated, locally porphyritic biotite granitoids found in mantled gneiss domes of the Oliverian Plutonic Suite. The remainder of the Site is underlain by middle-upper Ordovician age variably metamorphosed sedimentary and volcanic rocks of greenschist to granulite facies of the Partridge Formation. Depths to bedrock in various portions of the Site are summarized below:



Range of Depth to Bedrock and Features	Location at Site
Approximately 7 feet bgs at MW-6-25, 11-15 feet to weathered rock (MW-4-25, MW-5-25, CA-SB-1, CA-SB-2, and CA-SB-8), 16 feet competent (CA-MW/BR-4). Water bearing fractures in CA-BR-4 were observed at 23, 27-27.5, 28.5, and 29.5 feet bgs.	Near mill building, northern portion of 1 Foundry
1.5 to 2 feet below the slab surface (CA-SB-11 through CA-SB-15)	Beneath mill building basement slab
11-15 foot refusal (WQ-1, MW-1 and MW-4)	Southern portion of 1 Foundry
Highly variable based on prior refusal depths but generally trends deeper refusal (20 feet) at the high point of MW-1-25, slightly shallower refusal at the lower point MW-2-25 (17 feet bgs) despite 10-15 foot change in surface elevation, but shallow refusal near MW-3-25 (5.5 feet bgs)	25 Mechanic Street

Hydrology

The Site and vicinity are located within the surficial drainage basin of the Mascoma River, which adjoins the Site to the east and southeast. A distributary channel of the river flows between the Site and island parcel. A raceway formerly entered the eastern basement of the mill building but the penstock is believed to be closed/sealed based on limited flow observed in the hatches. The Mascoma River flows south and west to the Connecticut River, which flows south making up the boundary between Vermont and New Hampshire. Precipitation is expected to infiltrate within vegetated areas of the Site and recharge overburden groundwater, and excess precipitation and precipitation onto impervious surfaces contributes to overland flows captured by onsite catch basins or resulting in direct runoff to the Mascoma River.

Based on the previous investigation, interpreted groundwater flow direction at the Site is mapped to flow to the south/southeast in the southern portion of the Site and east/southeast in the northern portion of the Site beneath the mill building and in proximity to the river (see **Figure 3**). The **Figure 9** cross section indicates the potential for groundwater diversion along the steep slope north of the office/storage building.

Water levels in all accessible wells at the Site were gauged during the Supplemental Well Installation work in October/November 2021 and groundwater monitoring events from November 2022 through April 2024. Based on these events, depth to groundwater for the wells in the general center of the 1 Foundry Street Site parcel (CA-MW-3 and CA-MW-4/CA-BR-4) ranged from 5.71 to 5.84 feet bgs. Depth to groundwater for the wells on the 25 Mechanic Street Site parcel and northern portion of the 1 Foundry Street Site parcel ranged between 0.00 (flooded roadbox at MW-6-25 suspected to be related to installation of nearby fire hydrant) to 10.94 feet bgs (April 2024). For monitoring wells in the southern portion of the 1 Foundry Street Site parcel, depth to groundwater ranged between 3.33 feet bgs (April 2024) to 12.97 feet bgs (November 2022), with the shallowest being MW-4. Based on the presence of water infiltration in the office/storage building, it is presumed groundwater is in contact with that building foundation (see **Figure 9** cross section).

Groundwater was observed beneath the northern/central portion of the mill building, in borings CA-SB-13 and CA-SB-15 (See **Figure 4A**) at approximately 19-20 inches below the concrete slab.

Overburden under the concrete slab in southern portions of the building (CA-SB-11, CA-SB-12, CA-SB-14) was observed to be wet just above refusal, but no measurable groundwater column was present.

Priority Resources

Public water is available to the vicinity along Mechanic Street and Mascoma Street. Groundwater flow has been documented to the southeast toward the adjoining river, which hydraulically disconnects the Site from other downgradient properties. Therefore, there are no human receptors downgradient of the Site where public or private drinking water wells may be impacted.

Changing Climate Concerns

The Site is located adjacent to the Merrimac River. According to the Federal Emergency Management Agency (FEMA) Flood Zone Map 33009C0894E, the eastern edge of the Site is located within Zone AE, where base flood elevations have been determined during inundation by a 100-year flood; however, the majority of the Site is within Zone X, which are areas of minimal flood hazard and have been determined to be outside the 500-year flood plain. Greater storm frequency and intensity in a changing climate may result in more frequent high-water levels and more frequent flooding of the eastern portion of the Site. Increased frequency of extreme weather events may also impact exterior portions of the Site and may result in increased erosion of improperly stabilized fill and/or building foundations.

Based on the nature of the contaminants at the Site, a changing groundwater level may impact exposure to certain contaminants at the Site due to the changing distance between the water table and planned new Site foundations.

Based on the nature of the proposed reuse of the Site, changing temperature, wildfires, changing dates of ground thaw/freezing, and changing ecological zone are not likely to affect the Site.

3.4 SOURCE AREAS AND CURRENT CONTAMINANTS OF POTENTIAL CONCERN

The following source areas were identified at the Site based on the cumulative data for the Site for the Site:

Source Areas

The following source areas have been identified at the Site:

- Historical dry-cleaning operations at the former retail building on the 25 Mechanic Street Site parcel with three primary potential release sources:
 - Interior machines that leaked directly to beneath the building
 - Potential spills during loading/handling of chemicals at the rear loading dock
 - Possible dry-cleaning vent on the north/eastern sides of the building



- Historical operations at the 1 Foundry Street Site parcel as a commercial dry cleaner. Recent specific source areas include the following; however, are considered additive to the primary release and groundwater plume migration from 25 Mechanic Street:
 - Dry cleaning wastewater discharge from the mill building
 - Dry cleaning equipment within the mill building and interior pathways to the subsurface (e.g., leakage through wooden floors to basement floor drains)
 - Storage of cleaning agents within the office/storage building and mill building resulting in off-gassing
 - Potential spills during handling/loading of chemicals at the loading dock(s), particularly the central loading dock on the mill building that adjoins the crawl space where a 40-gallon release was previously documented in 1989
- Historical industrial operations at the 1 Foundry Street Site parcel as a woolen mill and surrounding area for manufacturing and additional woolen mill operations
- Former 20,000-gallon No. 6 fuel oil UST (Tank #5) on the 1 Foundry Street Site parcel adjacent to the boiler house
- Two former 20,000-gallon No. 6 fuel oil USTs (Tank #s 2 and 3) in the southern portion of the 1 Foundry Street Site parcel that reportedly occasionally stored waste oil as well
- Offsite, upgradient petroleum releases:
 - Leaking historical USTs at Buskey's Property (1 Mechanic Street)
 - Longtime historical auto repair operations at former Norm's Auto/Maheu's Auto (6 Mechanic Street)
 - Historical fuel distribution operations that included four aboveground storage tanks (ASTs) and two reported USTs at Evan's Motor Fuels (0 Foundry Street)
- Site building components on the 1 Foundry Street Site parcel

Contaminants of Potential Concern

Based on analytical data collected during prior cumulative investigations, current COPCs include the following:

- VOCs:
 - PCE and dechlorination byproducts
 - Carbon tetrachloride and chloroform
 - Petroleum compounds
- PFAS
- PAHs
- Asbestos



- PCBs in building materials
- Lead in paint

3.5 NATURE AND EXTENT OF CONTAMINATION

Based on the findings of previous assessments of the Site, the extent of COPCs is summarized below:

PCE & Dechlorination Byproducts

Prior environmental assessment at the 25 Mechanic Street Site parcel identified a release of PCE under the former retail building. Additionally, the assessment conducted as part of the 2021 Phase II ESA of the 1 Foundry Street Site buildings also suggested a release of PCE near the center of the mill building (near CA-VP-6). Dry cleaning operations at 25 Mechanic Street resulted in a release of PCE either directly to the subsurface beneath the retail building from a leaking machine and/or to the soil immediately beneath the loading dock on the eastern side of the building and/or dry-cleaning vent on the northern side of the building. No specific point sources for dry cleaning equipment were identified at the mill building.

Soil

Based on the results of the August 2020 Supplemental Phase II ESA, a source of CVOCs in soil was identified at SB-8-25 in the form of PCE and TCE (located on the northeast side of the Site building beneath a possible air/equipment vent) and SB-13-25 in the form of TCE (located in the southwest portion of the Site building). The highest concentrations were encountered at the bedrock interface/equipment refusal and are overlain by 5 to 6 feet of soil with little to no PID response. PID response vertically delineates these areas to a 1-foot-thick interval immediately above bedrock/equipment refusal. Based on this location above bedrock at depth, the source was believed to have originally been dense nonaqueous phase liquid (DNAPL) but has since progressed to a sorbed phase in soil based on current soil concentrations. Although sand and silt soil was not observed to be wet during advancement of SB-8-25 and SB-13-25, depth to water at 3 to 5 feet bgs in the nearby MW-2-25 and MW-3-25 suggests overburden groundwater to be present and that these source areas may be saturated.

These elevated concentrations in soil are discontinuous between each other with borings with no PID response or limited CVOCs detections separating them. The apparent source area at SB-13-25 appears delineated by SB-11-25, SB-9-25, SB-12-25 and SB-14-25 where only trace detection of PCE were identified. The source area at SB-8-25 is delineated by SB-15-25, SB-16-25, and SB-7-25 to the west and south, but cannot be delineated to the northeast and east with available soil sample locations. Based on partitioning calculations, the soil concentrations do not support the presence of a residual DNAPL phase; therefore, the extent to the east would not be expected to extend much beyond the parcel boundary in soil, particularly considering the topographic change and the adjoining building.

PCE concentrations in soil detected at SB-8-25 are consistent with the highest concentrations of PCE in groundwater at MW-2-25; however, the previously detected concentrations of PCE in soil vapor in locations VP-1 and VP-3 were not confirmed in co-located soil samples collected from



beneath the Site building. The lack of a correlated sub-slab soil source may suggest PCE vapors are migrating upward from the SB-8-25 source area through granular building fill or utility pathways and are concentrating under the building foundation by becoming trapped by the foundation frost walls. Based on the results of the supplemental soil sampling, an extensive source of CVOCs immediately below the slab related to dry cleaning equipment is not apparent. TCE (a dechlorination product of PCE) detected in the soil samples collected from SB-13-25 was higher than PCE, which is inconsistent with the results of SB-8-25 where PCE is well above the SRS, with TCE at a much lower concentration. This may indicate a higher rate of dechlorination near SB-13-25 than at SB-8-25.

The volume of CVOC-impacted soil that, if removed during redevelopment, would need to be considered as an F-listed hazardous waste, was conservatively estimated for the northeast corner of the building (encompassing SB-8-25 and MW-2-25) as well as the southwest area of the Site building (encompassing SB-13-25). The approximate amount of clean soil to be segregated atop the layer of contaminated soil was also summarized. Volumes are presented below:

Source Area:	SB-8-25 & MW-2-25	SB-13-25	Total
Contaminated soil depth interval (ft bgs)	6-7	2.5-5.5	-
Volume of contaminated soil (CY)	90	110	200
Volume of clean soil above contaminated soil (CY)	910	90	1,000

Sub-slab investigation of soil beneath the mill building did not indicate any evidence of a PCE source or migration of DNAPL to beneath the mill building.

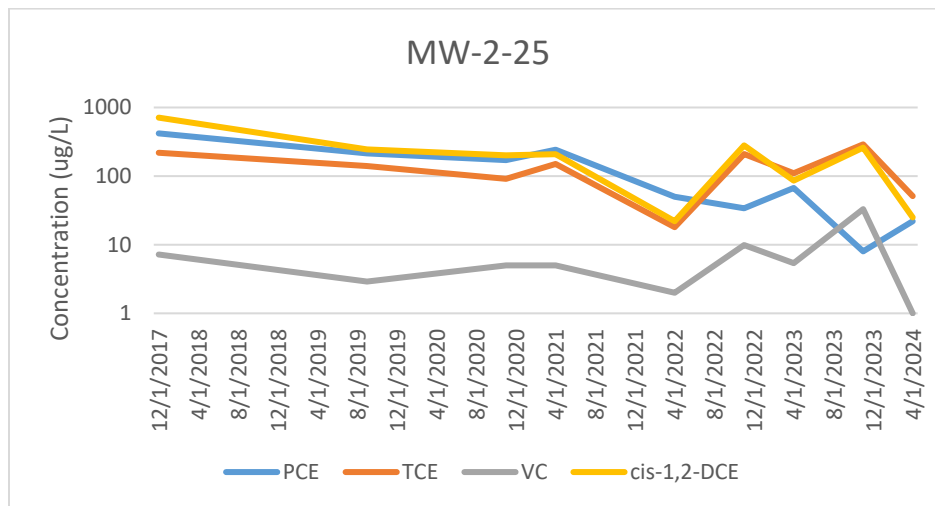
Lastly, petroleum and PCE impacted soil from the southern portion of the Site was removed in 1990 as part of a UST removal excavation. Confirmatory soil samples indicated petroleum was below laboratory reporting limits but that detections of PCE below the current SRS remained in soil at the excavation margins. This area is monitored under a GMP for residual related groundwater contamination. Therefore, this soil would require proper management if disturbed during redevelopment.

Groundwater

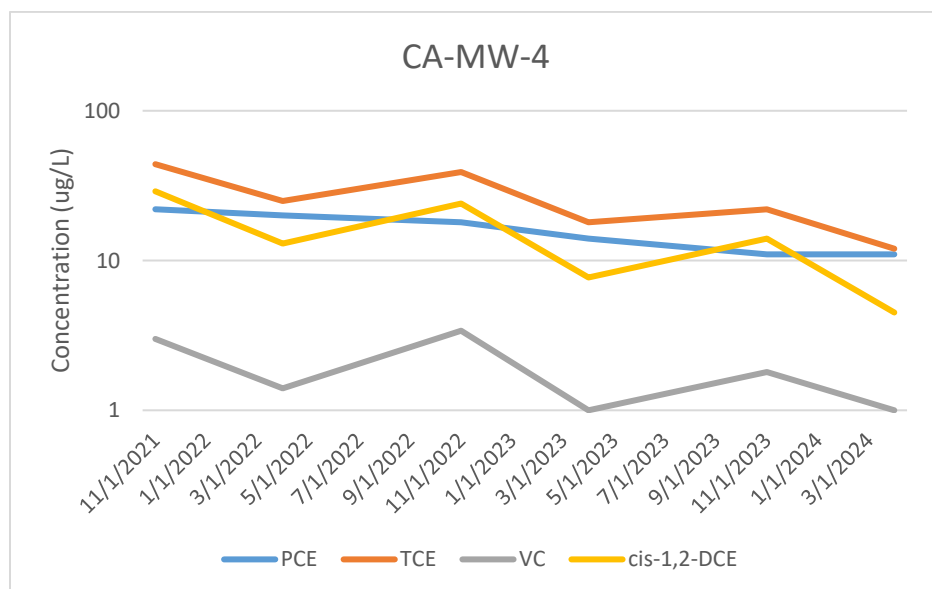
Cumulative groundwater data indicates the highest concentration of PCE, as well as dechlorination products TCE and cis-1,2-dichloroethene (DCE), to be in MW-2-25 with an apparent plume extending downgradient to CA-MW-4, and trace detections of PCE in MW-3-25 to the south of MW-2-25 and CA-MW-1 (decommissioned as of October 31, 2023), which may be on the downgradient edge of the plume. Considering recent groundwater flow, migration extends southeast away from MW-2-25 between CA-MW-3 and MW-4 to CA-MW-4 and beneath the mill building in the vicinity of vapor point CA-VP-6 (see following soil vapor section). Analytical results of CA-MW-4 indicates a continuity of the plume between the two known impacted areas. Bedrock groundwater results from CA-BR-4 with no CVOC detection and bedrock observations with limited fractures indicates migration of the CVOC plume into shallow bedrock does not

appear to have occurred. Overburden groundwater flowing beneath the mill building was observed to be minimal with only trace measurable groundwater in CA-PZ-15.

Review of recent groundwater sampling rounds indicates an overall decrease in concentrations of PCE inverse concentrations of dechlorination products TCE, cis-1,2-DCE, and VC at MW-2-25 between 2017 and 2024. A similar pattern is observed in the downgradient CA-MW-4, with a seasonal trend of higher results of dechlorination products in November sampling rounds. This may be the result of higher concentrations of petroleum compounds migrating onto the Site during the fall allowing for oxygen depletion during petroleum degradation resulting in an anaerobic environment more favorable to increased dechlorination. Based on the apparent trend lines and presence of dechlorination products, attenuation of the plume at the source does appear to be actively occurring in recent years.



Inset Chart A – Trend line for groundwater data at MW-2-25



Inset Chart B – Trend line for groundwater data at CA-MW-4

Water elevation information suggests that groundwater may be partially deflected around the northern end of the office/storage building due to the construction into the topography (split level) and shallow depth to water. Water that accumulates to a sump in the basement of the office/storage building was previously pumped to the surface between the office/storage building and the mill building before discharge was ceased on November 2, 2021, due to the presence of trace PCE in the effluent.

CVOCs in groundwater were already documented to be present and are managed under a GMP for the southern portion of the 1 Foundry Street parcel. These compounds were attributed to a release of waste oil from the removed waste oil USTs from the vicinity in 1987 or to a spill of PCE in 1989 near the mill building loading dock (see **Figure 2**). The contaminated soil was removed as part of the UST removal and residual groundwater contamination continues to be monitored. Concentrations in WQ-2 and WQ-3 continue to exceed the AGQS and are monitored under the GMP (GMP-198801003-L-06). Trend evaluation as part of the January 2024 Periodic Summary Report indicates concentrations of PCE are stable.

Soil Vapor

Soil vapor sampling results for TCE and PCE were above residential and commercial soil gas screening levels (SGSLs) in VP-1, VP-2, and VP-3 in the retail building. The vapor plume was previously documented to extend onto the 1 Foundry Street parcel within the office/storage building with PCE concentration detected in VP-7 and CA-VP-1 through CA-VP-3 below the SGSLs.

The greatest concentration of PCE in soil vapor in the mill building is at CA-VP-6. No specific equipment or use of this area suggests this specific location as a source area. Based on groundwater concentrations exceeding NHDES AGQS in CA-MW-4 downgradient of MW-2-25, low concentrations in MW-3-25, the lack of PCE detections in MW-6-25, CA-MW-3 and MW-4, and the location of CA-VP-6, there is a narrow pathway for connection of the groundwater CVOC plume at 25 Mechanic Street to CA-VP-6. The groundwater plume is believed to be the source of the sub-slab concentrations. However, similar highly elevated concentrations were not identified at CA-IA-4 in the office building basement where groundwater emerges, which is a direct line between MW-2-25 and CA-VP-6; however, those concentrations may be influenced by the groundwater diversion around the building. Concentrations of soil vapor and indoor air do indicate CVOC presence in the mill building that require mitigation regardless of the source.

Indoor Air

Indoor air sampling results indicate the presence of TCE and PCE within the retail building at concentrations above commercial indoor air screening levels (IASLs) indicating a complete VI pathway from the subsurface to indoor air.

Indoor air at the downgradient office/storage building also contains PCE and TCE, but at concentrations below the IASL. Soil vapor concentrations at the collocated points are higher than the corresponding indoor air concentrations, indicating vapor intrusion may be occurring and a



complete pathway is present. However, with indoor air concentrations below the IASL based on the building's current vacant status and future plans for demolition of the building, there are no other concerns for indoor air at the office/storage building at this time.

Indoor air samples identified PCE, TCE, and sequential dechlorination products, cis-1,2-DCE and vinyl chloride in the mill building. Generally, concentrations in soil vapor in the mill building are greater than the indoor air results, providing a line of evidence that the indoor concentrations are attenuating from the subsurface or during migration through the slab. This is with the exception of the southern end of the building in vicinity of CA-VP-5 and CA-VP-12, where soil vapor concentrations were less than indoor air. This may suggest a background source in the basement of the building (releases from drums in concrete containment area) or simply flow of air through the building from the highest concentrations at CA-VP-6 to the lower concentrations in the south part of the basement. Utility migration pathways that were not penetrated by the soil vapor point may also allow for migration of contaminants from the high source areas at CA-VP-6 to intrude other areas of the basement. Indoor air on the upper first and second floors also contained concentrations of TCE just above the residential IASL and PCE just below the IASL. Concentrations in the upper floors of the building were lower than those detected in the basement, likely as a result of dispersion.

Although a complete pathway is present from soil vapor to indoor air, another contributing source to indoor air may be the open airflow from the crawl space via windows into the basement adjacent to CA-VP-6. Several pipes of unknown origin discharge to this crawl space, no flow has actively been observed, and then discharge to a catch basin (see **Figure 4A**). If these pipes intercept perimeter flow from the west side of the building and divert it through this drainage system, they may be a contributing preferential pathway for migration of TCE vapor to indoor air.

Carbon Tetrachloride & Degradation Products (Chloroform)

Carbon tetrachloride (CT) and degradation product, chloroform, were detected nearly universally in indoor air above residential IASL. CT was an older dry-cleaning fluid that was phased out in the 1940s and 1950s; therefore, this COPC may have been used during prior woolen mill operations. Additionally, both compounds can off gas to indoor air from washing operations that use bleach, and chloroform is a common background contaminant due to off gassing from chlorinated drinking water. The long history of heavy duty washing/bleaching operations may have contributed to indoor concentrations. CT and chloroform have not previously been detected in groundwater in this well network, except for the sample collected from MW-1 in November 2020.

Highly elevated chloroform has been detected in soil vapor in the retail building but without corresponding CT, though reporting limits for CT have been slightly elevated. Based on the presumed age of the CT, the contaminant mass has potentially degraded largely to chloroform. Similar highly elevated concentrations of chloroform (detections above the SGSs that would indicate a potential for attenuation to indoor air) were not detected during the Phase II ESA in the storage/office building or mill building soil vapor except for at CA-VP-2 in the office/storage



building. This elevated concentration does not correspond to similarly elevated indoor air concentration in CA-IA-2.

Indoor air concentrations throughout both the storage/office building and mill building are consistent and just marginally above the residential IASL, and both residential and commercial IASLs at one location (CA-IA-9). Since soil vapor concentrations above the SGSL were mostly not present in both the mill and office/storage buildings, these indoor air concentrations may also represent a background concentration in the older buildings due to contamination of the building components themselves and off gassing related to prior cleaning operation. Soil vapor reporting limits exceed the indoor air concentrations and cannot be used to dismiss a sub-slab source.

Based on the presence of PCE related CVOCs in the mill building that will already warrant mitigation, the CT and chloroform detections will likely be mitigated simultaneously if originating from a sub-slab source. If coming from the building off-gassing or residual air concentration, the mill building would also require air mitigation for CT and chloroform; however, based on the very marginal exceedances of the IASL, concentrations are expected to diminish with installation of new interior ventilation systems and redevelopment of the building. These CVOCs will also be monitored as part of the confirmatory sampling to confirm adequate ventilation or mitigation in conjunction with VI condition.

Petroleum VOCs

Old Tank #5 Manhole

Soil assessment as part of the previous Phase II ESA indicated visual and olfactory observation of petroleum contamination at depth at CA-SB-1 in the vicinity of the Old Tank #5 manhole. This manhole is previously documented to contain oil saturated rags and soils, yet no removal documentation could be ascertained. Soil results confirm residual petroleum but at concentrations below the SRS, except for benzo(a)pyrene. Groundwater sampled from CA-MW-1 did not contain detection of petroleum VOCs above laboratory reporting limits. This cumulative data at the inferred source indicates the contamination associated with the Old Tank #5 manhole is limited to the immediate vicinity of the manhole at a depth of approximately 12 feet bgs and is residual contamination in nature. Based on this information, it is Credere's opinion that this residual contamination associated with Old Tank #5 manhole does not warrant further assessment or remedial action.

Offsite Sources

Recent (2021) assessment conducted by others documented petroleum compounds in groundwater in the northern portion of the 1 Foundry Street Site parcel (MW-4-25 and MW-6-25) and the northern portion of the 25 Mechanic Street Site parcel (MW-1-25 and MW-2-25). Groundwater assessment as part of the Phase II ESA revealed concentrations of benzene in CA-MW-3 above New Hampshire AGQS and a significant petroleum odor was observed emanating from the catch basin in proximity to CA-MW-3. There are several potential offsite sources of petroleum contamination that may be contributing to the onsite contamination:

- Petroleum contamination associated with historical gasoline USTs has been identified at the upgradient Buskey's Property (1 Mechanic Street), which based on groundwater flow and topography would be the most likely source for the contamination observed at MW-4-25 and the downgradient MW-6-25 and CA-MW-3. While petroleum may have been present sporadically onsite, no known gasoline storage has been documented and the presence of MTBE in the two onsite wells suggests the gasoline source to be the offsite. A storm sewer drainage pipe extends down the approximate center of Foundry Street to the Site to a catch basin just north of CA-MW-4 where petroleum odor was noted, which may be another pathway for contaminant transport.
- Norm's Autobody at 6 Mechanic Street was occupied by auto repair businesses from 1964 to present day; however, there were no documented releases. Recent reporting in Onestop indicated LNAPL had been detected in 2021/2022 and that delineation efforts were ongoing in 2022. Based on groundwater flow and topography, this release is the most likely source for the contamination observed at MW-1-25 and MW-2-25. Based on available documentation, it cannot be concluded this is the definitive source of the contamination observed in MW-1-25 and MW-2-25; however, plans for potential further assessment include a well on the 25 Mechanic Street property that may further confirm Norm's as the source.
- The property adjoining the 1 Foundry Street Site to the north, located at 0 Foundry Street, was occupied by Evan's Motor Fuels bulk distribution from approximately 1949 to sometime in the 1970s. This property is documented to formerly have four ASTs storing petroleum; however, there are no documented releases associated with these tanks. However, two USTs were removed from this property circa 1979, with holes observed in the tanks and free product reported in the excavation. This is only documented in the 1989 Site Assessment for the Site, no documentation was provided to NHDES at the time of removal. Based on groundwater flow and topography, if a release associated with these ASTs and/or USTs occurred, it could be a contributing source for the contamination observed at CA-MW-3 particularly given the direct migration pathway down the storm sewer line where a petroleum odor was observed. However, since CA-MW-5 is not impacted, this is not likely the primary source. Based on available documentation, it cannot be concluded the former Evan's Motor Fuels property is the source of any contamination observed onsite.

The contaminant plume has been adequately delineated to be encroaching on the northern portion of the Site and migrating east/southeast with groundwater flow; therefore, no further assessment is warranted at this time if groundwater continues to be monitored at the Site and offsite GMPs using the existing monitoring well network. The onsite wells are planned for incorporation into the offsite GMP GMZs.

PFAS

Groundwater assessment conducted as part of voluntary groundwater monitoring at 25 Mechanic Street and the Phase II ESA identified PFAS-impacted groundwater on the 1 Foundry Street Site parcel and the upgradient 25 Mechanic Street parcel. It was suspected that PFAS was collocated



with PCE released from dry clean facilities due to contamination of the PCE dry cleaning fluids with PFAS by leaching from treated clothing. However, the highest PFAS concentrations do not correspond to the highest PCE location at MW-2-25. The highest concentration of PFHxS was detected in the upgradient MW-1-25 well suggesting an offsite source, while the concentration of PFOA and PFOS are higher onsite. Due to lack of apparent correlation in concentration between adjoining wells and only marginal exceedances of the AGQS, further assessment is not warranted if concentrations continue to be monitored, at least periodically, as part of existing groundwater monitoring programs at the Site.

PAHs

The parking area on the 1 Foundry Street Site parcel was paved circa 1977 and was formerly unpaved. Waste oil is documented to have been used as a dust suppression method every summer for “some years”, thereby acting as a release of waste oil directly to the surficial soil at the 1 Foundry Street Site parcel. Additionally, the long-term industrial use of the Site has likely resulted in ubiquitous PAHs throughout soil beneath the existing asphalt, particularly in the dark/black soil observed in CA-SB-4 and CA-SB-5. Therefore, PAHs are assumed to be present in surface soil and be comingled to depths where reworking of soil had occurred during the frequent reconstruction of the Site by Lebanon Woolen Mills in the 1900s. PAHs are considered stable in soil and not likely to migrate to groundwater, as evidenced by lack of detections in groundwater samples. Therefore, this soil would require proper management if disturbed during redevelopment.

Asbestos

Asbestos was identified to be limited to the mill building and office/storage building. The following materials and estimate quantities of ACM are present at the Site:

- Office/storage building:
 - o 2,900 square feet of 9x9 tile comprised of brick red, brown, and black tile
 - o 1,900 square feet of 12x12 off-white floor tile and associated mastic

In addition, approximately 100 square feet of asbestos-contaminated (asbestos content <1%) roofing materials above the loading dock is present at the mill building. None of the remaining building roofs could be accessed for sampling and remain a data gap.

ACM was not identified in other sampled Site building materials; however, additional suspect ACM located behind walls or beneath floors, if present, will require sampling as renovation and/or demolition occurs.

Approximately 1200 linear feet of pipe insulation was abated from the mill building in April 2024. 10.66 cubic yards of asbestos waste were disposed of at Minerva Enterprises landfill in Waynesburg, Ohio.



PCBs in Building Materials

Building materials, specifically paint, containing PCBs at concentrations greater than 1 mg/kg (excluded PCB Bulk Product Waste) were identified in the mill building and office storage building. It is presumed all paint of the same color within the Site buildings contains PCBs and is represented by the respective sample. The following paints were identified to contain PCBs greater than 1 mg/kg in the Site buildings. Bolded paints contain PCB concentrations exceeding 50 mg/kg and are considered PCB Bulk Product Waste that must be removed:

- Mill building:
 - Brown floor paint
 - Teal wall paint
 - White ceiling paint
 - Red/brown floor paint
 - Brown caulk on the cafeteria door
- Office/storage building:
 - **White ceiling and wall paint**
 - Grey floor paint
 - **Yellow wall paint**
 - **Blue/Green wall paint**
 - Beige wall paint
 - Light Grey ceiling paint
 - **Brown wall paint**
 - **Pink wall paint**

White paint determined to be PCB bulk product waste is present throughout the first floor and exterior walls of the second floor and is extensive within the office/storage building. The office/storage building is planned for demolition and will be disposed entirely as a PCB bulk product waste in New Hampshire.

Lead in Paint

LCP was detected in the green exterior paint on all 1 Foundry Street Site buildings. No LCP was identified on the interior of the boiler house. LCP was detected throughout the mill building, which included all fire door paint (grey, white, mint green), most wall paints (grey, white, light blue, red), and the red paint on piping. LCP was also identified throughout the office/storage building. Identified LCP included wall paint (off-white, light green under the off-white, brown, light yellow, light pink, yellow/orange, tan, and light blue); fire door paint (grey and black); white ceiling and light frame paint; white window frame paint, and off-white chair rail paint. The interior walls that appeared not to be original construction did not contain lead.

Paint was observed to be in generally stable condition throughout the buildings; however, renovation, removal, or damage to these surfaces can result in lead dust. Lead dust accumulates in wooded floors, on windows, ceilings, and other horizontal surfaces and tends to recontaminate previously unimpacted or cleaned surface, and migrate through foot traffic and air movement if not thoroughly contained and cleaned during renovation work. Based on the planned residential use of the mill building, it will be imperative that lead painted surfaces are properly handled during renovation and adequate cleaning of completed spaces is completed prior to future residential occupation.



3.6 EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

Exposure pathways describe how a human or environmental receptors encounter contaminants that may be present at the Site. Potential migration pathways through groundwater, surface water, air, soils, and sediments were considered for each COPC and source. A migration pathway is considered an exposure pathway if there is a mechanism of contaminant release from primary or secondary sources, a transport medium, and a point of potential contact with receptors. Both current and potential future releases and migration pathways to receptors are considered.

Inhalation:	This pathway is primarily associated with groundwater contamination within 30 feet of an occupied structure when groundwater elevation is less than 15 feet below surface grade, or when depth to groundwater is unknown. This pathway is applicable when receptors may inhale impacted media in the form of contaminated vapor. This pathway is also applicable when contaminated soil and/or groundwater are exposed via an excavation.
Dermal Absorption:	Exposure via dermal absorption occurs when receptors are exposed to chemical concentrations present in soil, groundwater, surface water, or hazardous building materials through direct contact with the skin.
Active Ingestion:	The active ingestion pathway represents exposure which may occur through the active ingestion of contaminant concentrations via a drinking water supply well, through agricultural products, or through direct consumption of soil (e.g., typically by children or improper hygiene/health and safety of soil workers).
Incidental Uptake:	This pathway is applicable when receptors may incidentally inhale or ingest impacted media in the form of contaminated dust, chips, or airborne asbestos fibers.

Potential Receptors are categorized by duration of exposure and intensity of use at the Site. The receptor categories described in the CSM include the following:

Residents:	A residential scenario would include those users having long duration and high intensity exposures. Particularly high intensity activities for adults would include gardening, and for children would be playing in soil.
Commercial Workers:	Commercial receptors are those present at the Site for long durations but with low intensity exposure such as indoor office workers.
Recreational or Park User:	Park users are characterized by low duration, i.e., less than two hours per day, and low intensity usage such walking, shopping, and bird watching.
Excavation or Construction Worker:	Excavation or construction workers are present at the Site for short durations though intensity of use is high, such as during non-routine activities including construction or utility work. Examples include utility and construction contractors and landscapers.

3.7 EXPOSURE PATHWAY AND RECEPTOR SUMMARY

Under current conditions, exposure to Site COPCs includes only trespassers (passive users), as the Site is not regularly in use or occupied, and those walking along Foundry Street. However, future redevelopment may broaden potential exposure to the other receptor groups including construction workers during redevelopment, and possible future residents and occupants.

Exposure pathways include inhalation of volatiles by construction workers in open excavations, inhalation of volatiles by all receptors in the office/storage building and mill building and potential future Site buildings at 25 Mechanic Street, incidental uptake of contaminated dust by all receptors, dermal absorption through contact with impacted media by all receptors, and active ingestion by future occupants or construction workers employing poor hygiene.



4. CLEANUP GOALS AND APPLICABLE GUIDELINES

The remediation goal is to eliminate or manage the risks to human health and the environment for identified COPCs through proper abatement, management, mitigation, and/or disposal. Objectives specific to each contaminated media are outlined below:

- Remediate the source area at 25 Mechanic Street to allow for attenuation of groundwater impacted with CVOCs downgradient of the source
- Eliminate the exposure pathway to indoor air through mitigation of indoor air concentrations to below residential IASLs at the mill building and any future new construction
- Eliminate the exposure pathway to PAH-impacted surface soil throughout and residual petroleum (near boiler house) at the 1 Foundry Street Site parcel
- Abate asbestos-containing building materials identified at the mill building and office/storage building
- Remove TSCA-regulated PCB-Bulk Product Waste identified at the office/storage building
- Stabilize, properly manage, and remove if necessary, LCP and non-TSCA regulated PCB-containing paint identified on the 1 Foundry Street Site buildings
- Perform construction activities in accordance with the EPA Renovation, Repair or Painting requirements and the New Hampshire Lead Poisoning Prevention & Control Rules, Chapter He-P 1600

Petroleum in groundwater is being addressed as part of other remedial measures, existing offsite GMPs or by others and therefore, is not included in the ABCA/RAP.

To achieve these objectives, the following cleanup goals or regulatory standards or guidelines will be applicable to cleanup:

4.1 SOIL AND GROUNDWATER

The remediation goal for CVOC-impacted soil, PAHs in soil, residual petroleum in soil, and groundwater at the Site is to eliminate exposure to excavation/construction workers during the redevelopment and future occupants after redevelopment. Remediation will be considered complete when the exposure pathways are reduced/eliminated such that exposure to the CVOCs are below the applicable New Hampshire Code of Administrative Rules Chapter Env-Or 600 Contaminated Site Management, Table 600-1 Ambient Groundwater Quality Standards (AGQS) and Table 600-2 Soil Remediation Standards (SRSs).

Based on the results of the previous investigations, excess soil generated from the 25 Mechanic Street source area under the selected alternative would be considered an F-listed hazardous waste. Excavated source area material will be disposed offsite at an appropriately licensed landfill.



Offsite disposal will be done in accordance with New Hampshire Code of Administrative Rules Env-Sw 900: Management of Certain Wastes.

4.2 INDOOR AIR AND SUB-SLAB SOIL VAPOR

The remediation goal for CVOC-impacted sub-slab soil vapor and indoor air at the Site is to eliminate exposure to excavation/construction workers during the redevelopment and future occupants (primarily residents) after redevelopment. Remediation will be considered complete when the exposure pathways are reduced/eliminated such that exposure to the CVOCs are below the NHDES Waste Management Division Vapor Intrusion Guidance, Table 1 Vapor Intrusion Screening Levels (VISLs), revised February 2013, for the residential use scenario, which are the lowest values of the VISLs. Remediation cannot be considered complete until sub-slab soil vapor and indoor air impacts are mitigated, and resultant concentrations of indoor air spaces meets the residential VISLs.

4.3 ASBESTOS IN BUILDING MATERIALS

The remediation goal for asbestos is complete removal via abatement to eliminate exposure to construction workers during the redevelopment and future occupants after redevelopment. Post abatement conditions at the Site should be safe for re-occupancy as defined in NHDES Env-A 1800: Asbestos Management and Control (Env-A 1800).

4.4 PCBS IN BUILDING MATERIALS (PRIMARILY PAINT)

The remediation goal for PCBs is removal and disposal of PCB-containing materials in the office/storage building in conformance with applicable regulations. Removal decisions and actions will be governed by Toxic Substances Control Act (TSCA) Title 40 CFR § 761.62, which establishes a PCB Bulk Product Waste threshold criterion of greater than, or equal to 50 milligrams per kilogram (mg/kg). Materials with PCB concentrations greater than this threshold require removal from use and proper disposal as hazardous waste. Excluded PCB Bulk Product Wastes with concentrations between 1 mg/kg and 50 mg/kg are also required to be properly disposed when removed from use.

As the office/storage building is planned for demolition, known PCB-containing materials will be removed from use by demolition and PCB-containing building materials must be disposed in accordance with 40 CFR § 761.62. Any building materials containing PCBs at concentrations less than 1 mg/kg are unrestricted for future use and/or disposal per 40 CFR § 761.61(a)(4)(i)(A).

4.5 LEAD IN PAINT

During Redevelopment

The remediation goal for lead in paint is to properly manage exposure to allow safety of construction workers in accordance with the Occupational Safety and Health Administration (OSHA) Lead in Construction guidelines for work in the 1 Foundry Street Site buildings. The remediation goal for lead in paint during redevelopment includes any LCP that will be impacted as part of renovation activities so that it will be managed appropriately to prevent exposure to construction workers. Contractors incidentally impacting lead paint as part of renovation activities



must be certified under the US EPA Lead Renovation, Repair and Painting (RRP) rule. Contractors impacting lead paint for the exclusive purpose of eliminating the lead paint and/or lead hazard because of its lead concentration and not because of the renovation design must be performed by a licensed abatement contractors under the New Hampshire Code of Administrative Rules, Lead Poisoning, Prevention, and Control Rules, Chapter He-P 1600. Abatement activities are defined in Chapter He-P 1609.02.

Under the current redevelopment scenario, none of the anticipated renovations will be performed with the one and only intention of eliminating lead paint and/or lead hazards and therefore can be performed by an RRP-certified contractor. If the intention becomes addressing the lead paint and/or lead hazard solely due to the lead concentration, the work will be performed by an abatement contractor.

After Redevelopment

The remediation goal for lead in paint after redevelopment is that any LCP is stabilized or removed prior to re-occupancy of the Site buildings. LCP that is to be impacted by renovation or demolition activities should be properly removed prior to these activities or managed during these activities. This proper management and/or removal includes the control of lead-containing dust generation and its spread throughout the Site buildings. This is to eliminate exposure to future residents or commercial employees after redevelopment. Post renovation conditions at the Site should be safe for re-occupancy as defined in New Hampshire Code of Administrative Rules, Chapter He-P 1600 Lead Poisoning, Prevention, and Control Rules (Chapter He-P 1600).



5. PRESUMPTIVE REMEDIAL MEASURES

The goal relative to the identified COPCs is to eliminate or manage the risks to human health and the environment through proper management, mitigation, and/or disposal of identified COPCs. To achieve this goal, the project will require the implementation of the following presumptive remedial measures, which will be required to be completed regardless of other activities conducted at the Site. The following presumptive remedial measures will be implemented:

5.1 REMOVAL OF DEBRIS AND REMAINING CHEMICALS

The Site buildings, particularly the mill building, were full of materials relict of the prior dry cleaning and laundering operations including presses, laundry machines, drums of solvents/chemicals, bulk storage of detergents, bleach, and softeners in three 5,000-gallon ASTs, carts, paint, and abundant other debris. There is no reuse for these materials as part of the redevelopment, so they were removed prior to beginning construction. Minor larger solid waste materials remain in the building to be removed as part of ongoing redevelopment.

Note: this work was planned for April 2022 in parallel with review of the draft RAP to facilitate preparation for redevelopment. This was coordinated with NHDES via a letter from Pierce Atwood to NHDES dated April 7, 2022. The majority of the cleanout work occurred in August 2022.

Hazardous waste removal: \$65,000.00

Universal waste removal: \$20,000.00

Bulk debris removal: \$65,500.00

5.2 SEAL RACEWAY, FLOOR DRAINS, AND CRAWLSPACE IN MILL BUILDING

Due to the unknown discharge point of some floor drains and presumed discharge of the raceway directly to the river, these represent a direct conduit for migration of contaminants to the environment and are required to be sealed. Additionally, the raceway, floor drains, and crawlspace within the mill building currently represent a pathway from subsurface contamination to indoor air. The raceway, floor drains, and crawlspace require closure to eliminate this pathway to prevent further migration of contaminants to the indoor air environment. Additional venting of the crawlspace will be necessary to create a negative pressure environment and convey subsurface contamination to the building exterior.

Presumptive Cost: \$ TBD based on construction costs

5.3 ASBESTOS ABATEMENT

Redevelopment of the Site includes select interior and exterior demolition of Site building components to support renovations. As required by Env-A 1800, asbestos is required to be properly abated prior to renovation or demolition. Abatement was completed in accordance with applicable State and Federal regulations by appropriately licensed contractors.



Note: notification of commencement of this work was provided and approved by NHDES per a letter from Credere to NHDES dated October 16, 2023. This work occurred from February 2024 to April 2024.

Mill building abatement: \$85,000.00

Office/storage building abatement: \$50,000.00

5.4 REMOVAL OF TSCA-REGULATED PCB BULK PRODUCT WASTE

The presence of TSCA-regulated PCB bulk product waste confirmed in the office/storage building during previous assessments will require proper removal and disposal. The building is planned for demolition; therefore, the entire building will be handled as PCB bulk product waste. Bulk product waste would be disposed offsite at an appropriately licensed landfill in accordance with 40 CFR 761.50 through 761.79.

All demolition debris treated at PCB bulk product waste: \$198,395.00

5.5 MANAGEMENT OF LEAD AND PCB-CONTAINING PAINT, WITH REMOVAL AND DISPOSAL AS NEEDED AND RRP-COMPLIANT CONSTRUCTION

The presence of excluded PCB Bulk Product Waste and LCP confirmed in the 1 Foundry Street Site mill building during previous assessments requires proper management, removal or disposal. Due to the flexible redevelopment design, observed extents and condition of PCB-containing paint and LCP require management (e.g., stabilization) at a minimum, and whole component removal when applicable in accordance with the EPA Lead RRP rule and general accordance with Chapter He-P 1600 abatement procedures as a best practices. The wastes generated were disposed offsite at an appropriately licensed landfill or recycling facility in accordance with New Hampshire Solid Waste Rules – Env-Sw 100, 200, and 900, 49 CFR 100- 199 – Transportation of Hazardous Materials, and 40 CFR 256 – Guidelines for Development and Implementation of State Solid Waste Management Plans, and/or 40 CFR 761.50 through 761.79.

Note: notification of commencement of this work was provided and approved per a letter from Credere to NHDES dated October 16, 2023. This work occurred from February 2024 to April 2024.

Presumptive Cost: \$550,985.00



5.6 INSTALLATION OF SSDS AND VAPOR BARRIER IN ANY NEW CONSTRUCTION

Adaptation of existing buildings to prevent exposure to future occupants to vapor intrusion concerns is evaluated for alternative methods in **Sections 6 and 7**. However, new construction is much more easily designed for VI prevention. Any new construction at the Site will be designed with sub-slab geotextile matting above a gravel bed, and passive or active ventilation of the vapor to above the roofline. The foundation will be installed with a vapor barrier to prevent any residual vapor from migrating into the building. This requirement will be worked into the 25 Mechanic GMP to be prepared for the Site.

Presumptive Cost: TBD depending on future building design



6. DESCRIPTION AND EVALUATION OF REMEDIAL ALTERNATIVES

The remedial actions selected for the Site should eliminate the potential for human exposure and/or improper disposal of COPCs at the Site. Multiple remedial alternatives are available to address the identified COPCs at the Site.

6.1 NO ACTION

Under a “No Action” alternative no remediation activities would be implemented at the Site and is used as a baseline for comparison of other alternatives and is not considered further. The “No Action” alternative does not include a means for mitigating or eliminating potential exposure to impacted soil, soil vapor, indoor air, groundwater, or hazardous building materials during and following redevelopment. Therefore, the potential for human exposure continues to exist for future patrons, residents, excavation/construction works, and commercial workers.

6.2 CVOCs IN SOIL AND GROUNDWATER

Alternative #SG1 – Source treatment and ongoing monitoring via GMP

Under this alternative, the CVOC source area in soil at 25 Mechanic Street will be managed as needed during redevelopment. This would include treatment of contaminated soil in the deep soil source located in the 2-foot zone above bedrock to reduce mass in soil contributing to groundwater impacts. An initial application of zero valent iron (ZVI) to make the sorbed contaminant bioavailable would be completed followed by a biostimulation additive and downgradient groundwater monitoring. Reduction of the source mass would lessen downgradient impacts in groundwater and the biostimulation additive would expedite the sequential dechlorination of CVOCs.

Given current data, the natural attenuation rates for the controlling compounds (PCE/TCE) are adequate to achieve groundwater standards in a reasonable time (see **Inset Chart C**). The biological degradation reaction rates estimated under current conditions can be improved. Source reduction and bio-stimulation will accelerate the dechlorination process and substantially reduce that clean up time frame of the source and plume depending on groundwater transport rates. The CVOC-impacted groundwater plume would still be managed under a GMP and a GMZ would be established for 25 Mechanic Street and the northern portion of 1 Foundry Street. The monitoring of contaminants for attenuation progress in groundwater will be performed under a GMP until two consecutive rounds of sampling are below the NH AGQS. This GMP would be separate from the existing GMP in the southern portion of the 1 Foundry Street Site parcel.

Alternative #SG2 – Complete source area removal and groundwater monitoring via GMP

Under this alternative, standard excavation techniques would be used to remove and properly dispose of all CVOC-impacted soil located at the 25 Mechanic Street Site parcel as an F-listed hazardous waste with excavation margins confirmed to meet applicable New Hampshire SRSs. Based on prior environmental investigations at the Site, a layer of non-contaminated soil overlies the 2-foot interval of CVOC-contaminated soil, which is located at the top of bedrock. This top



layer would be kept separate from the known CVOC-impacted interval to reduce disposal volume. This would also include confirmatory sampling of Site soil to ensure remaining soil meet applicable New Hampshire SRSs.

CVOC-impacted groundwater would still be managed under a GMP and a GMZ would be established for 25 Mechanic Street and the northern portion of 1 Foundry Street. The monitoring of contaminants in groundwater for MNA will be performed under a GMP until two consecutive rounds of sampling are below AGQS. This GMP would be separate from the existing GMP in the southern portion of the 1 Foundry Street Site parcel.

Alternative #SG3 – Combined source area soil removal with supplemental treatment

Under this alternative, standard excavation techniques would be used to remove and properly dispose of CVOC-impacted soil within the needed excavation limits of the planned new building and parking deck. The excavation would extend vertically to the known contamination (5 to 7 feet below current grades) for soil removal to the extent feasible on top of bedrock. Horizontally, particularly to the northeast (SB-8-25 area), the excavation would extend to PID readings below PID performance criteria (see **Section 8.6**) or to the extent practicable considering the propane tank and trees on the northeastern adjoining property, excavation sloping/shoring needs, and limitations related to the steep topography. Recognizing that the contamination right above bedrock may be difficult to fully remove and due to physical limitations, any residual CVOCs that cannot be excavated at the base and side margins will be treated. An initial application of ZVI to make the sorbed contaminant bioavailable would be completed followed by a biostimulation additive and downgradient groundwater monitoring. Reduction of the source mass by removal would lessen downgradient impacts in groundwater and the biostimulation additive would expedite the dechlorination of residual CVOCs at the source excavation margins as well as in the downgradient groundwater plume.

Given current data, the natural attenuation rates for the controlling compounds (PCE/TCE) are adequate to achieve groundwater standards in a reasonable time (see above **Inset Chart C**) but can be enhanced. Source removal and biostimulation to increase the dechlorination rates will substantially reduce that clean up time frame of the source and plume depending on groundwater transport rates. The CVOC-impacted groundwater plume would still be managed under a GMP and a GMZ would be established for 25 Mechanic Street and the northern portion of 1 Foundry Street. The monitoring of contaminants for attenuation progress in groundwater will be performed under a GMP until two consecutive rounds of sampling are below the NH AGQS. This GMP would be separate from the existing GMP in the southern portion of the 1 Foundry Street Site parcel.

6.3 CVOCs IN INDOOR AIR AND SUB-SLAB SOIL VAPOR

Alternative #IA1 – Retrofit SSDS, vapor barrier/sealing and indoor air performance monitoring

Under this alternative, a vapor barrier and active SSDS will be retrofitted to the existing mill building. This will include a fan/blower connected to piping that is installed through the basement foundation and into the subsurface at one or more locations, depending on the radius of influence



achieved. The SSDS will be designed to actively pull contaminated sub-slab soil gas from the subsurface to create a negative pressure environment under the slab preventing the migration of vapors into the basement. The discharge piping will vent out the top of the building above the roof line. Vapor intrusion mitigation requirements will be incorporated into a new GMP for the 25 Mechanic Street source and will outline that the system must be continually operated to provide protection of building occupants. The GMP will also describe maintenance requirements of the SSDS. The effectiveness of the system will be monitored through continued performance monitoring of indoor air, until such a time that groundwater concentrations for the associated plume are no longer monitored and have been reduced to below the AGQS. Once this is achieved, the configuration of the system will be modified so that the system runs passively if the passive operation continues to maintain indoor air concentrations below the IASLs.

The vapor barrier will be installed in conjunction with basement renovations and will be sealed along the perimeter with minimum 12-inch overlap and taped seams and around any utility penetrations. As the vapor barrier is planned for installation in conjunction with pouring a new concrete floor, the material will at a minimum be a 10-mil polyethylene sheeting with the new overlying concrete also contributing to the barrier. Due to the poly sheeting's lack of durability and potential for pin holes and cuts during installation and subsequent construction over the top, a more durable cross laminated and reinforced material should be considered.

While the mill building is currently the only Site building not anticipated to be demolished, this alternative applies to any of the Site buildings that remain through redevelopment. New construction is covered in **Section 5.6**.

Alternative #IA2 – Ventilated floor and indoor air performance monitoring

Under this alternative, the existing foundation of the mill building will be reconstructed such that it will have two slabs (old slab with some perforation to accommodate plumbing trenching and a new finish slab) and a middle ventilating layer consisting of high permeability granular material and perforated venting piping or a cellular matting. A minimum 10 mil vapor barrier (with taped seams) will be installed below the new slab and above the granular material and venting materials to retard any vertical vapor movement. The perforated piping/cellular matting will be connected to a radon style fan that will create a vacuum in the interstitial space between the old and new slabs. The discharge will be plumbed above the roof line outside the building. Depending on the results of system monitoring, passive venting may be a viable application in this treatment scenario. These alterations to the existing floor would restrict redevelopment options given the already established ceiling height of the basement that would be shortened to allow for the ventilated floor layer. Vapor intrusion mitigation requirements will be incorporated into a new GMP for the 25 Mechanic Street source and will outline operational and maintenance requirements of the system. The effectiveness of the system will be monitored through continued performance monitoring of indoor air, until such a time that groundwater concentrations for the associated plume are no longer monitored and have been reduced to below the AGQS.



While the mill building is currently the only Site building not anticipated to be demolished, this alternative applies to any of the Site buildings that remain through redevelopment. New construction is covered in **Section 5.6**.

6.4 PAHS IN SURFACE SOIL AND RESIDUAL PETROLEUM

Alternative #SS1 – Preparation of a Soil Management Plan

Under this alternative, the PAH-impacted surface soil throughout the 1 Foundry Street Site parcel and limited residual petroleum at the boiler house would be properly managed during Site building construction/redevelopment and installation of utilities to accommodate construction/design plans. Impacted soil may be relocated throughout the Site to allow for appropriate fill balance to meet required grades. Excess soil that cannot be accommodated would be disposed offsite at a licensed landfill.

PAH-impacted soil that can be reused onsite would be covered with an engineered barrier system. The engineered barrier system would include the following designs:

- Installation of asphalt or concrete parking areas, sidewalks, foundations, patios, etc. with appropriate top course and sub-base materials
- 1 foot of natively sourced fill materials over a marker layer in landscaped areas (lawn areas, planting beds, tree islands) and at least 2 feet of fill over a marker layer in playground areas or other areas intended for child use (if any)

A Soil Management Plan (SMP) would then be prepared to ensure maintenance of the engineering barrier system is upheld and any future soil disturbance is conducted according to NHDES guidelines for the 1 Foundry Street Site parcel. It would be the responsibility of the Owner to ensure the SMP is followed and implemented long-term.

Alternative #SS2 – Additional Delineation of PAHs in Surface Soil and Select Soil Removal and Disposal

Under this alternative, the horizontal and vertical extent of PAHs in surface soil and the residual petroleum at the boiler house at the 1 Foundry Street Site parcel will be delineated via sampling. Results will be used to facilitate select removal of only PAH-impacted soil using standard techniques for excavation, offsite disposal and replacement with clean fill. As the extent of PAH-impacted soil is unknown at this time, a best- and worst-case scenario will be detailed in the alternative evaluation. No engineered barrier system would be required and no long-term SMP would be needed.

Alternative #SS3 – Complete Soil Removal to Bedrock and Proper Disposal

Under this alternative, all soil would be presumed impacted from historical operations at the 1 Foundry Street Site parcel would be removed to bedrock using standard techniques and properly disposed of at a licensed facility. No delineation would be warranted as all soil would be considered contaminated. No engineered barrier system would be required and no long-term SMP would be needed.



7. COMPARATIVE ANALYSIS OF CLEANUP ALTERNATIVES

The comparison and evaluation of remedial alternatives has been conducted using the five criteria listed below:

1. Effectiveness and reliability
2. Feasibility and ease of implementation
3. Risk reduction and associated benefits
4. Cost effectiveness using the net present worth of all future costs
5. Estimated time to reach “No Further Action”

A brief summary of these five criteria and a discussion as to how they pertain to the remedial alternatives is presented below.

7.1 DESCRIPTION OF EVALUATION CRITERIA

Effectiveness and Reliability

Since the primary objective of a remedial action is to reduce or eliminate exposure of humans and the environment to unacceptable concentrations of COPCs, effectiveness and reliability are considered primary threshold criteria. This criterion addresses whether or not a remedy is effective at providing adequate protection by evaluating how risk from each exposure route is eliminated, reduced, or controlled through each specific alternative. This criterion also addresses the ability of the alternative to achieve the cleanup goal and applicable guidelines. This criterion evaluates the long-term reliability of the alternative with respect to performance, reasonable costs associated with upkeep, level of effort associated with upkeep, and the resilience of the alternative with respect to reasonably foreseeable changing conditions.

Feasibility and Ease of Implementation

This criterion analyzes technical feasibility and the availability of services and materials. Availability of services and materials evaluates the need for offsite treatment, storage, or disposal services and the availability of such services. Necessary equipment, specialists, and additional resources are also evaluated.

Risk Reduction and Associated Benefits

This criterion evaluates the method of reduction of risk to exposure of identified COPCs via elimination, reduction, or control of the identified risk. This criterion also evaluates the associated benefits of the method of risk reduction. Evaluation of short term and long-term maintenance requirements will be included as part of identified associated benefits.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Cost information presented for the alternatives evaluates the estimated capital, operational and maintenance costs of each alternative. Capital costs include direct capital costs such as materials and equipment. Costs are presented as a balancing criterion such that if a number of remedial



alternatives are comparable for the previously discussed criteria, cost may be used as a distinguishing factor in the selection of the remedial action. Estimated costs were developed based on prior project and contractor experience, and current estimates received from contractors.

Green Remediation Potential

This criterion also evaluates the extent of green remediation techniques that can be employed as part of the project and their associated benefits relative to other alternatives. This criterion will be evaluated based on its consistency with EPA's *Principles for Greener Cleanups* policy.

Estimated Time to Reach "No Further Action"

This criterion is defined as the time it will take to achieve "No Further Action" in accordance with Env-Or 609.02. Please note this criterion does not take into account redevelopment and other time for non-environmental tasks.

7.2 EVALUATION OF ALTERNATIVES

7.2.1 Soil and Groundwater

Alternative #SG1 – Source treatment and ongoing monitoring via GMP

Effectiveness and Reliability

Soil treatment via a method of in situ chemical reduction and biostimulation at the MW-2-25, SB-8-25, and SB-13-25 source area, given observed geology, small source area, and geochemical conditions, is a proven effective mitigation technique and is therefore a reliable method at treating the CVOC-impacted soil to a level that will accelerate the downgradient plume attenuation. This alternative would involve injection from wells, which may limit the effectiveness due to potential limited radius of influence at the injection points. Given that not all contamination will be mineralized with one round of treatment, additional rounds of treatment or additional injection points may be required to improve effectiveness but have detrimental impacts on other comparison criteria (e.g., ease of implementation, cost, timeline).

Conditions of groundwater contamination after treatment will be monitored via the GMP, which is a reliable method of documenting the groundwater conditions. CVOCs in soil have already been shown to be degrading via dechlorination. With the source area reduced, contaminants are expected to do the same in groundwater at an increased pace compared to #SG1, and ongoing monitoring is crucial to documenting the process.

Because there is uncertainty associated with the number of injection points and potential radial influence or reach of the treatment products when applied by injection, this alternative is considered less effective at addressing the source than #SG2 and #SG3, but equally effective at treating long-term the downgradient groundwater plume.

Feasibility and Ease of Implementation

This remedial alternative for CVOC source areas requires installation of injection points and utilizes standard treatment and application techniques. Considering the relatively shallow source



(7-10 feet bgs, see CSM **Section 3.5**), injection points would be quick and easy to install; however, treatment chemical dispersion can be limited by soil type and targeting all the soil mass may be challenging. However, the small mass that has been identified to date should be effectively treated with a conservative injection approach of no more than 6-10 locations, which is easily implemented. The biostimulation treatment will have beneficial secondary effects on the downgradient plume accelerating dechlorination.

This alternative is feasible and easy to implement and requires less resources and effort than #SG2 and #SG3 as excavation resources are intensive. This alternative also requires document preparation to establish the GMZ at the Site and standard groundwater sampling techniques for ongoing monitoring. Based on these considerations, this alternative is considered more implementable than #SG2 and #SG3.

Risk Reduction and Associated Benefits

Elimination of contaminant source via treatment is a proven method of eliminating risk of exposure, however, assumes adequate contact with injection chemicals in the source area is achieved, which may limit the reduction of risk in soil. Based on the depth of soil exposure well below the surface and similar groundwater monitoring under a GMP, risk reduction is considered equal to #SG2 at reducing the soil source but slightly less than #SG3 based on the greater contact of treatment with #SG3. If achieved, this alternative provides the benefit of no long-term maintenance for soil as the source area is eliminated or reduced to below the SRSs, leaving behind soil that may not require special handling when disturbed.

In addition, this alternative provides the added benefit of stimulating biological dechlorination within the downgradient plume; thereby, making it overall better at risk reduction than #SG2.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$10,000
Treatment Pilot Testing/Engineering	\$1,500
Injection Point Installation (assumed 6 points)	\$6,000
In Situ Chemical Treatment	\$35,000
Confirmatory Soil Sampling Drilling Program	\$25,000
GMP Application/Recording/Legal fees	\$8,000
GMP Renewal (every 5 years,)	\$3,750
Ongoing GMP Monitoring (assumed 10 years)*	\$138,000
10% Contingency	\$22,725
Total	\$249,975+

*\$12,000 per year (year 1) with 3% annual inflation

+ Plus presumptive remedy costs

Green Remediation Potential

As no soil removal would occur, this alternative would require no excavation and offsite disposal of contaminated soil, resulting in less fuel consumption and greenhouse gas emissions during



removal and transport. This alternative also leaves existing soil in place, reducing erosion and stormwater runoff concerns in close proximity to the river. Chemicals used for treatment can be sourced locally. Additionally, subcontractors with green business practices can be given precedence in the bidding process. Therefore, this alternative has greater green remediation potential than #SG2 and #SG3.

Estimated Time to Reach “No Further Action”

Under this alternative, the estimated time to reach “No Further Action” would be dictated by ongoing monitoring results documenting groundwater concentrations of CVOCs to be below residential AGQS, which is estimated to be approximately 10 years. Given the CVOC source in soil would have been eliminated, dechlorination of contaminants in groundwater is anticipated to occur in less time than if the CVOC source in soil is left in place to continue PCE contributions. Since this alternative also has the potential to slightly augment attenuation of the downgradient groundwater plume, this alternative is anticipated to take approximately equal time to reach “No Further Action” to #SG2 but more time than #SG3.

Alternative #SG2 – Complete source area removal and groundwater monitoring via GMP

Effectiveness and Reliability

Soil removal using standard construction and excavation techniques is a proven effective means of eliminating the CVOC-impacted soil. Given additional soil removal may be required based on confirmatory sample results, other factors may be diminished (ease of implementation, cost, and time) to maintain effectiveness of this alternative. Since the soil will be exposed for sampling and further excavation, this alternative is more reliable due to greater accessibility to the source.

Conditions of groundwater contamination after soil removal will be monitored via the GMP, which is a reliable method of documenting the groundwater conditions. CVOCs in soil have already been shown to be degrading via dechlorination. With the source area removal, contaminants are expected to do the same in groundwater at an increased pace compared to no source area removal, and ongoing monitoring is crucial to documenting the process. This alternative relies on source reduction/removal and on existing geochemical conditions within the plume for natural attenuation.

This alternative more reliably removes the source but provides no additional means to address the groundwater plume other than natural attenuation; therefore, is considered more reliable/effective to #SG1, but less effective than #SG3.

Feasibility and Ease of Implementation

Now that the retail building is removed, this remedial alternative utilizes standard excavation and construction techniques for excavation and soil removal, making the alternative feasible and able to be implemented; however, saturated conditions in the area of the known source (groundwater is estimated at 4-6 feet compared to the 5-7+ foot excavation depth) may inhibit or complicate the excavation. This targeted source mass at a depth of 7 to 10 feet bgs will also require effort to segregate overlying clean soil and is a relatively intensive and intrusive excavation effort for such



a thin and small quantity of source mass. However, considering the proximity of the source to physical constraints and the topography of that vicinity, adequate excavation to the required depth/extent for complete removal of soil to the remedial goal may be challenging without extensive shoring, large tree removal, and relocation of the adjoining propane tank.

This alternative also requires document preparation to establish the GMZ at the Site and standard groundwater sampling techniques for ongoing monitoring. Based on these considerations, this alternative is considered less feasible and less implementable than Alternatives #SG1 and #SG3.

Risk Reduction and Associated Benefits

Elimination of contaminant source via removal is a proven method of eliminating risk of exposure and confirmatory sampling documents the reduced concentrations in soil. This alternative provides the benefit of no long-term maintenance as the source area is removed, replacing with un-impacted soil that does not require special handling when disturbed; however, this alternative requires additional resources and effort during implementation to ensure all contaminated soil has been removed. This alternative also requires additional resources and effort to perform ongoing monitoring. Compared to Alternative #SG1, this alternative is equally effective at reducing the source to #SG1 but does not provide the added benefit of treating the downgradient plume; therefore, this alternative is considered to have less risk reduction than #SG1 and #SG3.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$25,000
Soil Excavation and Disposal as an F-listed Hazardous Waste^	\$256,000
Confirmatory Soil Sampling (assumes 40 samples)	\$4,000
GMP Application/Recording/Legal fees	\$8,000
GMP Renewal (every 5 years)	\$3,750
Ongoing GMP Monitoring (assumed 10 years)*	\$138,000
10% Contingency	\$43,475
Total	\$478,225+
*\$12,000 per year (year 1) with 3% annual inflation	
^assumes 200 cy (320 tons) at \$800 per ton for excavation, transport and disposal	
+ Plus presumptive remedy costs	

Green Remediation Potential

This alternative requires a significant amount of offsite disposal of contaminated soil, resulting in greater fuel consumption and greenhouse gas emissions during transport, and greater volumes of material to be disposed of in a landfill. It is possible to reduce transportation impacts by using local contractors and a local source of clean fill; however, for this reason this alternative is considered to have lower green remediation potential than #SG1 and SG#3.

Estimated Time to Reach “No Further Action”

Immediately following receipt of confirmatory sampling results illustrating the removal of CVOC-impacted soil, Site soil would meet the requirements for “No Further Action”. Under this



alternative, the estimated time to reach “No Further Action” for groundwater would be approximately 10 years and is dictated by ongoing monitoring results illustrating groundwater concentrations of CVOCs to be below residential AGQS. Given the CVOC source in soil would have been eliminated, dechlorination of contaminants in groundwater is anticipated to occur in less time than if the CVOC source in soil is left in place. Based on these considerations, this alternative is anticipated to take approximately equal time to reach “No Further Action” to Alternative #SG1 but in more time than #SG3.

Alternative #SG3 – Combined source area soil removal with supplemental treatment

Effectiveness and Reliability

Soil removal using standard construction and excavation techniques is a proven effective means of eliminating the CVOC-impacted soil. As Site limitations such as topography and the propane tank and trees on the northeastern adjoining property hinder the reliability of soil removal to margins below the SRS, treatment using ZVI will address any residual contaminated margins at the base of excavation on bedrock or horizontally, particularly toward the northeast. The treatment chemicals are applied directly to the open excavation, which improves chemical contact with the soil compared to the injection points in #SG1. Additionally, the treatment will be more effective at accessing saturated soil if encountered in the deepest part of the excavation. ZVI makes the sorbed residual contamination bioavailable for dechlorination processes. The proposed biostimulation is also more reliable in maintaining dechlorination rates than reliance on natural conditions for prolonged dechlorination.

Conditions of groundwater contamination after soil removal and treatment will be monitored via the GMP, which is a reliable method of documenting the groundwater conditions. CVOCs in soil have already been shown to be degrading via dechlorination. With the source area reduced, contaminants are expected to decline in groundwater at an increased pace compared to #SG2, and ongoing monitoring is crucial to documenting the process.

This alternative more reliably removes the source consistent with #SG2 but provides the added effectiveness and reliability through treating residual contamination left as a result of Site physical limitations. This alternative has the added reliability over #SG1 since it does not rely on injection points and is applied directly to the open excavation. Therefore, this alternative is the most effective and reliable.

Feasibility and Ease of Implementation

This remedial alternative utilizes standard excavation and construction techniques for excavation and soil removal, making the alternative feasible and readily implementable; however, saturated conditions in the area of the known source (groundwater is estimated at 4-6 feet compared to the 5-7+ foot excavation depth) may inhibit or complicate the excavation. If saturated conditions are encountered at this depth, the subsequent treatment chemicals can be applied with a degree of mixing such that any residual mass in the saturated zone also comes in contact with the chemicals. This targeted source mass at a depth of 7 to 10 feet bgs will require effort to segregate overlying clean soil and is a relatively intensive and intrusive excavation effort for such a thin and small quantity of source mass. However, as excavation to these depths is already anticipated for the



proposed construction of the parking deck, there is no added effort related to the soil removal. Due to the treatment of margins where contamination may persist, this alternative is less limited by the proximity of the source to the physical limitations and the topography of that vicinity. Significant shoring and sloping are not as important to excavate to the required depth/extent for complete removal of soil to the remedial goal as any margins limited by physical constraints will be addressed through treatment.

This alternative also requires document preparation to establish the GMZ at the Site and standard groundwater sampling techniques for ongoing monitoring. Based on these considerations, this alternative is less easily implemented than #SG1 due to excavation challenges, but more feasible than #SG2.

Risk Reduction and Associated Benefits

Elimination of contaminant source via removal with subsequent treatment is a proven method of eliminating risk of exposure. Treatment chemicals applied in the open excavation are more effectively reducing risk because the limitation of contact with the soil from injection points is removed. Based on the depth of soil exposure well below the surface and similar groundwater monitoring under a GMP, risk reduction is considered equal to #SG1 and #SG2 at reducing the source but slightly more than #SG1 based on the greater contact of treatment.

This alternative also requires additional resources and effort to perform ongoing monitoring. Based on this alternative being the most effective at treating the source while also including the biostimulation benefit of #SG1, this alternative is considered to have greater risk reduction in the downgradient groundwater plume as well.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$25,000
Soil Excavation and Disposal as an F-listed Hazardous Waste [^]	\$256,000
Confirmatory Soil Sampling (assumes 10 samples prior to treatment)	\$2,000
Treatment Pilot Testing/Engineering	\$1,500
In Situ Chemical Treatment	\$65,000
GMP Application/Recording/Legal fees	\$8,000
Ongoing GMP Monitoring (assumed 5 years)*	\$63,700
10% Contingency	\$42,120
Total	\$463,320+

*\$12,000 per year (year 1) with 3% annual inflation

[^]assumes 200 cy (320 tons) at \$800 per ton for excavation, transport and disposal

+ Plus presumptive remedy costs

Green Remediation Potential

This alternative also requires a significant amount of soil excavation and disposal of contaminated soil, resulting in fuel consumption and greenhouse gas emissions associated with excavation, disposal. This alternative is less likely to require additional excavation if confirmatory samples



fail due to the supplemental treatment addressing residuals, so has slightly more green remediation potential than SG#2. This alternative also leaves some stable soil onsite, reducing erosion and stormwater runoff concerns. Chemicals used for treatment can be sourced locally. Additionally, subcontractors with green business practices can be given precedence in the bidding process. For these reasons, this alternative is considered to have greater green remediation potential than #SG2 but less than #SG1.

Estimated Time to Reach “No Further Action”

Under this alternative, the estimated time to reach “No Further Action” would be dictated by ongoing monitoring results documenting groundwater concentrations of CVOCs to be below residential AGQS, which is estimated to be approximately 5 years. Given the CVOC source in soil would have been eliminated, dechlorination of contaminants in groundwater is anticipated to occur in less time than if the CVOC source in soil is left in place. Based on these considerations, this alternative is anticipated to be the fastest time to reach “No Further Action”.

7.2.2 Indoor Air and Sub-Slab Soil Vapor

Alternative #IA1 – Retrofit SSDS, vapor barrier/sealing and indoor air performance monitoring

Effectiveness and Reliability

Once the vapor barrier and SSDS are installed and operation and maintenance requirements incorporated into the new GMP for the 25 Mechanic Street source, the remedial action objective will have been attained, and determination of success is easy to demonstrate via indoor air sampling. Active SSDSs have been proven as an effective and reliable means to remediate exposure risk. This alternative is effective for the Site because the risk of exposure by potential receptors is diverted from migrating to indoor air to outside air above the roof line. Due to its similar nature, this alternative is considered equally effective and reliable as Alternative #IA2.

Feasibility and Ease of Implementation

This alternative for sub-slab contaminant mitigation requires radius of influence testing prior to implementation because it relies on subslab conditions for effective creation of a vacuum. This testing is prohibitive under existing conditions due to numerous perforations, trenches, and conditions unlike those of final construction. This alternative utilizes standard construction techniques similar to those required to install a radon-system. This alternative uses the current structure and floor conditions to fit the design to the structure, compared to fitting the structure to the design as with Alternative #2. The vapor barrier will be constructed of readily available materials that is easy to install with proper guidance on adequate sealing.

This alternative also requires the new GMP to administratively require continued operation and maintenance of the SSDS. This alternative is feasible and easy to implement and would not significantly alter the existing building construction and basement floor elevation; but the design is limited by lack of ability to complete radius of influence testing prior to final construction; therefore, this alternative is considered less feasible than Alternative #IA2.



Risk Reduction and Associated Benefits

Elimination of exposure potential via diversion of vapors is a proven method of eliminating risk of exposure. This alternative requires additional resources and effort to incorporate vapor mitigation requirements into the new GMP for the Site and perform ongoing monitoring; however, uses mechanical means to actively address the source of sub-slab contamination. However, this alternative has uncertainty with the design that cannot be tested until final construction. As the risk reduction is considered similar to Alternative #2, this alternative is considered to reduce risk equally but is a risky alternative to Alternative #IA2.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$10,000
Radius of Influence Testing	\$18,000
Installation of active SSDS (assumes 4 extraction points)	\$15,000
Vapor barrier	\$60,000^
GMP Application/Recording/Legal fees	\$1,000*
Ongoing Monitoring**	\$75,000
10% Contingency	\$19,200
Total	\$211,200+

*Overall GMP cost included under Soil and Groundwater alternative

**\$4,000 per year (year 1) with 3% annual inflation over 15 years

+ Plus presumptive remedy costs

^ generic default value used as the actual cost will depend on square footage and installation costs but will be the same between options.

Green Remediation Potential

This alternative requires less materials to adapt the design to the existing mill building conditions, marginally reducing the greenhouse gas emissions associated with the manufacture/sourcing of materials. However, a similar amount of effort/energy will be required for adaptation of an SSDS into overall construction plans for the mill building for both alternatives. Therefore, the two alternatives (#IA1 and #IA2) are considered to have generally equivalent green remediation potential.

Estimated Time to Reach “No Further Action”

Immediately following receipt of confirmatory indoor air sampling results illustrating the SSDS is effective and once the GMP is filed, the mill building would meet the requirements for “No Further Action”. This alternative is anticipated to take less time than Alternatives #IA2 as it carries less influence on the redevelopment design and can be installed under existing conditions and is therefore quicker to reach “No Further Action”.



Alternative #IA2 – Ventilated floor and indoor air performance monitoring

Effectiveness and Reliability

Once the ventilated floor is installed and the GMP is filed for the Site, the remedial action objective will have been attained and determination of success is easy to demonstrate via indoor air sampling. Ventilated floor systems have been proven as an effective and reliable means to remediate exposure risk. This alternative is effective for the Site because the risk of exposure by potential receptors is managed through the vacuum created by the slab. Any vapors that enter the interstitial space will be exported outside the building. Due to its similar nature, this alternative is considered equally effective and reliable to Alternative #IA1.

Feasibility and Ease of Implementation

This remedial alternative for sub-slab contaminant mitigation requires a design prior to implementation as it needs to be incorporated with the redevelopment design; however, standard installation techniques are used to construct a ventilated floor. This option requires increasing the floor elevation approximately 1 foot, which may in turn require raising of doorways and thresholds throughout the basement. The vapor barrier will be constructed of readily available materials that is easy to install with proper guidance on adequate sealing. This alternative is feasible and easy to implement; however, has an impact on the redevelopment design of the mill building; therefore, this alternative is considered less feasible and easy to implement than Alternative #IA1.

Risk Reduction and Associated Benefits

Elimination of exposure potential via diversion is a proven method of eliminating risk of exposure. This alternative requires additional resources and effort to perform ongoing monitoring and does not eliminate the source of sub-slab contamination. As the risk reduction is considered similar to Alternative #1, this alternative is considered to reduce risk equally to Alternative #IA1.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$25,000
Ventilated floor installation (matting, gravel, prep, and new floor)	\$99,000
Vapor barrier/epoxy coating	\$60,000 [^]
Confirmatory sampling (4 rounds)	\$15,000
GMP Application/Recording/Legal fees	\$1,000
Ongoing Air Monitoring**	\$75,000
10% Contingency	\$27,500
Total	\$302,500+

*Overall GMP cost included under Soil and Groundwater alternative

**\$4,000 per year (year 1) with 3% annual inflation over 15 years

+ Plus presumptive remedy costs

[^] generic default value used as the actual cost will depend on square footage and installation costs but will be the same between options.



Green Remediation Potential

This alternative requires more materials to adapt the design to the existing mill building conditions, marginally increasing the greenhouse gas emissions associated with the manufacture/sourcing of materials. However, a similar amount of effort/energy will be required for adaptation of a ventilated floor into overall construction plans for the mill building for both alternatives. Therefore, the two alternatives (#IA1 and #IA2) are considered to have generally equivalent green remediation potential.

Estimated Time to Reach “No Further Action”

Immediately following receipt of confirmatory indoor air sampling results illustrating the ventilating floor layer is effective, the mill building would meet the requirements for “No Further Action”. This alternative is anticipated to take more time than Alternatives #IA1 as it cannot be installed until the redevelopment design is complete and implemented.

7.2.3 Surface Soil and Residual Petroleum

Alternative #SS1 – Preparation of a Soil Management Plan

Effectiveness and Reliability

Once the engineered barrier system atop PAH-impacted surface soil and residual petroleum is installed and the NHDES-approved SMP is in place for the Site to prohibit soil excavation and outline maintenance of the barrier system, the exposure risk will have been effectively mitigated. Installation of an engineered barrier system is a proven effective and reliable mitigation method to eliminate the exposure pathway to future occupants of the Site as long as it is maintained. The SMP is required to ensure maintenance of the engineered barrier system for continued effectiveness at mitigating exposure and prohibit soil excavation beyond the barrier. Because the SMP is not a legal document recorded with the deed, its effectiveness is subject to the Owner’s implementation. Because the impacted soil is left in place and ongoing maintenance is required, this alternative is considered less effective and reliable than Alternatives #SS2 and #SS3.

Feasibility and Ease of Implementation

This remedial alternative utilizes standard construction techniques for installation of the engineered barrier system, which can be incorporated into the redevelopment design with minimal additional requirements to those likely already planned for installation during redevelopment. This alternative also requires document preparation of the SMP. As the engineered barrier system can be installed concurrently with redevelopment, this alternative is more feasible and easier to implement than Alternatives #SS2 and #SS3.

Risk Reduction and Associated Benefits

Elimination of exposure potential via an engineered barrier system and continued maintenance outlined in a SMP is a proven method of reducing risk of exposure; however, does not address the contaminated soil directly. Under this alternative, PAH-impacted surface soil may require handling during redevelopment and installation of an engineered barrier system. This alternative requires additional resources and effort to prepare the SMP and perform ongoing maintenance and



ultimately leaves the source area in place. However, as this alternative proposes to prevent exposure to all Site soil, there is less room for error compared to Alternative #2 where the exposure prevention will rely on placement of soil samples. As all exposure would be prevented, this alternative is equally as effective at risk reduction as Alternative #SS3.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$30,000
Installation of Engineered Barrier System	\$300,000
(Incidental construction credit)^	(\$250,000)
Preparation of SMP	\$4,000
Long Term Cover Layer Maintenance*	\$38,000
10% Contingency	\$12,200
Total	\$134,200+

*\$800 per year (year 1) with 3% annual inflation over 30 years

^Most of cost is incidental to construction that will occur anyway as a result of redevelopment, therefore that estimated cost was subtracted from the total to illustrate the cost associated only with the remedial alternative

+ Plus presumptive remedy costs

Green Remediation Potential

As no soil removal would occur, this alternative would require no excavation and offsite disposal of contaminated soil, resulting in less fuel consumption and greenhouse gas emissions during removal and transport. This alternative also leaves existing soil in place, reducing erosion and stormwater runoff concerns in close proximity to the river. Therefore, this alternative has greater green remediation potential than #SS2 and #SS3.

Estimated Time to Reach “No Further Action”

Immediately following completion of redevelopment and inspection of the engineered barrier system to ensure it meets adequate length requirements and once the SMP has been prepared and approved, this alternative would meet the requirements for “No Further Action”. Given the engineered barrier system won’t be complete until redevelopment is finished, this alternative is anticipated to take longer to reach “No Further Action” than Alternatives #SS2 and #SS3; however, since this alternative does not impede and compliments the site construction work schedule during construction, this alternative is considered equal in time to #SS2.

Alternative #SS2 – Additional Delineation of PAHs in Surface Soil and Select Soil Removal and Disposal

Effectiveness and Reliability

Soil removal spot excavation using standard construction and excavation techniques is a proven effective means of eliminating PAH-impacted soil and residual petroleum. Given additional soil removal may be required based on confirmatory sample results, other factors (feasibility, timeline) may diminish to maintain effectiveness with each additional round of soil removal. This



alternative is considered more effective and reliable than Alternative #SS1 and less effective and reliable than Alternative #SS3.

Feasibility and Ease of Implementation

This remedial alternative utilizes standard excavation and construction techniques for excavation and soil removal, making the alternative feasible and easy to implement if a delineated extent of PAHs can be determined. Since limited data is available for surface soil and PAHs have largely been presumed present based on historical industrial use, the use of additional sampling to delineate the extent of PAHs in urban fill materials is likely not feasible given the ubiquitous nature of urban fills at sites of this type.

This alternative would also require confirmatory sampling to ensure all PAH-impacted soil and residual petroleum has been removed. Recognizing the difficulty in adequately delineating PAHs in urban fills and the depth of residual petroleum, this alternative is less feasible than Alternatives #SS1 and #SS3.

Risk Reduction and Associated Benefits

Elimination of contaminant source via removal is a proven method of eliminating risk of exposure. This alternative provides the benefit of no long-term maintenance as the source area is removed, leaving behind un-impacted soil that does not require special handling when disturbed; however, this alternative requires additional resources and effort during implementation to ensure all contaminated soil has been removed. Due to the large Site area associated with this alternative, this alternative also leaves a chance of error due to the nature of discrete delineation sampling (e.g., an elevated concentration may be missed without a significant number of samples). Due to the chance of error and leaving exposure to native soil, this alternative is considered the least effective at risk reduction.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$40,000
PAH-Impacted Soil Delineation	\$40,000
Soil Spot Excavation and Backfill (assumes 100 cy)	\$20,000
Soil Transport & Disposal	\$20,000
Confirmatory Laboratory Sampling	\$4,000
10% Contingency	\$12,400
Total	\$136,400+
+ Plus presumptive remedy costs	

Green Remediation Potential

This alternative requires more drilling and assessment for delineation and more excavation and disposal of contaminated soil than #SS1, resulting in more fuel consumption and greenhouse gas emissions associated with drilling, excavation, disposal, and import of clean fill. The materials required for additional delineation would also increase the amount of indirect greenhouse gas



emissions for this alternative. Spot excavation leaves some stable soil onsite, reducing erosion and stormwater runoff concerns. Although subcontractors with green business practices can be given precedence in the bidding process, this alternative is considered to have lower green remediation potential than #SS1.

Estimated Time to Reach “No Further Action”

Immediately following receipt of confirmatory sampling results illustrating clean margins of the soil excavation area and disposal facility certificates, the Site would meet the requirements for “No Further Action”. This alternative is estimated to take less time than Alternatives #SS3 but more time than #SS1 due to the need for delineation, excavation, and confirmatory sampling before construction can proceed.

Alternative #SS3 – Complete Soil Removal to Bedrock and Proper Disposal

Effectiveness and Reliability

Soil removal using standard construction and excavation techniques is a proven effective means of eliminating PAH-impacted soil and residual petroleum. As all soil would be removed, there would be no confirmatory sampling performed and no residual contamination to monitor in the future. This alternative is considered more effective and reliable than Alternatives #SS1 and #SS3.

Feasibility and Ease of Implementation

This remedial alternative utilizes standard excavation and construction techniques for excavation and soil removal, making the alternative feasible and easy to implement. As there would be no delineation of PAH-impacted soil and residual petroleum prior to excavation to focus efforts, the overall volume of soil to be removed and disposed offsite is anticipated to be significantly more than under Alternative #SS2. The logistics associated with removal of 5-15 feet of soil across the Site is more difficult and complicated by the building foundations as compared to #SS1, however, is less difficult than #SS2 due to the unknowns associated with achieving adequate delineation for #SS2.

Risk Reduction and Associated Benefits

Elimination of contaminant source via removal is a proven method of eliminating risk of exposure. This alternative provides the benefit of no long-term maintenance as the source area is removed, and no confirmatory sampling of excavation extents as all soil would be removed. This would mean natively sourced material would be brought in and would not require special handling when disturbed. This alternative prevents exposure to all contaminated soil similar to #SS1 and provides more risk reduction than Alternative #SS2.

Cost Effectiveness Using the Net Present Worth of All Future Costs

Based on prior project and contractor experience and current estimates received from contractors, the estimated cost of this alternative is broken down below:

Engineering/Construction Oversight/Reporting	\$60,000
Soil Excavation and Removal	\$600,000



Soil Backfill (57,000 cy)	\$2,000,000
Soil Transport and Disposal (57,000 cy/90,000 tons)	\$9,000,000
10% Contingency	\$1,166,000
Total	\$12,826,000+
+ Plus presumptive remedy costs	

Green Remediation Potential

This alternative requires a significant amount of offsite disposal of contaminated soil, resulting in greater fuel consumption and greenhouse gas emissions during transport, and greater volumes of material to be disposed in a landfill. It is possible to reduce transportation impacts by using local contractors and a local source of clean fill; however, for this reason this alternative is considered to have lower green remediation potential than #SS1 and #SS2.

Estimated Time to Reach “No Further Action”

Immediately following receipt of disposal facility certificates, the Site would meet the requirements for “No Further Action”. Given the extreme quantity of soil to handle and transport, and then backfill and compact prior to development, this alternative is estimated to take longer than Alternative #SS1 and Alternative #SS2 and significantly delays the construction and Site work schedule.

7.3 JUSTIFICATION FOR THE SELECTED REMEDIAL ALTERNATIVES

The following tables summarize the comparison criteria and alternatives using a relative rank score. The top-ranking score is based on the total number of alternatives presented as part of this ABCA/RAP (e.g., 2, 3, and 4 alternatives), representing the best option for that comparison criteria.



Soil and Groundwater

Alternative	#SG1 Soil Treatment	#SG2 Complete Source Area Removal	#SG3 Combination Excavation/ Treatment
Effectiveness and Reliability	1	2	3
Feasibility and Ease of Implementation	3	1	2
Risk Reduction and Associated Benefits	2	1	3
Cost Effectiveness	3 [\$249,975]	1 [\$478,225]	2 [\$463,320]
Green Remediation Potential	3	1	2
Time to Reach "No Further Action"	2	2	3
Total Score	14	8	14

Since the proposed redevelopment requires extensive excavation already, there will be cost efficiency related to performing the soil excavation in conjunction with redevelopment. Since #SG3 is considered the most effective and reliable and will lead to the greatest risk reduction, Credere recommends **#SG3 Combined Soil Excavation and Treatment**. At the time of the GMP renewal, sufficient data will be available to evaluate statistical trends to determine if the contaminant mass is attenuating as a result of the source removal and biostimulation of dechlorination as it appears to already be doing (see **Inset Charts A and B**).

Indoor Air and Sub-Slab Soil Vapor

Alternative	#IA1 Retrofit SSDS w/ Vapor Barrier	#IA2 Ventilated Floor
Effectiveness and Reliability	2	2
Feasibility and Ease of Implementation	1	2
Risk Reduction and Associated Benefits	1	2
Cost Effectiveness	\$211,200 (2)	\$302,500 (1)
Green Remediation Potential	2	2
Time to Reach "No Further Action"	2	1
Total Score	10	10

Based on the above matrix, the two alternatives are generally equal. Considering the project design, the ventilated floor is the preferred alternative as it is more reliable in the design phase. However, certain areas of the basement cannot accommodate a raised floor and will utilize extraction points. Therefore, both alternatives are selected to be applied to select areas of the basement.

Surface Soil and Residual Petroleum

Alternative	#SS1 Preparation of a SMP	#SS2 Delineation of PAHs and Select Removal	#SS3 Complete Soil Removal to Bedrock
Effectiveness and Reliability	1	2	3
Feasibility and Ease of Implementation	3	1	2
Risk Reduction and Associated Benefits	3	2	3
Cost Effectiveness	\$134,200 (3)	\$136,400 (2)	\$12,826,000 (1)
Green Remediation Potential	3	2	1
Time to Reach “No Further Action”	3	2	1
Total Score	16	11	11

Based on the above matrix, cost and most practical ability to implement in conjunction with the redevelopment, the selected alternative is alternative **#SS1 Preparation of a SMP**. This alternative can be easily adapted to design elements that must occur regardless of the remedial approach (asphalt paving, landscape installation, sidewalks, etc.). It is effective because it prevents exposure to contaminants across the Site without relying on limited sample data to target specific areas.



8. REMEDIAL ACTIVITY METHODOLOGY AND PERFORMANCE EVALUATION

This section outlines the means and methods for implementation of the selected remedial alternative. After implementation of the selected remedial alternatives, the performance and efficacy of the remedial alternative will be evaluated against the indicated performance criteria.

8.1 REMOVAL OF DEBRIS AND REMAINING CHEMICALS

In August 2022, appropriately license waste handlers were subcontracted to handle all chemical waste. Wastes in small containers (paint cans, small drums, 55-gallon drums) were overpacked, characterized and transported offsite for disposal. Bulk containers of detergent, bleach and other agents were pumped into DOT-approved containers, characterized and transported offsite. The bulk containers were cut open, cleaned of any residuals and decontamination materials were containerized for offsite disposal.

Bulk debris and heavy equipment was dismantled and transported offsite in rollofts, palletized, or consolidated to facilitate transport. Debris unassociated with chemicals (e.g., laundry carts, presses, sorting machines) was disposed of as solid waste.

Visual inspection of the building confirmed debris was adequately removed and chemical disposal manifests were tracked and maintained to ensure proper handling and disposal of the remaining chemicals.

8.2 SEAL RACEWAYS, FLOOR DRAINS, AND CRAWLSPACE IN MILL BUILDING

Preliminary architectural design plans are included in **Appendix C** on plans A-413 and A-110 (pertinent environmental mitigation features are highlighted yellow for reference). Window openings in the basement will be blocked in with CMU and the wall will be sealed by extending the vapor barrier that will be installed as part of the new concrete floor up the wall to the ceiling to stop air flow from the crawl space into the basement. The crawl space ceiling will then be sealed with spray foam cellular insulation to act as a continuous barrier between flow of air over the top of the basement vapor barrier, or upward into the overlying first floor space. Lastly, though mechanical drawings are not yet available, the crawl space will have an air handling ventilation system to move air continuously out of this space. This will aid in both vapor mitigation as well as moisture prevention in this sealed space.

Floor perforations (drains, trenches, grates, etc.) will be permanently sealed as part of the floor replacement and in conjunction with the vapor mitigation system (see **Section 8.7**). Generally, removal of grate systems and hatches and filling of the voids to grade with flowable fill will occur. The raceway is planned to be left open and a closed-cell spray foam will coat the underside of the new concrete floor to provide insulation above while still allowing for open air flow in the raceway to the exterior. Plumbing and vapor mitigation systems will be installed, and a final vapor barrier and new concrete floor will be installed at final basement grade. The vapor barrier will be bonded to the perimeter walls and utilities and joints will be taped according to manufacturer's instructions to create a continuously sealed floor.



8.3 ASBESTOS ABATEMENT

Asbestos abatement will be performed by a licensed abatement contractor in accordance with NHDES Env-A 1800: Asbestos Management and Control (Env-A 1800). Previously identified ACM will be removed entirely. Any materials suspected to be ACM will either be presumed ACM and removed accordingly or will be sampled to assess if the materials can remain in place or be disposed of as C&D waste.

Asbestos abatement will be evaluated with a visual and air clearance in accordance with Env-A 1800. At the completion of asbestos abatement in each regulated area and prior to dismantling the containment and decontamination system, a New Hampshire Asbestos Inspector with an Asbestos Air Monitor licensed from any state (New Hampshire does not have an Air Monitor certification) will conduct a thorough visual inspection of the work area for the presence of visible residue. Once the Air Monitor has determined that no visible residue remains, air clearance samples will be collected with a sufficient volume of air to accurately determine, to a 95 percent probability, fiber concentrations are below 0.010 fibers/cubic centimeter (f/cc) of air. The number of air clearance samples per regulated area to be collected are as follows:

- Two samples for each regulated area less than 100 square feet
- Three samples for each regulated area between 100 and 1,000 square feet
- Five samples for regulated areas greater than 1,000 square feet

The air clearance samples are considered to “pass” if results indicate the presence of no more than 0.010 f/cc. Air clearance sampling details are also summarized in **Appendix A**.

Approximately 1200 linear feet of pipe insulation was abated from the mill building in April 2024. 10.66 cubic yards of asbestos waste were disposed of at Minerva Enterprises landfill in Waynesburg, Ohio. Air clearances for this work were reported by Clay Point Associates, Inc. dated May 16, 2024.

8.4 REMOVAL OF PCB BULK PRODUCT WASTE FROM THE OFFICE/STORAGE BUILDING

The entire building, including the foundation sidewalls that serve as a retaining wall on the west side, will be demolished using standard demolition techniques and containerized for disposal entirely as PCB Bulk Product Waste (PCBs > 50 mg/kg) according to 40 CFR § 761.62. Containers will be lined prior to filling to minimize leakage during transport. Full containers will be burrito wrapped or covered with a container tarp to prevent loss of material on roadways. The landfill may require characterization for lead TCLP for a waste profile.

During active demolition, any visible dust will be considered PCB (and lead) contaminated and must be contained and immediately suppressed with wet suppression techniques. Water application should be controlled to prevent runoff and any runoff from the demolition area should be contained with berms and captured to prevent migration to the nearby river.



Performance evaluation for the removal of PCB bulk product waste will consist of a visual inspection after the waste has been removed. The inspection should be performed by a Qualified Environmental Professional (QEP).

8.5 MANAGEMENT OF LEAD AND PCB-CONTAINING PAINT IN THE MILL BUILDING, WITH REMOVAL AND DISPOSAL IF NEEDED AND RRP COMPLIANT RENOVATION

LBP/LCP and excluded PCB-building materials will be disposed of along with building material waste if removed from use. Based on previous assessments, the waste generated would be disposed offsite at an appropriately licensed landfill or recycling facility in accordance with New Hampshire Solid Waste Rules – Env-Sw 100, 200, and 900, 49 CFR 100- 199 – Transportation of Hazardous Materials, and 40 CFR 256 – Guidelines for Development and Implementation of State Solid Waste Management Plans and/or 40 CFR 761.50 through 761.79.

Management/removal of PCB-containing paint will not be measured separately. The evaluation of management of LCP will be considered to apply to PCB-containing paint. During work that impacts any LCP, it is expected that there will be proper management of all lead-containing dust generated. This proper management includes the containment and control of all lead-containing dust generation and the minimization of its spread throughout the workplace throughout the duration of the project. The project should be phased such that renovation work can be reasonably controlled, cleaned and then protected during work in other areas to prevent migration of dust. As a rule of thumb, work that disturbs LCP coated surfaces will require work in accordance with the EPA Lead RRP rule and general accordance with Chapter He-P 1600 abatement procedures as best practices.

Following completion of renovation work in the mill building into residential units, a visual inspection of units and collection of dust wipe samples will be performed to confirm the efficacy of cleanup methods. It is also advised for periodic wipe samples during implementation of early renovation work to confirm the effectiveness of dust containment and cleaning procedures prior to installing final finishes.

While the management of lead paint is not considered abatement, wipe samples will be completed in general accordance with New Hampshire Chapter He-P 1600 Lead Poisoning Prevention and Control frequencies for wipe samples post renovation. The visual inspection and dust wipe sampling will be completed by a New Hampshire licensed Lead Inspector. The number of dust wipe samples to be collected are as follows:

- Two wipe samples per unit (one windowsill or well, and one floor)
- One floor wipe sample per 2,000 square feet, collected from a common area (e.g., laundry room, entryway, stairwell, etc.)

The dust samples are considered acceptable if results are as follows:

- Less than 40 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) on floors



- Less than 250 $\mu\text{g}/\text{ft}^2$ on interior windowsills
- Less than 400 $\mu\text{g}/\text{ft}^2$ on window wells

Sampling will commence in finished units with 1-2 units to confirm approximately adequate cleaning procedures and will then proceed to remaining units once cleaning procedures are confirmed adequate.

Dust wipe sampling details are also summarized in **Appendix A**.

8.6 SOURCE AREA EXCAVATION AND TREATMENT AND ONGOING MONITORING VIA GMP

Soil Removal

Generally, soil removal is required to support redevelopment of the property. **Figure 10** shows the proposed layout of the new structure relative to the former retail building. The primary area of contamination is north/northeast of the proposed new building. Excavation is planned to begin with the extent necessary for the proposed redevelopment. Soil will be segregated based on PID response. Soil with PID less than 1 ppm will be segregated onsite for use as backfill or for separate waste characterization and disposal with an objective of disposal at an in state licensed solid waste landfill. This soil is anticipated to be encountered within the top 5 feet of excavation. Soil with PID screening greater than 1 ppm will be containerized for offsite disposal as an F listed hazardous waste. At this point, excavation margins will be field screened with a PID. It is important to also consider the offsite petroleum source as potential PID response for the Site. The following will be the targets for the excavation limits beyond the base excavation:

- Unsaturated margins to the southeast, south and west, or the base will be excavated until margins are less than 1 ppm.
- Saturated margins to the southeast, south and west and base will be excavated until margins are less than 10 ppm due to anticipated petroleum constituents in the groundwater.
- To the north and northeast where the greatest contamination is expected, excavation will continue until margins are less than 10 ppm or to the limits of a safe excavation considering the local topography and proximity to adjoining structures (i.e., the adjoining trees and propane tank if still present).

Soil segregated from the 25 Mechanic Street excavation area where PID response exceeds 1 ppm, will be presumptively considered a hazardous waste or evaluated for a Contained-Out Determination. The need for further characterization will be dictated by the receiving facility but is presumed to require at least the following characterization:

- Volatile organic compounds (VOC)
- Semi-volatile organic compounds (SVOC)
- Ignitibility, conductivity, and reactivity (sulfide and cyanide)
- TCLP VOCs



Confirmatory Sampling

When these excavation limits are obtained, confirmatory soil samples will be collected for VOC laboratory analyses from the areas of greatest remaining PID response to document soil concentration prior to treatment application. Four samples will be collected from the north/northeast portion of the excavation, two from each the east, south and west sidewalls, and four from the base of the excavation. VOC samples will be collected from the excavation bucket using a dedicated soil syringe into laboratory preserved VOAs. Results will be compared to the NHDES SRSs; however, exceedance of the SRS will not require additional excavation as these residuals are expected to be addressed by the treatment.

Chemical Treatment

PID readings will also be used to bias application rates in certain parts of the excavation (i.e., greater application where PID remains high). ZVI will be applied to the base of the excavation at a rate determined by the manufacturer. If a saturated zone is encountered in the base of the excavation (assumed to be 1-3 feet in thickness at most), the applied product will be mixed with the excavator bucket to improve distribution down to the bedrock surface. ZVI solubilizes the sorbed mass making it bioavailable for dechlorination. The biostimulation product¹ is then added to enhance the biological community and dechlorinate the newly solubilized mass. The enhanced biological community is anticipated to consume the source and begin migrating in the downgradient direction with the plume to also stimulate dechlorination and CVOC destruction in groundwater. The proposed treatment provides the ideal conditions for complete dechlorination that can sometimes be held up at certain phases due to consumption of the needed nutrients or change in reducing conditions. Biostimulation improves the residency time of destructive microbes to prevent this stalling from occurring.

After treatment, the excavation will be backfilled, and construction can proceed accordingly.

GMP Institutional Control

To monitor concentrations in groundwater to assess the effectiveness of the source removal and biostimulation treatment method, groundwater monitoring wells MW-2-25 and CA-MW-4 will be sampled biannually for the first two years and MW-1-25, MW-2-25, MW-3-25 (or replacements if destroyed during construction), MW-6-25, MW-4, and CA-MW-4 will be sampled on an annual basis for VOCs. PFAS should also be included in the sampling suite at least once every two years at MW-2-25 and CA-MW-4, which may also be incidentally treated by the treatment chemicals. A GMP for this plume for the proposed annual sampling will be submitted under separate cover upon approval of this ABCA/RAP; however, the proposed GMZ is provided as **Figure 11**.

PCE trends as well as total CVOCs on a molar basis will be evaluated after eight rounds of sampling have been completed using statistical trend analysis. CVOCs in soil have already been shown to be degrading via dechlorination. With the source area reduced after excavation and

¹ Recommended product is ERDEnhanced <https://terrastryke.com/>



treatment, contaminants are expected to do the same in groundwater at an increased pace compared to attenuation using existing conditions only.

8.7 CVOCS IN INDOOR AIR MITIGATION

The vapor mitigation design in the mill building will vary in different areas of the basement based on the required final floor elevations for future redevelopment/construction. The building has been divided into the following three areas where vapor mitigation will be handled separately.

- In the southern portion of the basement will be amenities, a golf simulator, a reception entry, a water/utilities room, and two residential units. In all southern portions except the water/utilities room, a new slab/vapor barrier is planned to be poured over the old slab to create a complete seal between the subsurface and interior of the building. A vented floor system using geotextile mat or perforated PVC piping will be installed between the old and new slabs. In the water/utilities room, a new slab/vapor barrier will be poured over the old slab and an epoxy floor coating will be applied to the surface of the new slab, as height limitations prevent the installation of the vented floor system in this room.
- In the central portion of the building, five residential units are planned. The area under the residential units and hallway will be sealed off from the underlying raceway and crawl space as discussed in **Section 8.2**, and a vapor barrier and epoxy floor coating will be installed. As the raceway is currently planned to be left open to exterior air flow, natural passive venting beneath the slab in the area under the residential units will occur. This portion of the basement contains the highest sub-slab and indoor air CVOC concentrations; thus, ventilation must be maximized while accommodating ceiling height limitations in residential units and the hallway. Therefore, a trench and perforated piping vented to above the roofline will be installed in the area between the hallway and the crawlspace (storage areas/closets) to intercept vapors migrating from west of the building. This area will also be finished with a vapor barrier and finish slab/epoxy floor coating.
- In the north end of the basement, a gym and storage space are planned. Due to height limitations, a new slab/vapor barrier and epoxy floor coating will be installed in the entirety of the gym area. Similar to the central portion, a trench and perforated piping vented to above the roofline will be installed along the western edge of the gym area to capture any upgradient vapors migrating toward the building. The storage area will comprise a vented floor due to more ceiling height allowance.
- A portion of the first floor of the Site building at the northern end is in ground contact. A new concrete slab and vapor barrier are planned to be installed above the old slab on the entire north end first floor to further mitigate vapor migration into this portion of the building.

See **Appendix C** for a detailed plan of vapor mitigation features in the basement of the Site building.



Basis of Design and Materials of Construction

The goal of design for the vapor mitigation system is to ensure indoor air concentrations of PCE and other CVOCs inside the existing Site building will not exceed the IASL for a residential setting. This will be achieved by installing a ventilation system to break the complete pathway between the interior of the building and the sub-slab. Sub-slab air will be discharged via piping outside above the building's roofline. The following materials (or equivalent) will be used to construct the SSDS:

- 4-inch diameter poly-vinyl chloride (PVC) perforated and solid pipe and fittings (sweep elbows, screens, caps, and couplings) OR geotextile vented matting with manufactured fittings for horizontal runs
- 4-inch diameter PVC riser pipe to reach the roof
- Elastomeric PVC flexible couplings
- Specified exhaust fans
- Washed 3/4-inch minus landscaping stone
- Roof vent boot
- Electrical wire and breaker switches
- PVC primer and cement
- Pipe clamps
- Dynavac Manometer
- Flexible electrical conduit and mounting hardware
- Vapor barrier
 - Minimum 10 mil polyethylene sheeting with a preference for a cross laminated and reinforced fabric for easier and more reliable installation
 - Seam tape
- Epoxy floor coating system

Vented Floor

The SSDS shall be designed in accordance with the American Society for Testing and Materials International (ASTM) Standard Practice E2121-21, *Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings*, revised October 28, 2021, and the American National Standards Institute (ANSI)/American Association of Radon Scientists and Technologists (AARST) document CC-1000 2018, *Soil Gas Control Systems in New Construction of Buildings*. The following criteria shall be met for successful installation of the vented trenches or floor in specified portions of the basement:

- Vapor barrier materials will be installed only when all applicable floor drain/trench/raceway sealing has been completed, any new utility work is done, and any



other structural or renovation work for the basement has been complete to ensure the vapor barrier is not punctured.

- Once the building subgrade has been prepared according to the building foundation plan, a permeable continuous layer of crushed stone consisting of at least 4 inches in depth shall be installed within the footprint of the slab area planned for vented floor. It is vitally important that a continuous layer of permeable material is installed to establish effective air flow under all portions of the building.
- The SSDS shall comprise a non-woven geotextile matting or perforated PVC pipe to serve as a conduit for vapor transport installed beneath the concrete slab to facilitate air flow and collection of vapors under the entire footprint of the slab. The matting/pipe shall be placed flush over the permeable sub-slab support material and shall be installed to allow the lateral flow of soil gases to the system's suction point.
- The geotextile matting/piping shall be placed in the layout shown in **Appendix C**.
- Soil vapor shall be directed from the geotextile matting above the slab via 4-inch diameter (or greater) solid PVC conveyance piping through horizontal matting to PVC pipe transitional fittings.
- PVC pipe will be connected to the riser point and plumbed to the building exterior.
- All perforations will be sealed at the final floor with hydraulic cements or another non-VOC sealant.
- A fan rated for exterior use will be installed. A GX4 Pro Series fan will be installed for the vented floor as the increased fan performance is needed to achieve vacuum in the vented floor design. The radon fan or blower will be wired in accordance with building codes by an electrical contractor.
- A screening point will be manifolded into the blower/fan effluent riser pipe to allow for screening of the effluent with a PID. This point should include a failsafe to ensure the point cannot be left open, which would ventilate vapors to the interior for interior locations.
- Exhaust vent piping will extend at least 2 feet above the building roof line/eave and will be appropriately secured with brackets. Subsequent vent pipes installed in the center of the building that may extend out the roof and be connected to an interior fan will require appropriate flashing and a roof vent boot.
- A Dynavac Manometer will be installed on each riser pipe to allow Site occupants to monitor the pressure and continued operation of the point.
- Placards will be placed on the SSDS points that indicate an active remediation system is in operation and not to tamper. Placards will include the installation contractor's contact information in the event the system is not operating properly.

Trench Ventilation

To accomplish the objective of the SSDS, a negative pressure will be established beneath the building slab. Since current conditions (i.e., floor perforation and raceway) prevent the ability to



perform a meaningful pilot test, the radius of influence unknown will be mitigated through trenching the basement floor and installing perforated pipe horizontally in an interceptor trench. Based on known information, it is anticipated that around 0.025 inches of water column vacuum (i.e., negative pressure) will ensure appropriate sub-slab conditions to intercept vapors along the crawl space wall.

Riser pipes will be placed in appropriate locations near existing interior walls, up centralized steel beams or in otherwise unobstructive locations. SSDS points will be installed as follows:

- The slab along the crawl space wall will be trenched, exposing underlying fill (i.e., a full penetration of the slab). The trench will be lined with geotextile fabric and perforated PVC pipe will be installed in 1-inch minus fill along the length of the trench in two lengths (one connected to the north riser pipe and one connected to the south riser pipe). Horizontal pipes will be connected to a vertical pipe.
- PVC expansion plugs will be installed to close the SSDS point until exhaust piping can be installed
- PVC pipe will be connected to the riser point and plumbed to the building exterior.
- All perforations will be sealed at the final floor with hydraulic cements or another non-VOC sealant.
- A fan rated for exterior use will be installed. An RP265 is specified for the central area risers, and the RP380 is specified for the northern gym area trench riser. These fans can be upgraded if the remedial goals cannot be achieved. The radon fan or blower will be wired in accordance with building codes by an electrical contractor.
- A screening point will be manifolded into the blower/fan effluent riser pipe to allow for screening of the effluent with a PID. This point should include a failsafe to ensure the point cannot be left open, which would ventilate vapors to the interior for interior locations.
- Exhaust vent piping will extend at least 2 feet above the building roof line/eave and will be appropriately secured with brackets. Subsequent vent pipes installed in the center of the building that may extend out the roof and be connected to an interior fan will require appropriate flashing and a roof vent boot.
- A Dynavac Manometer will be installed on each riser pipe to allow Site occupants to monitor the pressure and continued operation of the point.
- Placards will be placed on the SSDS points that indicate an active remediation system is in operation and not to tamper. Placards will include the installation contractor's contact information in the event the system is not operating properly.

Vapor Barrier and Epoxy Coating

See **Section 8.2** for general discussion of the vapor barrier.

- The selected vapor barrier material (minimum 10 mil polyethylene sheeting) will be rolled out with 12-inch overlap between runs. Seams will be taped with manufacturer



recommended sealing tape. The perimeter will be sealed with tape against the existing walls and around any utility perforations. Care should be taken to minimize walking on the barrier.

- Prior to pouring concrete, a final inspection will be performed to identify any potential cuts or visible holes. These will be taped, and the new concrete will be poured.
- The final epoxy product will include two coats, the first of which is a zero VOC 2-part system requiring a 2:1 ratio of resin to hardener. The second coat has some moisture/vapor resistance but serves to add body/thickness to the installation and be an indicator of when wear and tear requires reapplication of the second and/or first coat. The recommended product is included in Appendix C; however, a similar product may be substituted.

Performance Assessment

To accomplish the objective of the SSDS, negative pressure is imperative beneath the building slab. To assess the effectiveness of the vacuum, vacuum monitoring points will be installed throughout the slab following installation of the SSDS systems. Vacuum monitoring points will be installed in accordance with the manufacturer's instructions. Each point shall be installed at least 10 feet from the PVC riser pipe and at least one point shall be installed on the outer perimeter of the geotextile mat (where applicable). During installation, an air-tight seal will be ensured between the concrete slab and sub-slab by performing a leak test.

Mitigation of sub-slab soil vapor and indoor air contaminants at the mill building will be measured by follow-up indoor air sampling. It is anticipated that four biannual rounds (2 rounds for 2 years) of sampling with six samples collected per round will be appropriate for demonstrating the efficacy of the vapor/air mitigation system installed. Samples will be collected as follows:

- Three from the basement (worst case) at CA-IA-6 from the common hallway, one from CA-IA-12 in a studio unit, and one from CA-IA-8 in the gym.
- Two from the first floor from above the crawl space and another common area consistent with the location of previously sampled location (see **Figure 5B**)
- One ambient air sample from the exterior to further confirm chloroform and carbon tetrachloride ambient conditions

Annual rounds will be scheduled around seasons such that one round is in the late spring/summer and one during the heating season. These samples will be collected using 24-hour regulators to represent residential exposure. Confirmatory air sampling details are summarized in **Appendix A**.

After confirmation that the SSDS is adequately ventilating vapors for the first two years, indoor air monitoring will occur every 2 years with biannual inspection of the system to ensure continued operations. Inspection will include ensuring the fans are running, that there are no obstructions to the ventilation pipes, that the manometer indicates pressure is maintained, and that there is no other damage to the system.



8.8 PREPARATION OF A SOIL MANAGEMENT PLAN

Procedures for proper soil management at the Site will be outlined in a SMP for Site activities both during construction and any future renovation, reworking, or utility work. Based on uncertainty regarding the extent of contamination related to historical industrial use at the Site, an Activity Use Restriction (AUR) across the Site is not appropriate. The SMP will outline Site conditions and applicability, recommend health and safety procedures, and soil handling requirements. The health and safety procedures will include information on the appropriate personal protective equipment and environmental monitoring for the work zone relative to the Site chemical contaminants; however, will not include physical hazards of the standard construction practices, general emergency procedures (e.g., local emergency contacts), or other chain of command-type procedures. These procedures are presumed to be covered in the construction contractor's general health and safety plan. The SMP is included as **Appendix D** to this ABCA/RAP to serve as a stand-alone concise document that can be included in future plans and specifications for construction.



9. REMEDIAL DESIGN ASSESSMENT

A remedial design assessment was completed between September 2022 and April 2023 after submittal of the draft RAP for the Site. A brief description of the data gaps that were investigated, methodology, and results is detailed in **Section 2.3**. No further assessment is necessary to support the design and remedial decision process prior to commencement of remedial activities.



10. REMEDIAL ACTION PLANNING AND CLOSEOUT PROCEDURES

This section describes Site preparation and Site closure reporting activities that will be completed as part of the Site remediation.

10.1 HEALTH AND SAFETY PLAN DEVELOPMENT

A Health and Safety Plan to ensure the safe execution of the above listed presumptive remedial alternatives will be prepared prior to the start of remediation by any subcontractors selected to perform the work. The plan will outline the general COPCs and work to be completed, evaluate physical and chemical hazards, outline required controls and PPE, provide the chain of command structure, and include details of the contingency plan.

10.2 REQUIRED PERMITS

Proper notification of asbestos projects to NHDES will be required. Notification to the NHDES asbestos group is also required for ALL DEMOLITION, regardless of the presence of asbestos associated with the demolition.

Local building and planning approvals will also be required for demolition and will be the responsibility of the Owner and demolition contractor to obtain prior to demolition/renovations.

No other state or federal permits are anticipated to be required as a part of this remediation.

10.3 REMEDIAL ACTION IMPLEMENTATION REPORTING AND NO FURTHER ACTION

Following remediation completion, a Remedial Action Implementation Report (RAIR) will be prepared and submitted to the NHDES in accordance with Env-Or 606.17 to document that remediation was completed appropriately. After NHDES concurrence with the RAIR, a Certificate of Completion (CoC) for the Covenant Not to Sue program will be issued.

10.4 FILING OF INSTITUTIONAL CONTROLS

After receipt of the CoC, the QEP will work with NHDES to prepare the GMP using NHDES templates. Once approved by NHDES, the Owners legal team will support the QEP in filing/recording institutional controls.

The Owner with the support of the QEP will be responsible for maintenance of the requirements of the controls and keeping records of any required monitoring or inspections. GMP reporting will be completed by the QEP.

10.5 SCHEDULE

Task	Duration/Date
Receipt of Covenant Not to Sue Program Eligibility	February 8, 2022
Submittal of draft RAP	April 22, 2022
Public Notice of the RAP (30 days)	May 2-June 1, 2022

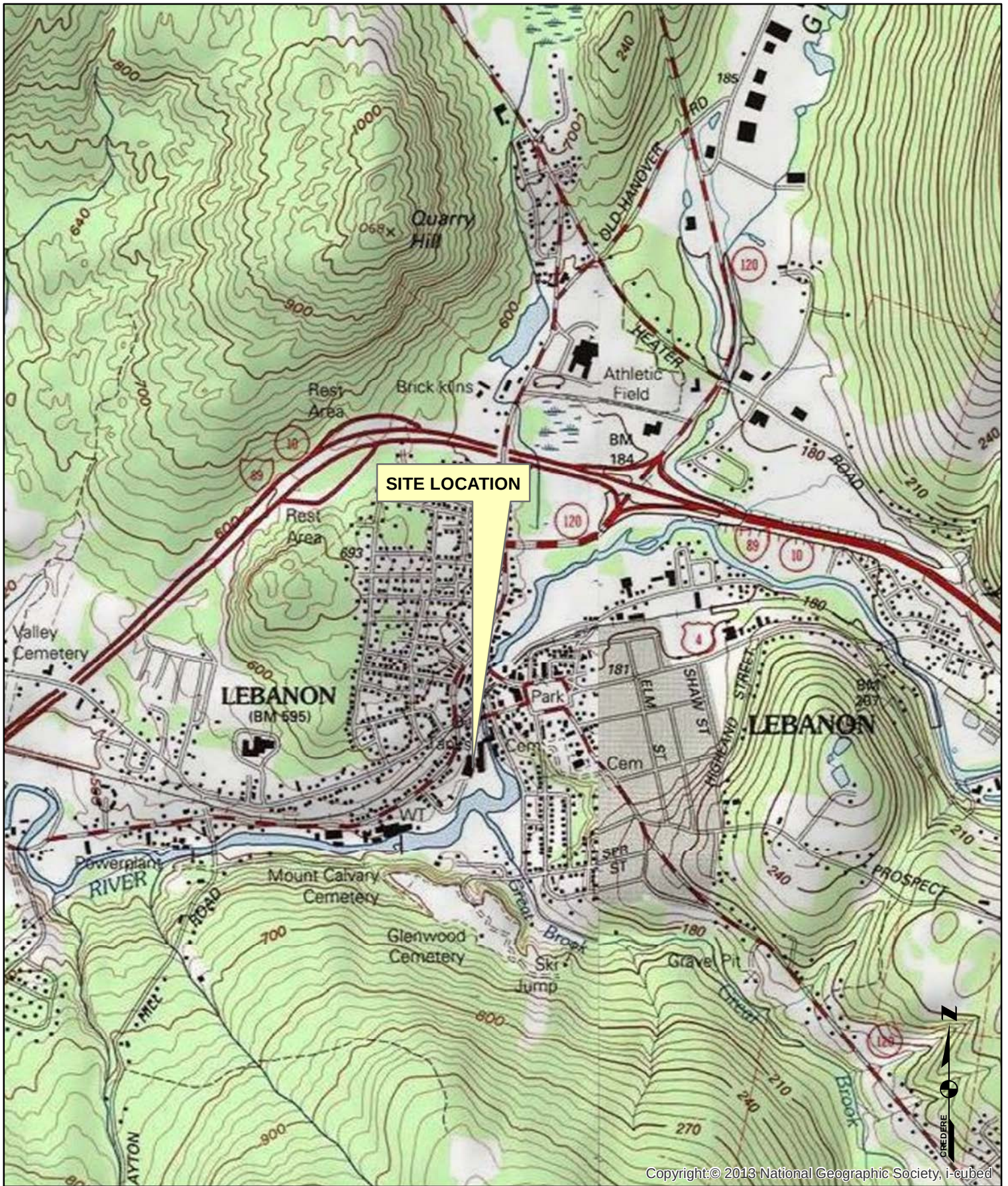


Task	Duration/Date
NHDES Review & Data Gap Discussion	June 2022 – October 2022
Interim Approval Letter – mill building cleanout	April 7, 2022
Mill building cleaning and debris removal	August 2022
Retail building demolition	February 2024
Mill building asbestos abatement & lead/PCB paint removal	February 2024 – April 2024
Reduction of 25 Mechanic Street groundwater monitoring frequency	May 20, 2024
Resubmittal of Revised RAP	October 2024
NHDES Review & RTC	January 2025 - March 2025
Public Comment Period	March 18 – April 18, 2025
Public Informational Meeting	April 2025
Submittal of GMP Application for 25 Mechanic Street source	March 2025
NHDES Issuance of Notice of Approved ABCA/RAP & GMP	April 2025
NHDOJ Issuance of Covenant Not to Sue	February 2025
Interior renovation of mill building and LCP/PCB paint management	Summer 2025
Mill building drain/raceway sealing, SSDS installation, vapor barrier	Construction schedule TBD
Office/storage building PCB demolition	Spring 2025
Site work and Engineered barrier install	Construction schedule TBD
Soil source area treatment at 25 Mechanic Street	Remediation schedule TBD
Preparation of Remedial Action Implementation Report	2026
NHDES issuance of Certificate of Completion	2026



FIGURES





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FIGURE 1 SITE LOCATION PLAN

FORMER KLEEN LAUNDRY & DRYCLEANING
25 MECHANIC STREET & 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE

1,000 0 2,000
Feet
1 INCH = 2,000 FEET





NOTES:
1. EXISTING CONDITIONS AND FEATURES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE BASED ON INFORMATION OBTAINED FROM THE CITY OF LEBANON, ESRI ORTHO IMAGES, NEW HAMPSHIRE OFFICE OF GIS, PRIOR ENVIRONMENTAL INVESTIGATIONS, AND GROUNDWATER SAMPLING PERFORMED FROM NOVEMBER 2022 TO APRIL 2024.
2. AGQS = AMBIENT GROUNDWATER QUALITY STANDARDS, GW = GROUNDWATER
3. GROUNDWATER ELEVATION DATA PROVIDED IN FEET ABOVE MEAN SEA LEVEL

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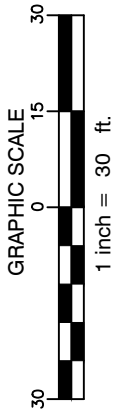
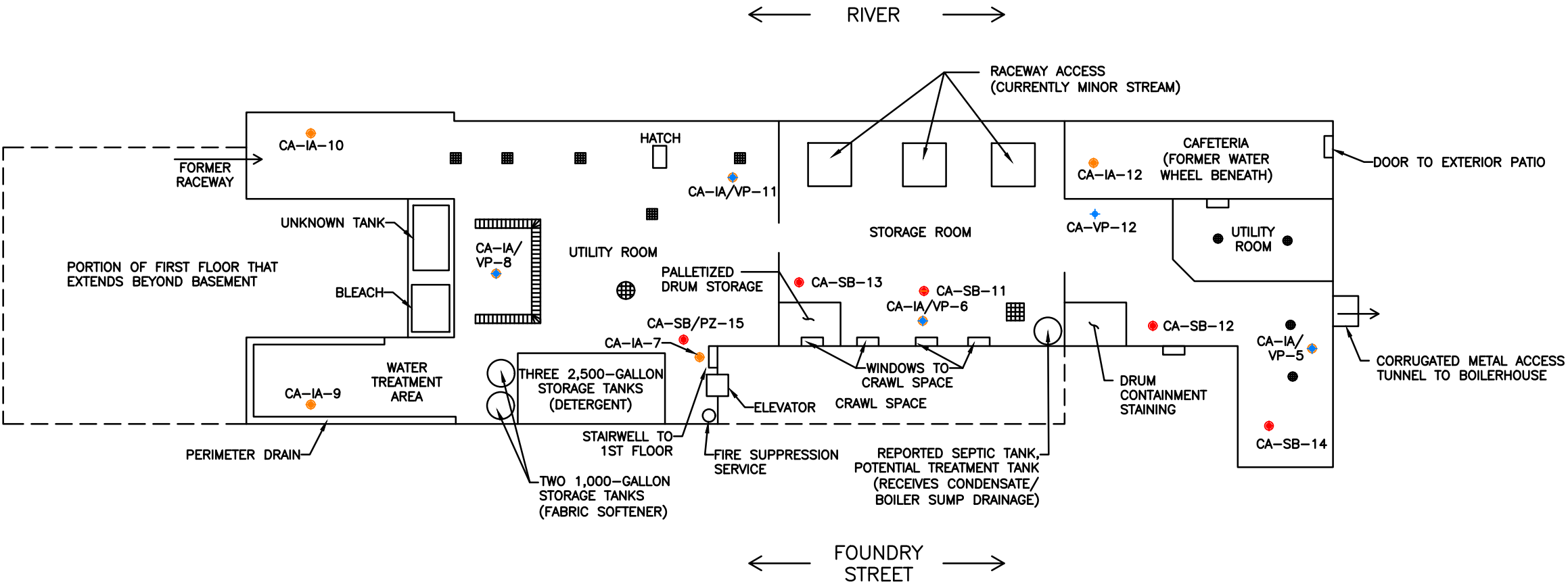
FIGURE 3 GROUNDWATER CONTOUR PLAN KLEEN LAUNDRY FORMER DRY-CLEANING FACILITY 1 FOUNDRY & 25 MECHANIC STREET LEBANON, NEW HAMPSHIRE	<table><tr><td>EXISTING MONITORING WELL</td><td>SITE BUILDING OUTLINE</td></tr><tr><td>FORMER MONITORING WELL</td><td>PCE GW PLUME >AGQS</td></tr><tr><td>SOIL BORING/PIEZOMETER (2023)</td><td>SITE BOUNDARY</td></tr><tr><td>SOIL VAPOR POINT</td><td>PARCEL BOUNDARIES</td></tr><tr><td>APPROX. GROUNDWATER CONTOUR</td><td>2-FOOT CONTOUR</td></tr><tr><td>APPROX. PETROLEUM GW PLUME</td><td></td></tr></table>	EXISTING MONITORING WELL	SITE BUILDING OUTLINE	FORMER MONITORING WELL	PCE GW PLUME >AGQS	SOIL BORING/PIEZOMETER (2023)	SITE BOUNDARY	SOIL VAPOR POINT	PARCEL BOUNDARIES	APPROX. GROUNDWATER CONTOUR	2-FOOT CONTOUR	APPROX. PETROLEUM GW PLUME	
EXISTING MONITORING WELL	SITE BUILDING OUTLINE												
FORMER MONITORING WELL	PCE GW PLUME >AGQS												
SOIL BORING/PIEZOMETER (2023)	SITE BOUNDARY												
SOIL VAPOR POINT	PARCEL BOUNDARIES												
APPROX. GROUNDWATER CONTOUR	2-FOOT CONTOUR												
APPROX. PETROLEUM GW PLUME													

LEGEND

 INDOOR AIR SAMPLE LOCATION

 SUB-SLAB SOIL VAPOR SAMPLE LOCATION

 SOIL BORING SAMPLE LOCATION



INDOOR AIR, SUB-SLAB SOIL VAPOR,
AND SOIL BORING LOCATION PLAN
MILL BUILDING - BASEMENT

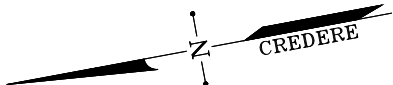
FIGURE 4A

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE

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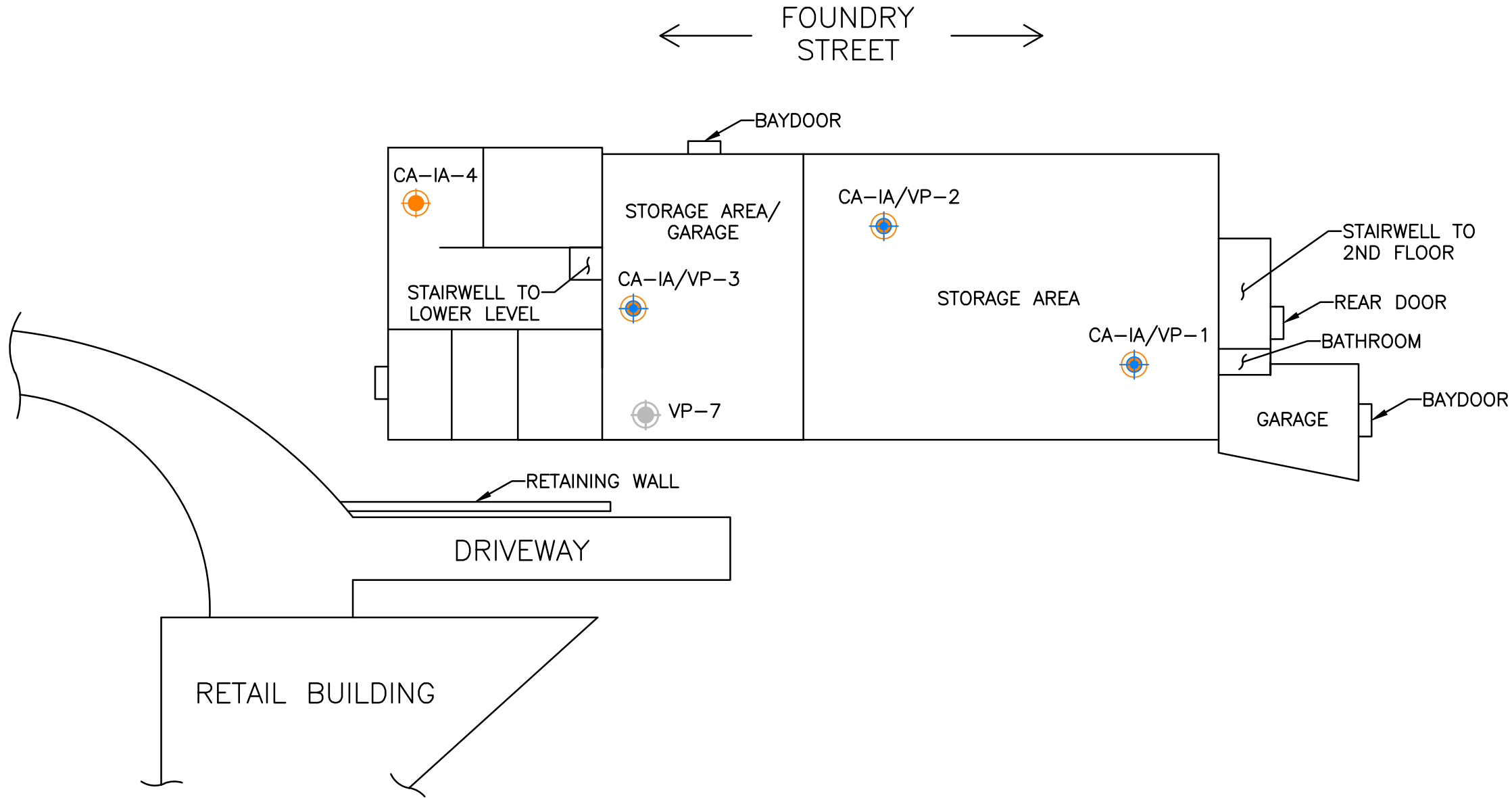
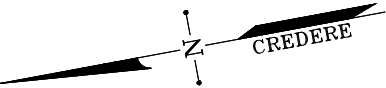


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LEGEND

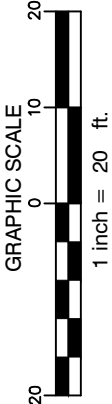
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SOIL VAPOR SAMPLE LOCATION
- FORMER SUB-SLAB VAPOR POINT



INDOOR AIR & SUB-SLAB SOIL VAPOR LOCATION PLAN
OFFICE/STORAGE BUILDING - FIRST FLOOR

FIGURE 4B

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE



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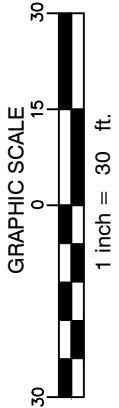
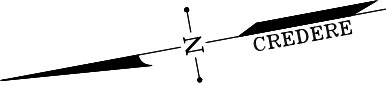
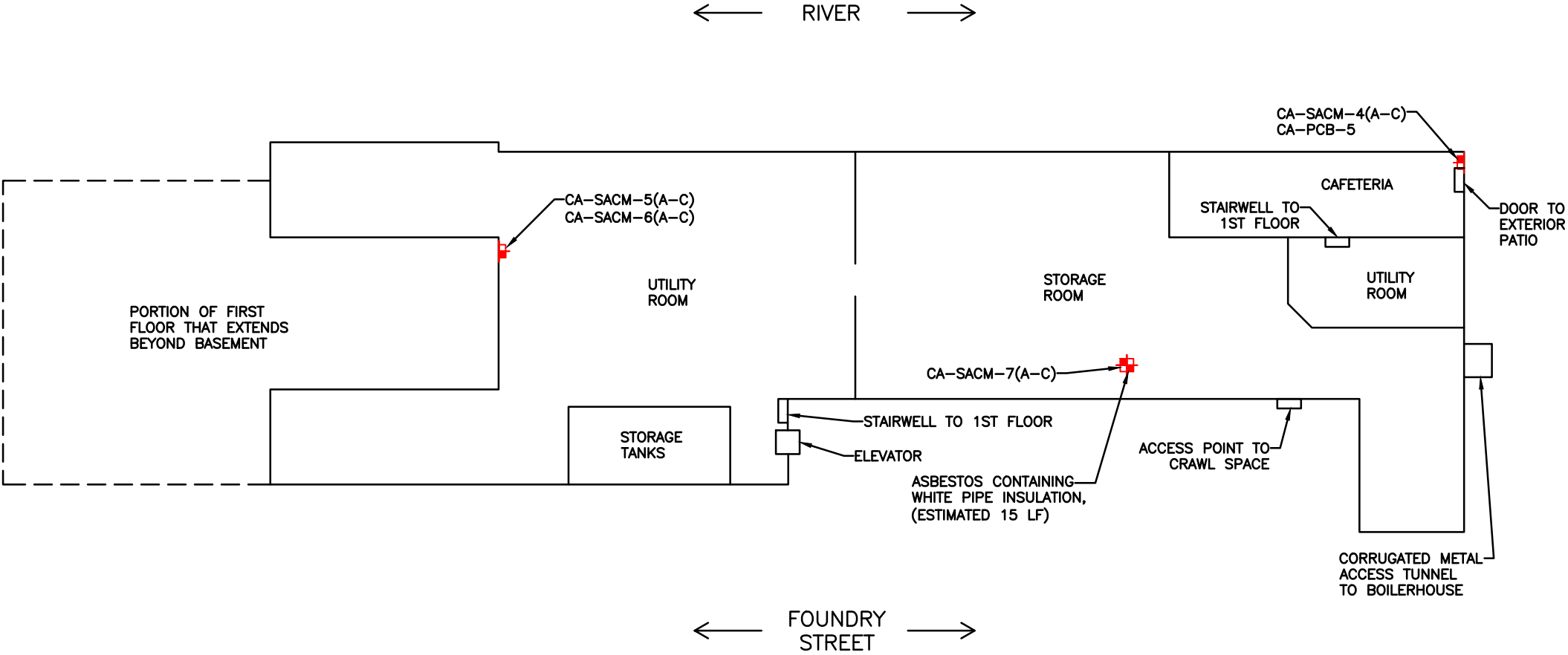
LEGEND



ASBESTOS/PCB SAMPLE LOCATION



ASBESTOS/PCB WALL SAMPLE LOCATION



HAZARDOUS BUILDING MATERIALS LOCATION PLAN
MILL BUILDING - BASEMENT

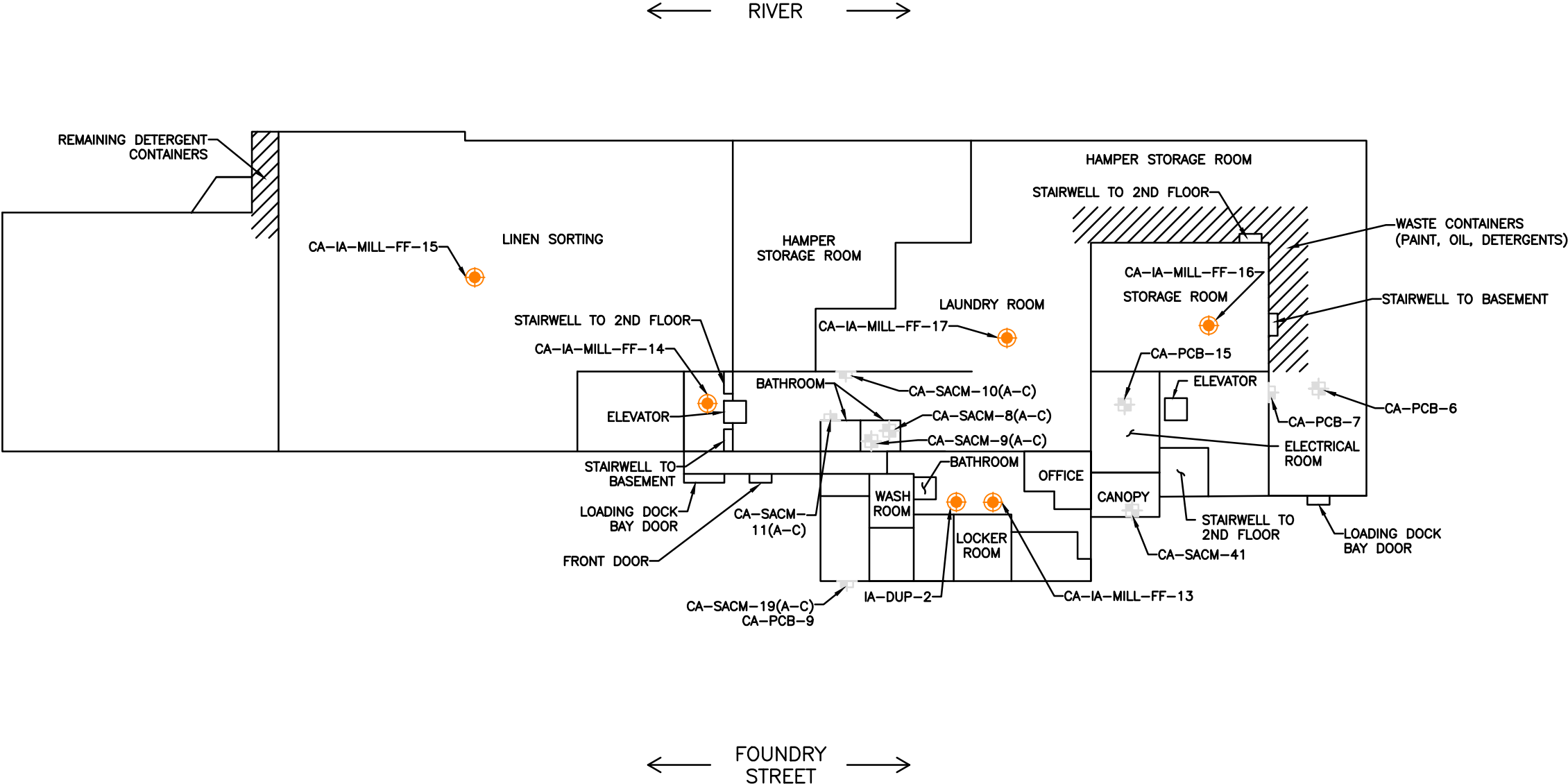
FIGURE 5A

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE

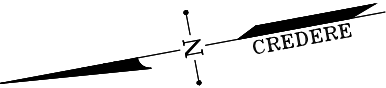
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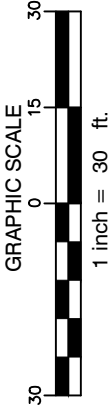
- LEGEND**
- INDOOR AIR SAMPLE LOCATION (COLLECTED SEPTEMBER 2022)
 - ASBESTOS/PCB SAMPLE LOCATION (COLLECTED MAY 2021)
 - ASBESTOS/PCB WALL SAMPLE LOCATION (COLLECTED MAY 2021)



HBMS & INDOOR AIR SAMPLE LOCATION PLAN
MILL BUILDING - FIRST FLOOR

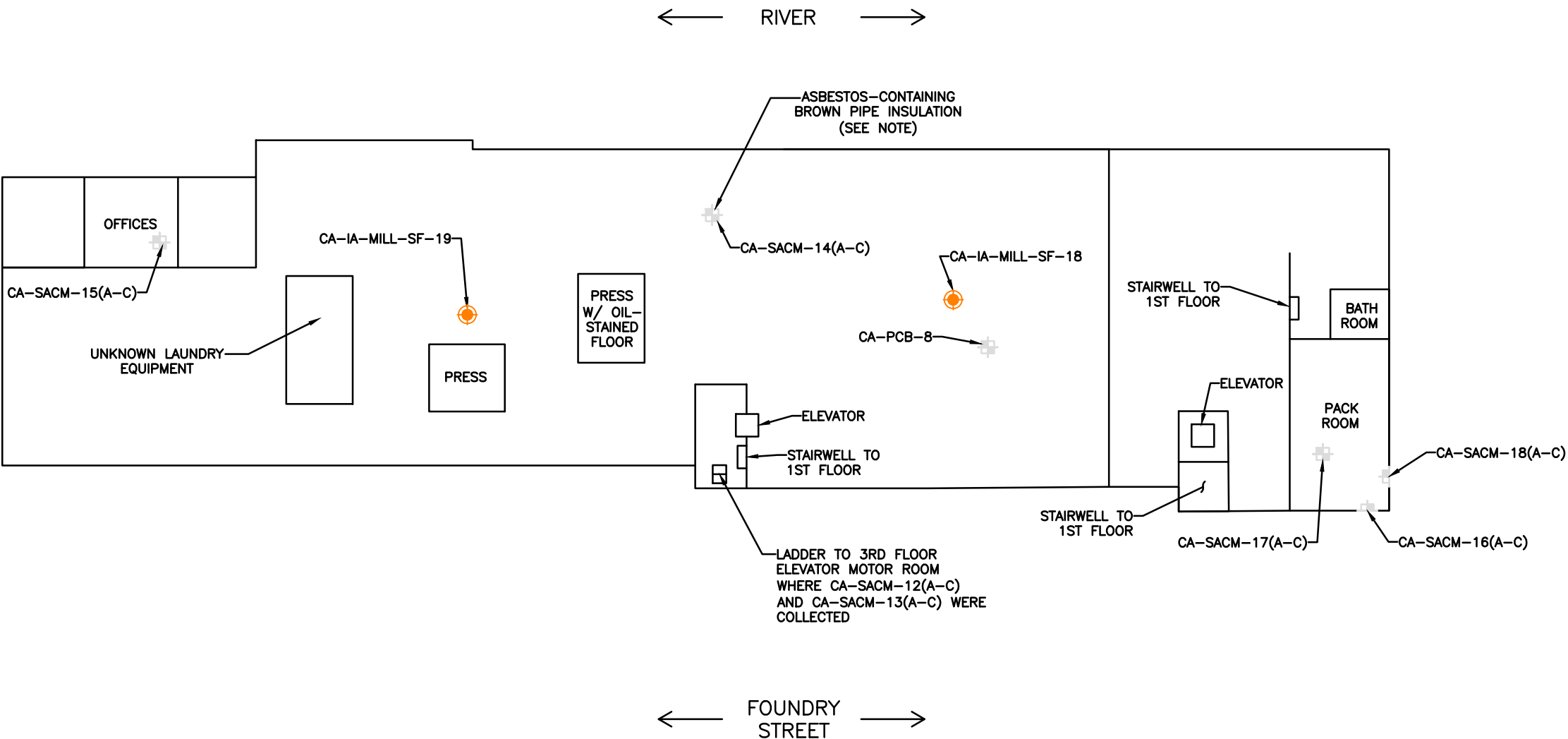
FIGURE 5B

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE



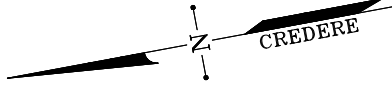
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- LEGEND**
- INDOOR AIR SAMPLE LOCATION (COLLECTED SEPTEMBER 2022)
 - ASBESTOS/PCB SAMPLE LOCATION (COLLECTED MAY 2021)
 - ASBESTOS/PCB WALL SAMPLE LOCATION (COLLECTED MAY 2021)

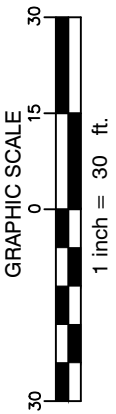
NOTE: AN ESTIMATED 1,000 LINEAR FEET OF ASBESTOS-CONTAINING BROWN PIPE INSULATION WAS DOCUMENTED ON PIPING THROUGHOUT THE 2ND FLOOR OF THE MILL BUILDING.



HBMS AND INDOOR AIR SAMPLE LOCATION PLAN
MILL BUILDING - SECOND FLOOR

FIGURE 5C

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE



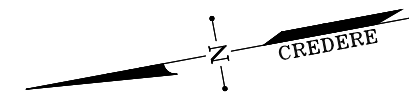
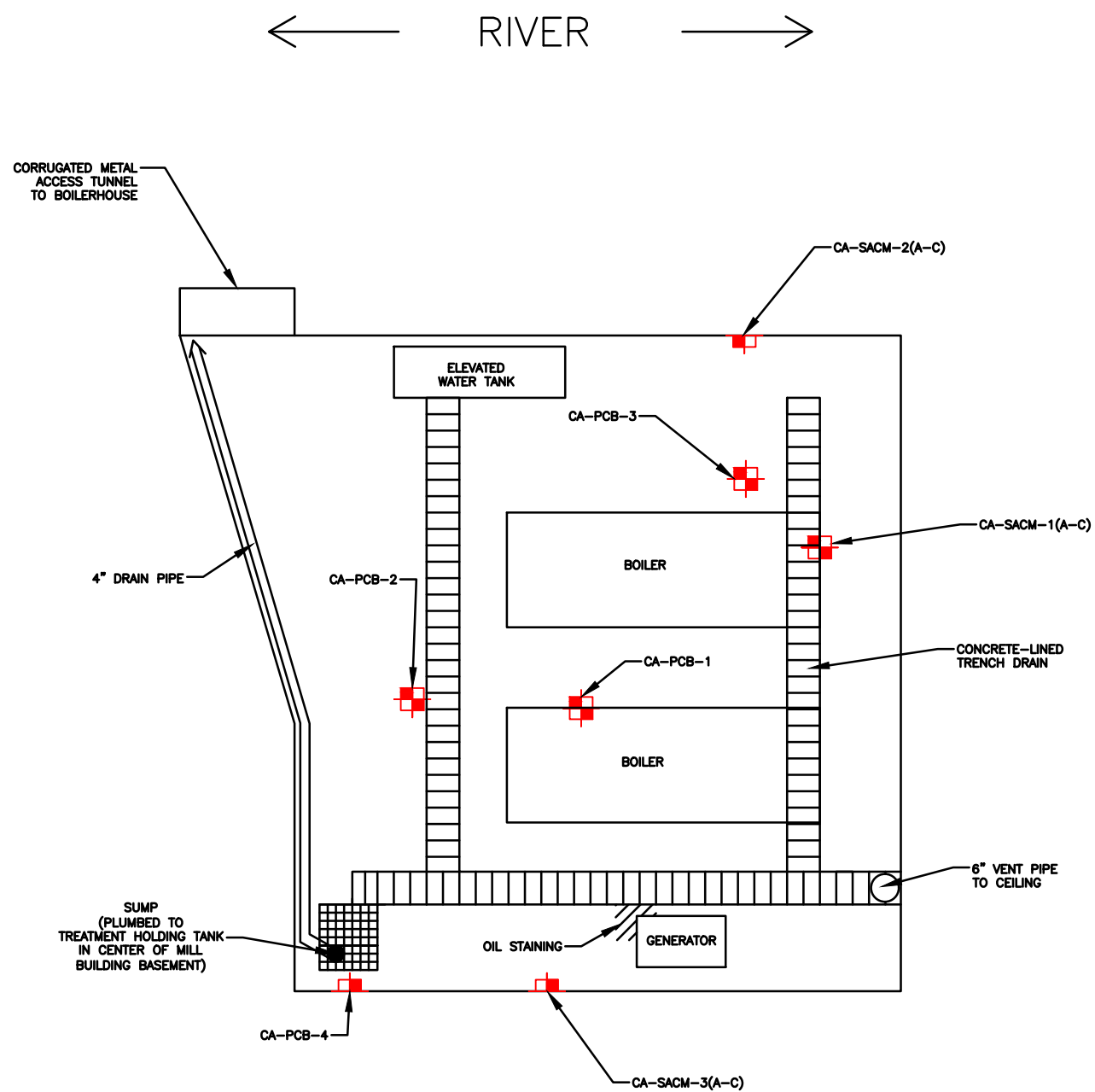
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LEGEND

ASBESTOS/PCB SAMPLE LOCATION

ASBESTOS/PCB WALL SAMPLE LOCATION



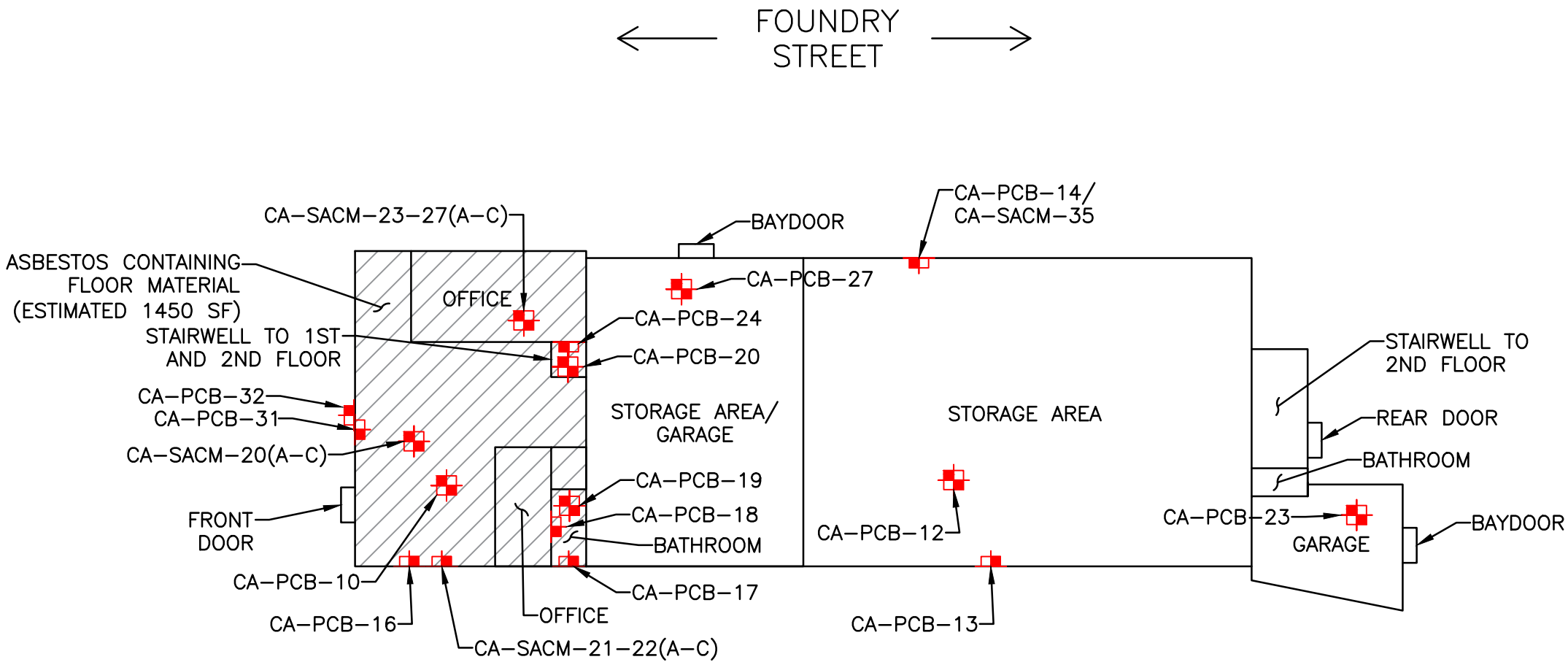
DRAWN BY: GWK CHECKED BY: ASD	DATE: 07/07/2021 PROJECT: 17001384	HAZARDOUS BUILDING MATERIALS LOCATION PLAN BOILER HOUSE	FIGURE 6	FORMER KLEEN LAUNDRY AND DRY CLEANING 25 MECHANIC STREET AND 1 FOUNDRY STREET LEBANON, NEW HAMPSHIRE
	Economy Community Environment CREDERE ASSOCIATES, LLC 776 MAIN STREET WESTBROOK, MAINE 04092 FAX: 207.887.1051 TEL: 207.828.1272 WWW.CREDERELLC.COM			

LEGEND

 ASBESTOS/PCB SAMPLE LOCATION

 ASBESTOS/PCB WALL SAMPLE LOCATION

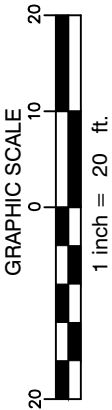
 ASBESTOS CONTAINING FLOOR MATERIAL



HAZARDOUS BUILDING MATERIALS LOCATION PLAN
OFFICE/STORAGE BUILDING - FIRST FLOOR

FIGURE 7A

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE



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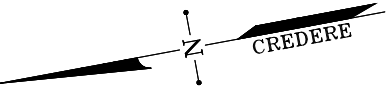
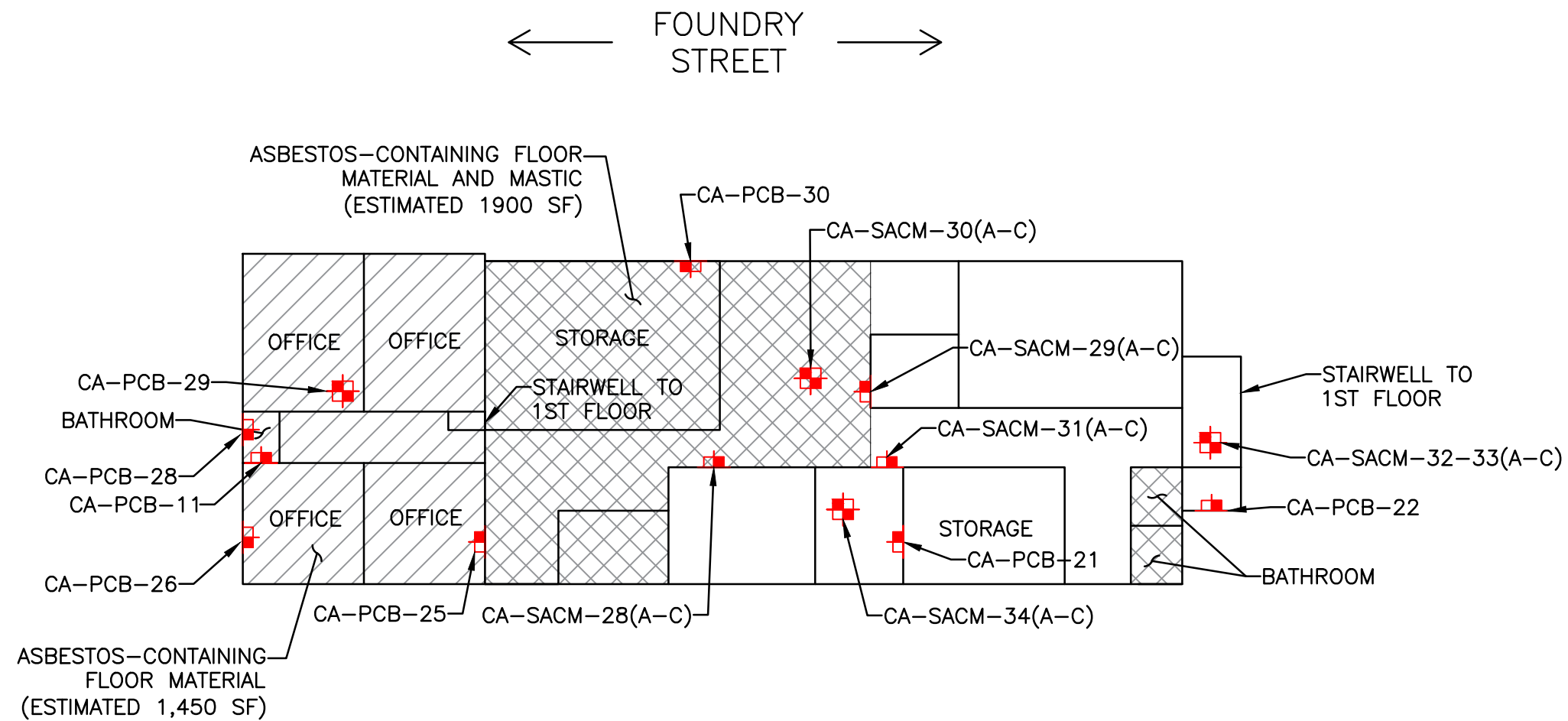
LEGEND

 ASBESTOS/PCB SAMPLE LOCATION

 ASBESTOS/PCB WALL SAMPLE LOCATION

 ASBESTOS CONTAINING FLOOR MATERIAL

 ASBESTOS-CONTAINING FLOOR MASTIC

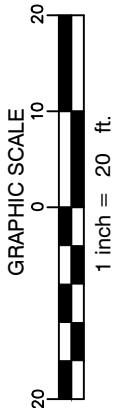


HAZARDOUS BUILDING MATERIALS LOCATION PLAN

OFFICE/STORAGE BUILDING - SECOND FLOOR

FIGURE 7B

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE



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DATE: 02/24/2024

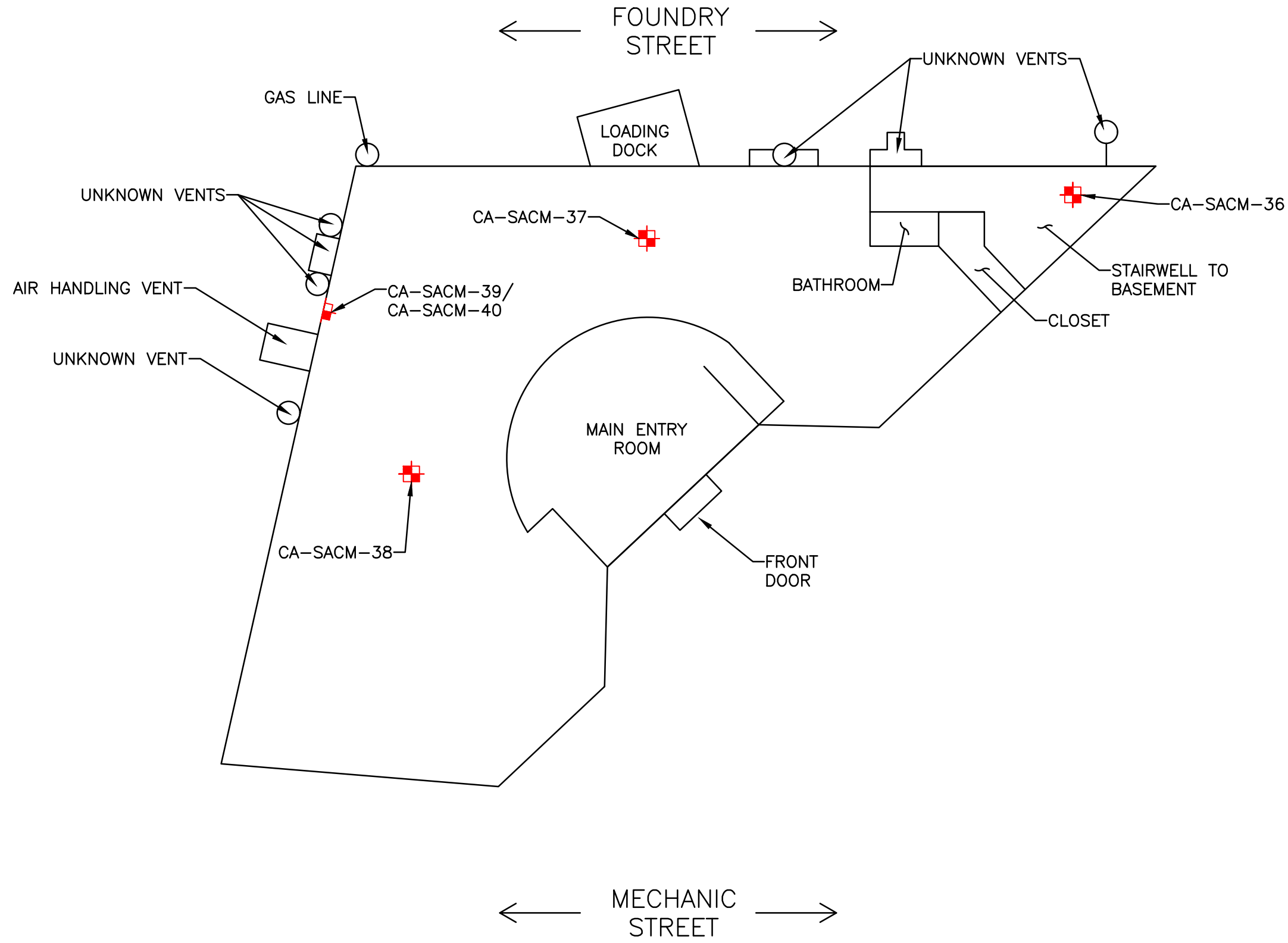
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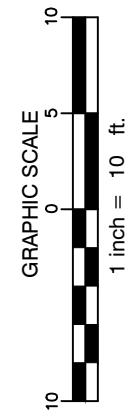
- ASBESTOS/PCB SAMPLE LOCATION
- ASBESTOS/PCB WALL SAMPLE LOCATION



HAZARDOUS BUILDING MATERIALS LOCATION PLAN
RETAIL BUILDING - FIRST FLOOR

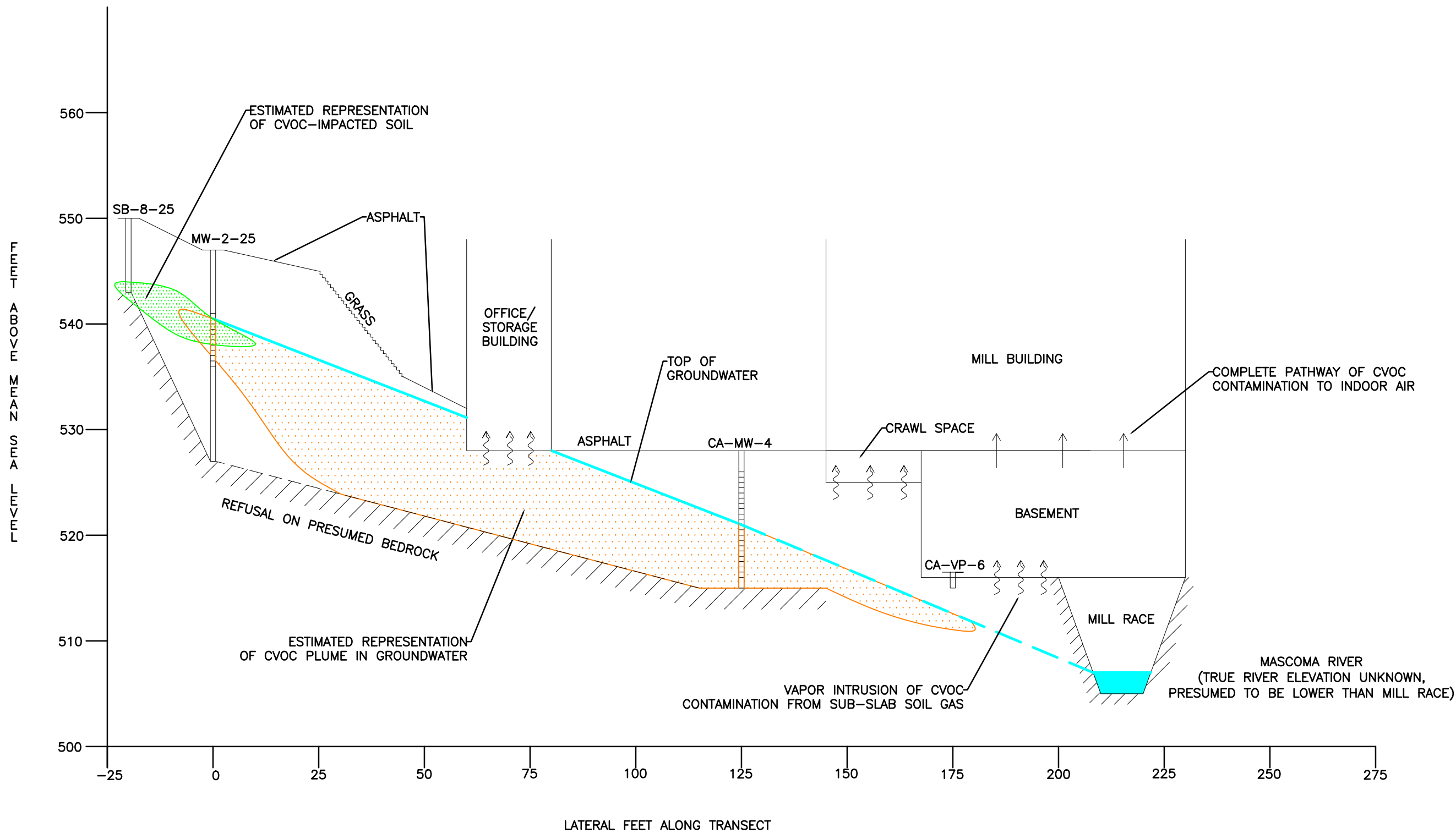
FIGURE 8

FORMER KLEEN LAUNDRY AND DRY CLEANING
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE



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NOTES

SOIL CROSS SECTIONS PREPARED BY CREDERE ASSOCIATES, LLC USING SOIL BORING LOGS AND ELEVATIONS PREPARED BY WAITE-HEINDEL, CREDERE, AND HISTORICAL BLUE PRINTS DATING TO LEBANON WOOLEN MILL CONSTRUCTION ERA.

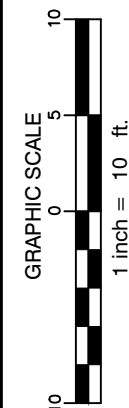
A-A' SOIL CROSS SECTION
KLEEN LAUNDRY

FIGURE 9

KLEEN LAUNDRY FORMER DRY CLEANING
FACILITY
25 MECHANIC STREET AND 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE

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PROJECT: 21001623

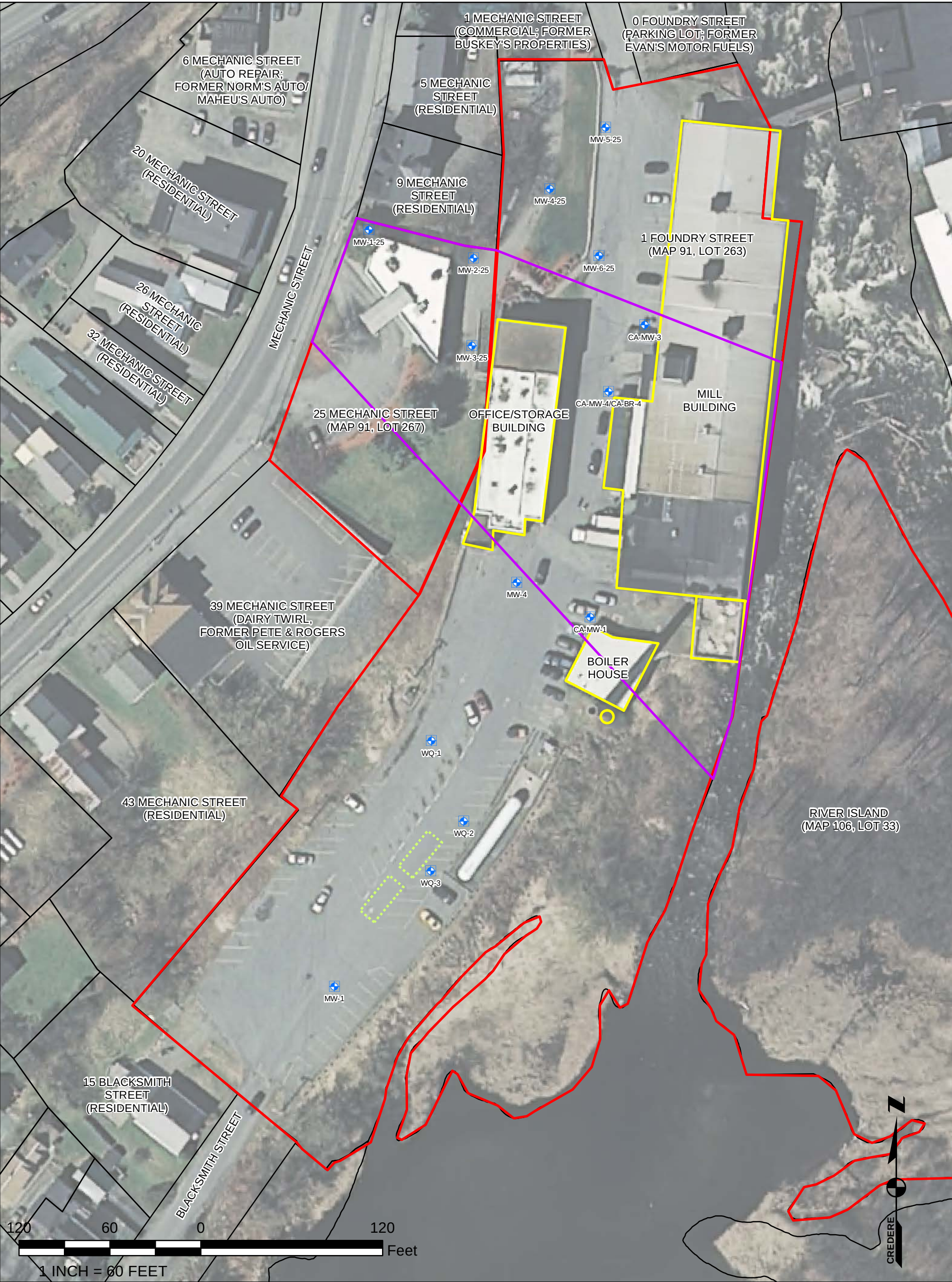
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NOTES:
REDEVELOPMENT PLAN PREPARED BY RODE ARCHITECTS, INC. OF BOSTON, MASSACHUSETTS AND PROVIDED VIA EMAIL FROM MR. JON LIVADAS ON MARCH 25, 2022.
PID = PHOTOIONIZATION DETECTOR
PPM = PARTS PER MILLION
SAMPLE LOCATION SYMBOLS ARE DETAILED ON FIGURE 2

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 Credere Associates, LLC 776 MAIN STREET WESTBROOK, MAINE Tel. 207.828.1272 Fax 207.887.1051 WWW.CREDERELLC.COM		FIGURE 10 PROPOSED PCE EXCAVATION AND TREATMENT AREA FOR 25 MECHANIC STREET	
		KLEEN LAUNDRY FORMER DRY CLEANING FACILITY 25 MECHANIC STREET AND 1 FOUNDRY STREET LEBANON, NEW HAMPSHIRE	
		--- EXCAVATED TO PID RESPONSE <1 PPM — EXCAVATED TO PID RESPONSE <10 PPM X X X X AREA OF PRIMARY TREATMENT APPLICATION --- APPROX. EXTENT OF CONTAMINATED SOIL — APPROX. EXTENT OF CONTAMINATED GROUNDWATER	



NOTES:
1. EXISTING CONDITIONS AND FEATURES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE BASED ON INFORMATION OBTAINED FROM THE CITY OF LEBANON, ESRI ORTHO IMAGES, NEW HAMPSHIRE OFFICE OF GIS, A FIGURE INCLUDED IN THE GMP RENEWAL APPLICATION PREPARED BY WAITE-HEINDEL DATED JANUARY 20, 2017, AND FIELD WORK PERFORMED ON NOVEMBER 8, 2021.
2. GMZ - GROUNDWATER MANAGEMENT ZONE, CVOC = CHLORINATED VOLATILE ORGANIC COMPOUND

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FIGURE 11
PROPOSED GMZ FOR CVOC RELEASE
AT 25 MECHANIC ST & 1 FOUNDRY ST

KLEEN LAUNDRY FORMER
DRY-CLEANING FACILITY
25 MECHANIC STREET & 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE



- PROPOSED GMZ
- SITE BOUNDARY
- SITE BUILDING OUTLINE
- FORMER 20,000-GALLON NO. 6 FUEL OIL UST
- PARCEL BOUNDARY
- EXISTING MONITORING WELL

TABLES



Table 1
Cumulative Sample Reference Table
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Location	Location Rationale	Sample ID	Analytical Method	Pertinent Sample Observations
CA-SB-1/CA-MW-1	To assess impacts associated with abandoned-in-place Tank #5 and observed petroleum free-product in brick manhole	CA-SB-1 (12-12.5/12.25) SB-DUP-1	VOCs (EPA Method 8260D) PAHs (EPA Method 8270E) TPH (EPA Method 8015C)	Highest PID reading: 4.692 ppm _v (12-12.5 feet bgs) Observation of residual petroleum contamination and petroleum odor from 12-12.5 feet bgs
		CA-MW-1	VOCs (EPA Method 8260C) PAHs (EPA Method 8270D with SIM) PFAS (EPA Method 537.1)	No field observations indicating contamination Ambient Air VOC: 0.000 ppm _v Well Mouth VOC: 0.023 ppm _v
CA-SB-2/CA-MW-2	To assess downgradient impacts associated with abandoned-in-place Tank #5 and observed petroleum free-product in brick manhole	CA-SB-2 (12-13/12.5)	VOCs (EPA Method 8260D) PAHs (EPA Method 8270E) TPH (EPA Method 8015C)	Highest PID reading: 26.54 ppm _v (12-13 feet bgs) Strong petroleum odor observed, no free product. No groundwater observed in borehole - no monitoring well installed
		CA-MW-2	Not sampled	Well not installed due to lack of groundwater observed in open borehole
CA-SB-3	To assess impacts associated with use of waste oil as dust suppression method prior to pavement circa 1977	CA-SB-3 (0.5-2.5)	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Field screenings/observations did not indicate evidence of a release or fill layer
CA-SB-4		CA-SB-4 (0.5-1.5)	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Fill layer observed from 0.5-1.5 feet bgs
CA-SB-5		CA-SB-5 (0-2.5) SB-DUP-2	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Fill layer observed from 0.5-2.5 feet bgs
CA-SB-6		CA-SB-6 (1-3)	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Field screenings/observations did not indicate evidence of a release or fill layer
CA-SB-7		CA-SB-7 (0.5-2.5)	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Field screenings/observations did not indicate evidence of a release or fill layer
CA-SB-8/CA-MW-3		CA-SB-8 (1.5-2.5) MS/MSD	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Highest PID reading: 3.105 ppm _v (1 foot bgs; presumed to be related to asphalt sub-base); minor dark staining/coloring below asphalt
		To assess impacts associated with historical dry-cleaning operations at the mill building	CA-MW-3	VOCs (EPA Method 8260D) PFAS (EPA Method 537.1)
CA-SB-9	To assess impacts associated with use of waste oil as dust suppression method prior to pavement circa 1977	CA-SB-9 (1-2.5)	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Field screenings/observations did not indicate evidence of a release or fill layer Highest PID reading: 2.368 ppm _v (0-1 feet bgs, within subbase layer)
CA-SB-10		CA-SB-10 (2-4)	TPH (EPA Method 8015C) PCBs (EPA Method 8082A) PP- Metals + Barium (EPA Methods 6020A & 7471B)	Highest PID reading: 1.451 ppm _v (2-3 feet bgs)
CA-SB-11	To assess subsurface conditions under the mill building basement slab in the area of CA-VP-6	CA-SB-11	Not sampled	Field screenings/observations did not indicate evidence of a release. Thin layer of anthropogenic fill observed directly beneath slab
CA-SB-12	To assess subsurface conditions under the mill building basement slab in the area beneath the loading dock	CA-SB-12		Field screenings/observations did not indicate evidence of a release
CA-SB-13	To assess subsurface conditions under the mill building basement slab	CA-SB-13		Field screenings/observations did not indicate evidence of a release
CA-SB-14		CA-SB-14		Field screenings/observations did not indicate evidence of a release
CA-SB-15/CA-PZ-15	To assess subsurface conditions under the mill building basement slab and impacts to groundwater beneath the mill building to establish if the documented CVOC plume extends to this area and determine relative concentration compared to upgradient plume.	CA-PZ-15	VOCs (EPA Method 8260D)	Field screenings/observations did not indicate evidence of a release
CA-MW-4	To assess connectivity between CVOCs identified at MW-2-25 and CA-VP-6	CA-MW-4	VOCs (EPA Method 8260D)	None
CA-BR-4	To assess migration of CVOCs to bedrock	CA-BR-4	VOCs (EPA Method 8260D)	
CA-SS-1	To assess surface soil impacts associated with 1,400-gallon petroleum release from adjoining 39 Mechanic Street in 1987 to eastern slope of Site boundary	CA-SS-1 (0-1)	VOCs (EPA Method 8260D) TPH (EPA Method 8015C)	Field screenings/observations did not indicate evidence of a release
CA-SS-2		CA-SS-2 (0-1)	VOCs (EPA Method 8260D) TPH (EPA Method 8015C)	
CA-SS-3		CA-SS-3 (0-1)	VOCs (EPA Method 8260D) TPH (EPA Method 8015C)	
CA-SS-4		CA-SS-4 (0-1)	VOCs (EPA Method 8260D) TPH (EPA Method 8015C)	

Table 1
Cumulative Sample Reference Table
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Location	Location Rationale	Sample ID	Analytical Method	Pertinent Sample Observations
CA-SUMP-1	To assess the presence of CVOCs in water being discharged to the ground surface at the Site from a sump in the basement of the office/storage building	CA-SUMP-1	VOCs (EPA Method 8260D)	Effluent leaving orange stain on asphalt surface. Sump has been turned off as of November 2, 2021, after receipt of effluent results.
WQ-3	To assess existing PCE plume at 1 Foundry Street monitored under a GMP for PFAS	WQ-3	PFAS (EPA Method 537.1)	No field observations indicating contamination Ambient Air VOC: 0.000 ppm _v Well Mouth VOC: 0.030 ppm _v
MW-2-25	To assess existing PCE plume at 25 Mechanic Street for PFAS	MW-2-25	Not sampled	Sampled by others in April 2021
CA-IA-1/CA-VP-1	To assess impacts associated with historical use of the former office/storage building	CA-IA-1	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
		CA-VP-1 VP-DUP-1	VOCs (EPA Method TO-15)	Highest PID reading: 6.994 ppm _v
CA-IA-2/CA-VP-2		CA-IA-2	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
CA-VP-2		VOCs (EPA Method TO-15)		
CA-IA-3/CA-VP-3		CA-IA-3	VOCs (EPA Method TO-15 SIM)	
CA-VP-3		VOCs (EPA Method TO-15)		
CA-IA-4/CA-VP-4		CA-IA-4	VOCs (EPA Method TO-15 SIM)	
CA-VP-4		Not sampled	Highest PID reading: >100 ppm _v Not sampled due to wet subsurface conditions	
CA-IA-5/CA-VP-5	To assess impacts associated with historical use of the former mill building	CA-IA-5	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
CA-VP-5		VOCs (EPA Method TO-15)	Highest PID reading: 2.232 ppm _v	
CA-IA-6/CA-VP-6		CA-IA-6 IA-DUP-1	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
		CA-VP-6	VOCs (EPA Method TO-15)	
CA-IA-7/CA-VP-7		CA-IA-7	VOCs (EPA Method TO-15 SIM)	Highest PID reading: 7.554 ppm _v Not sampled due to wet subsurface conditions
		CA-VP-7	Not sampled	
CA-IA-8/CA-VP-8		CA-IA-8	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
CA-IA-9/CA-VP-9		CA-VP-8	VOCs (EPA Method TO-15)	
		CA-IA-9	VOCs (EPA Method TO-15 SIM)	Highest PID reading: 1.237 ppm _v Not sampled due to wet subsurface conditions
CA-IA-10/CA-VP-10		CA-VP-9	Not sampled	
		CA-IA-10	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
CA-IA-11/CA-VP-11		CA-VP-10	Not sampled	Field screenings/observations did not indicate evidence of a release Not sampled due to wet subsurface conditions
		CA-IA-11	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
CA-IA-12/CA-VP-12		CA-VP-11	VOCs (EPA Method TO-15)	
		CA-IA-12	VOCs (EPA Method TO-15 SIM)	
CA-VP-12		VOCs (EPA Method TO-15)		
CA-IA-MILL-FF-13	To assess indoor air conditions associated with historical use of the former Mill Building	CA-IA-MILL-FF-13 IA-DUP-2	VOCs (EPA Method TO-15 SIM)	Field screenings/observations did not indicate evidence of a release
CA-IA-MILL-FF-14		CA-IA-MILL-FF-14		
CA-IA-MILL-FF-15		CA-IA-MILL-FF-15		
CA-IA-MILL-FF-16		CA-IA-MILL-FF-16		
CA-IA-MILL-FF-17		CA-IA-MILL-FF-17		
CA-IA-MILL-SF-18		CA-IA-MILL-SF-18		
CA-IA-MILL-SF-19		CA-IA-MILL-SF-19		
CA-SACM-1 (A-C) through CA-SACM-41 (A-C)		To assess for the presence of asbestos-containing building materials in the 1 Foundry Street Site buildings		
CA-PCB-1 through CA-PCB-32	To assess for the presence of PCB-containing building materials in the 1 Foundry Street Site buildings	CA-PCB-1 through CA-PCB-32 PCB-DUP-1 and CA-PCB-DUP-2	PCBs (EPA Method 8082A with soxhlet extraction method 3540C)	-

Notes:
1 - All samples were chilled to 4°C (+/- 2°C) and submitted to the laboratory on ice. Additional details regarding analytical method, sample preservation, sample volume and hold times can be found in Table 7-3 of Credere's Generic QAPP For Brownfields Work in Maine, New Hampshire, Massachusetts, and Vermont RFA #19043, revision 1, June 2020
"greatest contamination" was defined as the interval of highest PID response (minimum reading of 10 ppm to qualify as evidence of contamination), visual staining/sheens, or strong odors.
^CA-SS-7 through CA-SS-9 were to be collected only if in-situ lead in soil screening exceeded the New Hampshire Soil Remediation Standard
NHDES SRS - New Hampshire Department of Environmental Services Soil Remediation Standards
VOCs - Volatile organic compounds
BGS -Below ground surface
TPH - Total petroleum hydrocarbons
SVOCs - Semi-volatile organic compounds
PFAS - Per- and Polyfluorinated Alkyl Substances
EPA - Environmental Protection Agency
XRF - X-ray fluorescence
SB - Soil boring
MW - Monitoring well

RCRA - Resource Conservation and Recovery Act
SACM - Suspect asbestos-containing material
ACM - Asbestos-containing material
LP - Lead paint
PID - Photoionization detector
PCBs - Polychlorinated biphenyls
QA/QC - Quality Assurance/Quality Control
SIM - Selective Ion Monitoring

SS - Surface soil
NA - Not applicable
mg/kg - milligrams per kilogram
CA- Credere Associates
PP- Metals - Priority Pollutant Metals
LCP - Lead-containing paint
ppm - parts per million

Table 2
Groundwater Elevations Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Monitoring Well ID	Gauging Date	Approximate Screened Interval (feet bgs)	Ground Surface Elevation (feet)	Top of Riser Elevation ¹ (feet)	Depth to Bottom (feet below TOR)	Depth to Water (feet below TOR)	Water Level Elevation (feet)
CA-MW-1	6/3/2021	3-13	526.21	526.21	12.46	9.04	517.17
	11/8/2021				NM	9.68	516.53
	4/21/2022				12.39	9.55	516.66
	11/7/2022				Sinkhole		
	4/3/2023				Abandoned		
	4/3/2023						
CA-MW-3	6/3/2021	2.5-12.5	528.37	528.37	11.60	6.32	522.05
	11/8/2021				NM	5.78	522.59
	11/8/2022				12.86	6.12	522.25
	4/3/2023				12.86	5.71	522.66
CA-MW-4	11/8/2021	2-11.45	527.78	527.78	11.45	5.90	521.88
	4/21/2022				11.50	5.99	521.79
	11/8/2022				11.50	6.45	521.33
	4/3/2023				11.21	5.95	521.83
	10/31/2023				11.23	6.03	521.75
	4/2/2024				11.23	5.84	521.94
CA-BR-4	11/8/2021	16-30.15	527.89	527.89	30.15	5.80	522.09
WQ-1	11/30/2018	4.5-11.5	NM	525.13	11.10	8.40	516.73
	11/8/2022				11.26	9.01	516.12
WQ-2	6/3/2021	11.5-20.5	520.93	520.93	19.40	8.44	512.49
	11/8/2021				NM	8.26	512.67
	11/7/2022				19.33	8.65	512.28
WQ-3	6/3/2021	9.5-19.5	519.69	519.69	18.81	10.45	509.24
	11/8/2021				NM	9.83	509.86
	11/7/2022				18.62	11.68	508.01
MW-1	6/3/2021	9.5-24.5	517.67	517.67	22.10	13.02	504.65
	11/8/2021			NM	NG	-	
	11/7/2022			517.61	22.11	12.97	504.64
MW-4	12/4/2017	4.5-14.5	527.13	527.13	NM	NR	519.84
	9/9/2017				NM	NR	520.05
	11/6/2020				NM	NR	520.30
	4/27/2021				NM	NR	520.88
	6/3/2021				8.50	6.72	520.41
	11/8/2021				NM	6.53	520.60
	11/7/2022			527.00	8.72	6.80	520.20
	4/3/2023				8.72	3.99	523.01
	10/31/2023				8.54	4.01	522.99
	4/2/2024				8.56	3.33	523.67
MW-1-25	12/4/2017	10-20	560.81	560.81	NM	NR	546.46
	9/9/2017				NM	NR	547.53
	11/6/2020				NM	NR	547.61
	4/27/2021				NM	NR	548.80
	6/3/2021				18.90	12.83	547.98
	11/8/2021				NM	NG	-
	4/21/2022				18.93	11.95	548.86
	11/7/2022				19.20	13.51	547.30
	4/3/2023				18.68	11.93	548.88
	10/31/2023				18.93	12.68	548.13
	4/2/2024				18.91	10.94	549.87
	MW-2-25				12/4/2017	6-11	546.65
9/9/2017		NM	NR	540.32			
11/6/2020		NM	NR	540.65			
4/27/2021		NM	NR	541.26			
6/3/2021		10.10	6.00	540.65			
11/8/2021		NM	6.01	540.64			
4/21/2022		10.12	5.09	541.56			
11/7/2022		10.38	6.38	540.27			
4/3/2023		10.10	5.38	541.27			
10/31/2023		10.11	6.15	540.50			
4/2/2024		10.13	4.58	542.07			
MW-3-25		9/9/2017	2-6	543.84	543.84		
	11/6/2020	NM				NR	538.98
	4/27/2021	NM				NR	539.31
	6/3/2021	5.40				4.70	539.14
	11/8/2021	NM				4.33	539.51
	4/21/2022	5.40				4.34	539.50
	11/7/2022	5.77				4.24	539.60
	4/3/2023	5.41				4.05	539.79
	10/31/2023	5.41				4.36	539.48
	4/2/2024	5.41				3.61	540.23
MW-4-25	9/9/2017	7-17	544.38	544.38	NM	NR	535.32
	11/6/2020				NM	NR	536.58
	4/27/2021				NM	NR	537.19
	6/3/2021				16.55	8.20	536.18
	11/8/2021				NM	Obstruction	-

Table 2
Groundwater Elevations Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Monitoring Well ID	Gauging Date	Approximate Screened Interval (feet bgs)	Ground Surface Elevation (feet)	Top of Riser Elevation ¹ (feet)	Depth to Bottom (feet below TOR)	Depth to Water (feet below TOR)	Water Level Elevation (feet)
MW-5-25	9/9/2017	3-13.8	539.04	539.04	NM	NR	534.82
	11/6/2020				NM	NR	535.74
	4/27/2021				NM	NR	535.97
	6/3/2021				12.63	3.99	535.05
	11/8/2021				NM	3.39	535.65
	11/8/2022				12.86	3.73	535.31
MW-6-25	9/9/2017	2-6	531.52	531.52	NM	NR	529.93
	11/6/2020				NM	NR	529.95
	4/27/2021				NM	NR	530.97
	6/3/2021				4.50	2.05	529.47
	11/8/2021				NM	1.06	530.46
	4/21/2022				4.54	0.00*	531.52*
	11/7/2022				4.70	1.11	530.41
	4/3/2023				4.70	0.30	531.22
	10/31/2023				4.45	0.79	530.73
	4/2/2024				4.42	0.00	531.52

Notes:

bgs - below ground surface

TOR - top of riser

NG - Not Gauged

1 - Elevation survey

NR - not reported, only elevation provided in prior report

NM - not measured or reported in prior reports. Was not surveyed in June 2021 because it cannot be located.

The approximate screened interval for MW-1-25 through MW-6-25 was obtained from the January 16, 2020, Supplemental Site Investigation Report prepared by Waite Heindel Environmental Management.

The approximate screened interval for MW-1 and MW-4 was obtained from the October 18, 1988, Site Assessment Report prepared by Wagner, Heindel, and Noyes, Inc.

The approximate screened interval for WQ-1, WQ-2 and WQ-3 was obtained from the September 1, 1993, Groundwater Permit Application prepared by Wagner, Heindel, and Noyes, Inc.

*Water at surface and entering top of well during sampling, unclear if it was surface water or the water table as the water level did not lower during sampling.

Table 3
Asbestos-Containing Materials Sample and Results Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Name		Building	Location	Material	Amount Asbestos	Approximate Quantity (unit)
CA-SACM-1	A	Boiler House	Boiler Door	Rope Gasket	ND	NA
	B					
	C					
CA-SACM-2	A		Wall	Gray Mortar on Brick	ND	NA
	B					
	C					
CA-SACM-3	A		Wall	Caulk Wall Patch Material / White & Yellow	ND	NA
	B					
	C					
CA-SACM-4	A	Mill Building	Basement Around Café Door	Caulk / Brown	ND	NA
	B					
	C					
CA-SACM-5	A		Basement	Drywall with Light Green Paint	ND	NA
	B					
	C					
CA-SACM-6	A		Basement	Joint Compound	ND	NA
	B					
	C					
CA-SACM-7	A		Basement	TSI / Pipe Insulation / White	25% amosite	15 LF
	B					
	C					
CA-SACM-8	A		1st Floor Bathrooms & Office Area	2x4 Ceiling Tile / White	ND	NA
	B					
	C					
CA-SACM-9	A		1st Floor Bathroom	Underlayment Beneath Tile / Gray	ND	NA
	B					
	C					
CA-SACM-10	A		1st Floor Hallway near Bathrooms	Drywall with Light Green Paint	ND	NA
	B					
	C					
CA-SACM-11	A		1st Floor Hallway near Bathrooms	Joint Compound	ND	NA
	B					
	C					
CA-SACM-12	A		3rd Floor Elevator Motor Room	Drywall / White	ND	NA
	B					
	C					
CA-SACM-13	A		3rd Floor Elevator Motor Room	Plaster / White	ND	NA
	B					
	C					
CA-SACM-14	A		2nd Floor Main Room	Brown Pipe Wrap	5% amosite 30% chrysotile	1,000 LF + 50 elbows, 10 Ts, and 5 valves
	B					
	C					
CA-SACM-15	A		2nd Floor Office Space	2x2 Ceiling Tile / White	ND	NA
	B					
	C					
CA-SACM-16	A		2nd Floor Pack Room	Cove Base Adhesive / Yellow	ND	NA
	B					
	C					
CA-SACM-17	A		2nd Floor Pack Room	2x4 Ceiling Tile / White	ND	NA
	B					
	C					
CA-SACM-18	A		2nd Floor Pack Room	Plaster Over Brick / White	ND	NA
	B					
	C					
CA-SACM-19	A		Exterior Windows	Window Glazing / Gray	ND	NA
	B					
	C					
CA-SACM-20	A	Office/Storage Building	2nd Floor Office Spaces	Floor Leveling Compound / Black	ND	NA
	B					
	C					
CA-SACM-21	A		2nd Floor Office Spaces	Plaster Base Coat / Gray	ND	NA
	B					
	C					
CA-SACM-22	A		2nd Floor Office Spaces	Plaster Finish Coat / White	ND	NA
	B					
	C					
CA-SACM-23	A		2nd Floor Office Spaces	9x9 Floor Tile / Brick Red	4% chrysotile	2,900 SF*
	B					
	C					
CA-SACM-24	A		2nd Floor Office Spaces	Mastic / Black	ND	NA
	B					
	C					

Table 3
Asbestos-Containing Materials Sample and Results Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Name	Building	Location	Material	Amount Asbestos	Approximate Quantity (unit)
CA-SACM-25 A B C	Office/Storage Building	2nd Floor Office Spaces	9x9 Floor Tile / Brown	3% chrysotile	2,900 SF*
CA-SACM-26 A B C		2nd Floor Office Spaces	Floor Tile Adhesive / Yellow	ND	NA
CA-SACM-27 A B C		2nd Floor Office Spaces	9x9 Floor Tile / Black	6% chrysotile	2,900 SF*
CA-SACM-28 A B C		2nd Floor Office Spaces	Drywall / White	ND	NA
CA-SACM-29 A B C		2nd Floor Office Spaces	Joint Compound / White	ND	NA
CA-SACM-30 (floor tile) A B C		2nd Floor Office Spaces	12x12 Floor Tile/Off-white	4% chrysotile	1,900 SF
CA-SACM-30 (mastic) A B C		2nd Floor Office Spaces	12x12 Floor Tile Black Mastic	10% chrysotile	1,900 SF
CA-SACM-31 A B C		2nd Floor Office Spaces	Cove Base Adhesive / Black	ND	NA
CA-SACM-32 A B C		2nd Floor Office Spaces	24x24 Vinyl Floor Tile / Gray	ND	NA
CA-SACM-33 A B C		2nd Floor Office Spaces	Mastic / Black	ND	NA
CA-SACM-34 A B C		2nd Floor Office Spaces	2x4 Ceiling Tile / White	ND	NA
CA-SACM-35 A B C		1st Floor Garage Area Interior	Window Caulk / White	ND	NA
CA-SACM-36 A B C	Retail Building	1st Floor	12x12 Floor Tile / Black	ND	NA
CA-SACM-37 A B C		1st Floor	Sheet Floor / White & Gray	ND	NA
CA-SACM-38 A B C		1st Floor	2x4 Ceiling Tile / White	ND	NA
CA-SACM-39 A B C		1st Floor	Drywall / White	ND	NA
CA-SACM-40 A B C		1st Floor	Joint Compound	ND	NA
CA-SACM-41 A B C	Mill Building	Loading Dock Roof	Asphalt Shingles / Black with Green	<1% chrysotile	100 SF

Notes:
NA - Not applicable
ND - None detected
LF - linear feet
SF - square feet
*The 2,900 SF is made up of a checkered pattern of the brick red, brown, and black 12x12 floor tile
Bold indicates detection of asbestos
Indicates ACM
ACM - asbestos-containing material (≥1% asbestos)
SACM - Suspect asbestos-containing material

Table 3
Asbestos-Containing Materials Sample and Results Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Name		Building	Location	Material	Amount Asbestos	Approximate Quantity (unit)
CA-SACM-1	A	Boiler House	Boiler Door	Rope Gasket	ND	NA
	B					
	C					
CA-SACM-2	A		Wall	Gray Mortar on Brick	ND	NA
	B					
	C					
CA-SACM-3	A		Wall	Caulk Wall Patch Material / White & Yellow	ND	NA
	B					
	C					
CA-SACM-4	A	Mill Building	Basement Around Café Door	Caulk / Brown	ND	NA
	B					
	C					
CA-SACM-5	A		Basement	Drywall with Light Green Paint	ND	NA
	B					
	C					
CA-SACM-6	A		Basement	Joint Compound	ND	NA
	B					
	C					
CA-SACM-7	A		Basement	TSI / Pipe Insulation / White	25% amosite	15 LF
	B					
	C					
CA-SACM-8	A		1st Floor Bathrooms & Office Area	2x4 Ceiling Tile / White	ND	NA
	B					
	C					
CA-SACM-9	A		1st Floor Bathroom	Underlayment Beneath Tile / Gray	ND	NA
	B					
	C					
CA-SACM-10	A		1st Floor Hallway near Bathrooms	Drywall with Light Green Paint	ND	NA
	B					
	C					
CA-SACM-11	A		1st Floor Hallway near Bathrooms	Joint Compound	ND	NA
	B					
	C					
CA-SACM-12	A		3rd Floor Elevator Motor Room	Drywall / White	ND	NA
	B					
	C					
CA-SACM-13	A		3rd Floor Elevator Motor Room	Plaster / White	ND	NA
	B					
	C					
CA-SACM-14	A		2nd Floor Main Room	Brown Pipe Wrap	5% amosite 30% chrysotile	1,000 LF + 50 elbows, 10 Ts, and 5 valves
	B					
	C					
CA-SACM-15	A		2nd Floor Office Space	2x2 Ceiling Tile / White	ND	NA
	B					
	C					
CA-SACM-16	A		2nd Floor Pack Room	Cove Base Adhesive / Yellow	ND	NA
	B					
	C					
CA-SACM-17	A		2nd Floor Pack Room	2x4 Ceiling Tile / White	ND	NA
	B					
	C					
CA-SACM-18	A		2nd Floor Pack Room	Plaster Over Brick / White	ND	NA
	B					
	C					
CA-SACM-19	A		Exterior Windows	Window Glazing / Gray	ND	NA
	B					
	C					
CA-SACM-20	A	Office/Storage Building	2nd Floor Office Spaces	Floor Leveling Compound / Black	ND	NA
	B					
	C					
CA-SACM-21	A		2nd Floor Office Spaces	Plaster Base Coat / Gray	ND	NA
	B					
	C					
CA-SACM-22	A		2nd Floor Office Spaces	Plaster Finish Coat / White	ND	NA
	B					
	C					
CA-SACM-23	A		2nd Floor Office Spaces	9x9 Floor Tile / Brick Red	4% chrysotile	2,900 SF*
	B					
	C					
CA-SACM-24	A		2nd Floor Office Spaces	Mastic / Black	ND	NA
	B					
	C					
CA-SACM-25	A		2nd Floor Office Spaces	9x9 Floor Tile / Brown	3% chrysotile	2,900 SF*
	B					
	C					
CA-SACM-26	A		2nd Floor Office Spaces	Floor Tile Adhesive / Yellow	ND	NA
	B					
	C					

Table 3
Asbestos-Containing Materials Sample and Results Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Name	Building	Location	Material	Amount Asbestos	Approximate Quantity (unit)
CA-SACM-27	Office/Storage Building	2nd Floor Office Spaces	9x9 Floor Tile / Black	6% chrysotile	2,900 SF*
CA-SACM-28		2nd Floor Office Spaces	Drywall / White	ND	NA
CA-SACM-29		2nd Floor Office Spaces	Joint Compound / White	ND	NA
CA-SACM-30 (floor tile)		2nd Floor Office Spaces	12x12 Floor Tile/Off-white	4% chrysotile	1,900 SF
CA-SACM-30 (mastic)		2nd Floor Office Spaces	12x12 Floor Tile Black Mastic	10% chrysotile	1,900 SF
CA-SACM-31		2nd Floor Office Spaces	Cove Base Adhesive / Black	ND	NA
CA-SACM-32		2nd Floor Office Spaces	24x24 Vinyl Floor Tile / Gray	ND	NA
CA-SACM-33		2nd Floor Office Spaces	Mastic / Black	ND	NA
CA-SACM-34		2nd Floor Office Spaces	2x4 Ceiling Tile / White	ND	NA
CA-SACM-35		1st Floor Garage Area Interior	Window Caulk / White	ND	NA
CA-SACM-36		1st Floor	12x12 Floor Tile / Black	ND	NA
CA-SACM-37		1st Floor	Sheet Floor / White & Gray	ND	NA
CA-SACM-38		1st Floor	2x4 Ceiling Tile / White	ND	NA
CA-SACM-39		1st Floor	Drywall / White	ND	NA
CA-SACM-40		1st Floor	Joint Compound	ND	NA
CA-SACM-41	Mill Building	Loading Dock Roof	Asphalt Shingles / Black with Green	<1% chrysotile	100 SF

Notes:
NA - Not applicable
ND - None detected
LF - linear feet
SF - square feet
*The 2,900 SF is made up of a checkered pattern of the brick red, brown, and black 12x12 floor tile
Bold indicates detection of asbestos
Indicates ACM
ACM - asbestos-containing material (≥1% asbestos)
SACM - Suspect asbestos-containing material

Table 4
PCB-Containing Building Materials Sample and Results Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Name	Date Sampled	Building	Location	Material	Regulatory Criteria* (mg/kg)	Total PCBs^ (mg/kg)
CA-PCB-1	5/19/2021	Boiler House	Boilers	Blue paint	50 / 1	ND<0.16
CA-PCB-2	5/19/2021		Stairs & Railings	Yellow paint		ND<0.16
CA-PCB-3	5/19/2021		Propane Lines	Yellow paint		ND<0.15
CA-PCB-4	5/19/2021		Walls	White paint		ND<0.16
CA-PCB-5	5/19/2021	Mill Building	Basement Café Area Door	Brown caulk		ND<14
CA-PCB-6	5/19/2021		Wood Floors	Brown paint		1.9
PCB-DUP-1	5/19/2021					1.6
CA-PCB-7	5/19/2021		First Floor Bricks	Teal paint		1.81
CA-PCB-8	5/19/2021		Second Floor Ceiling Beams	White paint		5.7
CA-PCB-9	5/19/2021		Exterior Windows	Grey window glazing		ND<0.16
CA-PCB-10	5/19/2021	Office/Storage Building	Office Area Ceiling	White paint		78
CA-PCB-11	5/19/2021		Second Floor Bathroom Walls	White paint		91
CA-PCB-12	5/19/2021		Garage Area Floor	Grey paint		2.3
CA-PCB-13	5/19/2021		Garage Area Walls	Yellow paint		3.31
CA-PCB-14	5/19/2021		Garage Area Windows	White window glazing		ND<0.16
CA-PCB-15	5/20/2021	Mill Building	Electrical Room Floors	Red/brown paint		2.76
CA-PCB-16	9/26/2022	Office/Storage Building	First Floor Main Office	Blue/green paint		56
CA-PCB-17	9/26/2022		First Floor Office Bathroom Walls	Yellow/green/blue paint (layers)		66
CA-PCB-18	9/26/2022		First Floor Office Bathroom Wall (above door)	Off-White paint		39.3
CA-PCB-19	9/26/2022		First Floor Office Bathroom Ceiling	Light Gray paint		39
CA-PCB-20	9/26/2022		Basement Stairway Ceiling	White paint		44.4
CA-PCB-21	9/26/2022		Second Floor Room Walls	White paint		10.1
CA-PCB-22	9/26/2022		Second Floor Landing Storage Closet	Beige paint		2.0
CA-PCB-23	9/26/2022		Garage Bay Ceiling	White paint		0.62
CA-PCB-24	9/26/2022		Basement Stairwell Walls	Brown paint		69
CA-PCB-25	9/26/2022		Second Floor Office Closet Walls	White/Light Teal paint		117
CA-PCB-26	9/26/2022		Second Floor Northwest Corner Office Walls & Windowsills	White paint		71
CA-PCB-DUP-2	9/26/2022					87
CA-PCB-27	9/26/2022		Garage/Storage Area Floor	Brown paint		5.8
CA-PCB-28	9/26/2022		Second Floor Bathroom Walls	Pink paint		79
CA-PCB-29	9/26/2022		Second Floor Office Closet Walls	Brown paint		71
CA-PCB-30	9/26/2022		Second Floor Brick Walls (throughout)	Yellow paint		4.1
CA-PCB-31	9/26/2022		First Floor Office Window Frames	White paint		111
CA-PCB-32	9/26/2022		Exterior Window Frames	Green paint		2.2
KLEEN S-1	10/17/2023		Second floor brick wall	Green paint		18
KLEEN S-2	10/17/2023		Second Floor Bathroom Walls	Green paint		8.6

Notes:

ND<0.16 - None detected, laboratory reporting limit for aroclor with highest value shown

PCB - polychlorinated biphenyl

mg/kg - milligrams per kilogram

* - 40 CFR 761.3 definition of a PCB bulk product waste (≥50 mg/kg). NHDES Solid Waste Rules apply for waste <50 mg/kg

40 CFR §761.61(a)(4)(i)(A) allows materials with PCB concentrations ≤1 mg/kg to be disposed without further conditions.

^ - Individual aroclor concentrations are provided in the laboratory analytical report.

Grey shading with white text Result exceeds 1 mg/kg but is below 50 mg/kg

Black shading with white text Results exceed regulatory criteria

Double border Reporting limit exceeds regulatory criteria, considered to exceed 1 mg/kg based on DUA.

Table 5A
Lead Paint Survey Results Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Reading #	Building	Location	Side	Building Component	Substrate	Paint Color	Lead Concentration (mg/cm ²)
1	Standardization						
2-7	Calibration (see Table 5B)						
8	Boiler House	First Floor	A	Wall	CMU	White	0.00
9			B	Wall	Concrete	White	0.00
10			-	Equipment	Metal	Blue	0.00
11			B	Stairs	Metal	Yellow	0.00
12			-	Floor	Concrete	White	0.00
13		Catwalk	B	Door	Metal	Green^	0.00
14	Mill Building	Basement	A	Wall	CMU	Grey	0.05
15			A	Wall	CMU	White	0.00
16			C	Fire Door	Metal	Grey	4.18
17			C	Fire Door	Metal	White	3.31
18			A	Wall	Brick	Grey	>1
19			A	Wall	Brick	White	0.02
20			B	Wall	Sheetrock	White	0.00
21			D	Door	Metal	Black^	0.00
22			C	Wall	Brick	Mint Green	0.00
23			A	Wall	Sheetrock	Light Blue	0.00
24			D	Door Frame	Concrete	White	0.00
25		South Stairway from Basement to First Floor	B	Wall	Wood	Light Blue	0.00
26		First Floor	B	Wall	Brick	Light Blue	>1
27			B	Wall	Brick	Mint Green	0.00
28			-	Floor	Wood	Brown	0.00
29			-	Floor	Wood	Yellow	0.00
30			D	Fire Door	Metal	Mint Green	>5
31			C	Wall Corner Protector	Wood	Brown	0.00
32			A	Wall	Brick	Red	>5
33			-	Pipe	Metal	Red	0.31
34		First Floor	A	Post	Concrete	Brown	0.05
35			A	Post	Wood	Red	0.00
36			A	Post	Wood	White	0.06
37			A	Wall	Brick	Mint Green	0.00
38			D	Post	Metal	Yellow	0.00
39			C	Door	Metal	White	0.00
40			-	Ceiling	Wood	White	0.08
41	Mill Building	Exterior	B	Door Frame	Wood	Green	>5
42			B	Window Frame	Wood	Green	0.59
43			A	Roof Support Beam	Wood	White	0.00
44	Boiler House	Exterior	A	Window Sill	Concrete	Green	0.05
45			A	Window Frame	Wood	Green	0.00

Table 5A
Lead Paint Survey Results Summary
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Reading #	Building	Location	Side	Building Component	Substrate	Paint Color	Lead Concentration (mg/cm ²)
46	Office/Storage Building	Exterior	A	Bay Door Infill	Wood	Green	0.00
47			A	Window Frame	Metal	Green	1.23
48		Second Floor	C	Wall	Sheetrock	Off-white	>1
49			D	Window Frame	Metal	White	0.02
50			D	Wall	Sheetrock	Light Green under Off-white	>1
51			C	Wall	Sheetrock	Brown	>1
52			-	Ceiling	Metal	White	>1
53			-	Light Frame	Metal	White	>1
54			A	Chair Rale	Wood	Off-white	0.52
55			B	Wall ⁺	Sheetrock	Off-white	0.00
56			C	Fire Door	Metal	Grey	1.42
57			A	Wall	Sheetrock	White	0.00
58			A	Wall	Brick	White	0.00
59		First Floor	-	Floor	Concrete	Grey	0.04
60			D	Door	Wood	Teal	0.00
61			A	Wall	Brick	Light Yellow	0.31
62			D	Wall	Sheetrock	Light Yellow	0.00
63			D	Wall	Brick	Light Pink	>1
64			D	Wall	Brick	White	>1
65			D	Wall	Brick	Yellow/Orange	>1
66			D	Dire Door	Metal	Black	1.31
67			C	Wall	Concrete	Tan	>1
68-73	Random Retest (See Table 5C)						
74	Office/Storage Building	First Floor	C	Wall	Concrete	Light Blue	>1
75-78	Random Retest (See Table 5C)						
79-89	Calibration (see Table 5B)						

Notes:

mg/cm² - milligrams per centimeter squared

Bold - indicates lead containing paint under the OSHA Lead in Construction Standards (29 CFR 1926.62)

^ - indicates building component was likely factory painted based on visual appearance

+ - Interior walls were not part of original construction

No significantly unique testing combinations were observed on the second floor of the Mill Building.

Table 5B
XRF Calibration Check Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Timeline of Screening Activities	NIST SRM Paint Film	Standard Lead Concentration (mg/cm ²)	Calibration Check Lead Concentration (mg/cm ²)	Calibration Check Average (mg/cm ²)
Before	2573	1.04	1.0	1.1
			1.1	
			1.0	
	2570	0.001	0.0	0.0
			0.0	
			0.0	
After	2573	1.04	1.1	1.2
			1.2	
			1.2	
			1.1	
			1.3	
			1.2	
			1.1	
			1.0	
	2570	0.001	0.0	0.0
			0.0	
			0.0	

NIST - National Institute of Standards and Technology

SRM - Standard Reference Material

Highlighted values are outside the upper limit of the Check Calibration Limit range of 1.0 to 1.1 mg/cm², as specified on the manufacturers Performance Characteristic Sheet (PCS), indicating detected lead concentrations may be biased high. As the calibration check of the non-lead NIST SRM Paint Film were all read at 0.00 mg/cm², negative results can be relied upon. This exceedance is not considered to impact the conclusions of this lead survey.

XRF - X-ray fluorescence

mg/cm² - milligrams per centimeter squared

Table 5C
Random XRF Retesting Calculation Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Reading #	Retest of Reading #	Lead Concentration (mg/cm ²)			
		Initial	Retest	Average	Average Squared
68	67	1.0	1.0	1.0	1.0
69	61	0.3	0.4	0.4	0.1
70	60	0.0	0.0	0.0	0.0
71	58	0.0	0.0	0.0	0.0
72	56	1.4	1.1	1.3	1.6
73	55	0.0	0.0	0.0	0.0
75	47	1.2	1.6	1.4	2.0
76	41	5.0	5.0	5.0	25.0
77	28	0.0	0.0	0.0	0.0
78	29	0.0	0.0	0.0	0.0
		Average =	Average =	Tolerance Limit =	
		0.90	0.91	0.82	
		0.015			

Retest Pass= **TRUE**

Table 6
Summary of Recent Soil Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Location: Sample ID: Sample Depth (feet): Date Collected:			CA-SB-1				CA-SB-2		CA-SB-3		CA-SB-4		CA-SB-5				CA-SB-6		CA-SB-7		CA-SB-8		CA-SB-9		CA-SB-10	
			CA-SB-1 (12-12.5/12.25)		SB-DUP-1		CA-SB-2 (12-13/12.5)		CA-SB-3 (0.5-2.5)		CA-SB-4 (0.5-1.5)		CA-SB-5 (0.5-2.5)		SB-DUP-2		CA-SB-6 (1-3)		CA-SB-7 (0.5-2.5)		CA-SB-8 (1-2.5)		CA-SB-9 (1-2.5)		CA-SB-10 (2-4)	
			12-12.5/12.25				12-13/12.5		0.5-2.5		0.5-1.5		0.5-2.5				1-3		0.5-2.5		1.5-2.5		1-2.5		2-4	
			5/20/2021				5/20/2021		5/19/2021		5/19/2021		5/19/2021				5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021	
Parameter*	New Hampshire SRSs ¹ (mg/kg)	NHDES RCMP S-1 ² (mg/kg)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260D (mg/kg)																										
cis-1,2-dichloroethylene	2	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
trichloroethylene	0.8	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
tetrachloroethylene	2	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
ethylbenzene	120	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
Total xylenes	500	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
isopropylbenzene	330	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
n-propylbenzene	85	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
1,3,5-trimethylbenzene	96	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
1,2,4-trimethylbenzene	130	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
1,2,3-trimethylbenzene	NE	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
sec-butylbenzene	130	NA	0.082	U	0.082	U	0.21		NS		NS		NS		NS		NS		NS		NS		NS		NS	
n-butylbenzene	110	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
4-isopropyltoluene	NE	NA	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
naphthalene	5	28	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
Toluene	100	na	0.082	U	0.082	U	0.086	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
PAHs by EPA Method 8270E (mg/kg)																										
phenanthrene	NE	NE	0.54	U	0.53	U	0.56		NS		NS		NS		NS		NS		NS		NS		NS		NS	
fluoranthene	960	NA	0.93		0.74		0.48	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
pyrene	720	NA	4.5	J	3.7		0.48	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(a)anthracene	1	NA	1.0		0.83		0.48	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
chrysene	120	NA	2.4	J	1.9		0.39	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(a)pyrene	0.7	NA	0.83		0.76		0.39	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(g,h,i)perylene	NE	NE	0.68		0.58		0.48	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
Metals by EPA Method 6020A (mg/kg)																										
antimony	9	NA	NS		NS		NS		0.50	U	0.51	U	1.4		1.1		0.47	U	0.45	U	0.51		0.57		0.47	U
arsenic	11	NA	NS		NS		NS		7.4		6.1		8.5		8.6		5.4		8.0		4.9		3.6		2.3	U
barium	1,000	NA	NS		NS		NS		24		37		45		59		25		47		47		56		120	
beryllium	12	NA	NS		NS		NS		0.50	U	0.51	U	0.52	U	0.46	U	0.47	U	0.45	U	0.51	U	0.52	U	0.75	
chromium (total)	130/1,000 ^A	NA	NS		NS		NS		13		12		25		27		16		18		14		11		21	
copper	NE	NE	NS		NS		NS		19		15		31		37		15		22		29		14		8.2	
lead	400	NA	NS		NS		NS		17		20		88		92		21		17		43		6.3		13	
mercury	7	NA	NS		NS		NS		0.15	U	0.15	U	0.2		0.15	U	0.14	U	0.14	U	0.15	U	0.15	U	0.15	U
nickel	400	NA	NS		NS		NS		14		11		15		16		12		19		11		7.2		13	
zinc	1,000	NA	NS		NS		NS		26		45		73		86		24		32		32		13		39	
PCBs by EPA Method 8082A (mg/kg)																										
Total PCBs	1	NA	NS		NS		NS		0.15	U	0.77	U	0.16	U	0.15	U	0.15	U	0.16	U	0.16	U	0.16	U	0.16	U
TPH by Method 8015 (mg/kg)																										
TPH C10-C36	10,000	NA	7,900		7,000		1,600		200	U	1,300		2,900	J	520	J	230		430		2,500		260		200	U

Table 6
Summary of Recent Soil Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Location: Sample ID: Sample Depth (feet): Date Collected:			CA-SS-1		CA-SS-2		CA-SS-3		CA-SS-4		VP-4		MW-1-25		MW-2-25		SB-7-25						SB-8-25				SB-9-25R			
			CA-SS-1 (0-1)		CA-SS-2 (0-1)		CA-SS-3 (0-1)		CA-SS-4 (0-1)		VP-4		MW-1-25		MW-2-25		SB-7-25 (1)		SB-7-25 (12)		SB-7-25 (17)		SB-8-25 (0.5)		SB-8-25 (7)		SB-9-25R (0.5)		SB-9-25R (3)	
			0-1		0-1		0-1		0-1		15-Oct		15-20		10-May		1		12		17		0.5		7		0.5		3	
			5/19/2021		5/19/2021		5/19/2021		5/19/2021		10/12/2017		10/12/2017		10/12/2017		8/2/2021						8/2/2021				8/2/2021			
Parameter*	New Hampshire SRSs ¹ (mg/kg)	NHDES RCMP S-1 ² (mg/kg)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260D (mg/kg)																														
cis-1,2-dichloroethylene	2	NA	0.12	U	0.10	U	0.12	U	0.085	U	2.0	U	0.124	U	2.2	U	0.080	U	0.086	U	0.076	U	0.087	U	0.94	U	0.086	U	0.084	U
trichloroethylene	0.8	NA	0.12	U	0.10	U	0.12	U	0.085	U	2.0	U	0.124	U	2.2	U	0.080	U	0.086	U	0.076	U	0.087	U	3.3		0.086	U	0.084	U
tetrachloroethylene	2	NA	0.12	U	0.10	U	0.12	U	0.085	U	2.0	U	0.124	U	2.2	U	0.089		0.086	U	0.076	U	0.19		69		0.33		0.12	
ethylbenzene	120	NA	0.12	U	0.10	U	0.12	U	0.085	U	32.1		0.544		31.0		0.080	U	0.086	U	0.076	U	0.087	U	7.8		0.086	U	0.084	U
Total xylenes	500	NA	0.12	U	0.10	U	0.12	U	0.085	U	107		0.36		146		0.080	U	0.086	U	0.076	U	0.087	U	7.7		0.086	U	0.084	U
isopropylbenzene	330	NA	0.12	U	0.10	U	0.12	U	0.085	U	9.2		0.124	U	5.1		0.080	U	0.086	U	0.076	U	0.087	U	3.8		0.086	U	0.084	U
n-propylbenzene	85	NA	0.12	U	0.10	U	0.12	U	0.085	U	29		0.316		16.2		0.080	U	0.086	U	0.076	U	0.087	U	12		0.086	U	0.084	U
1,3,5-trimethylbenzene	96	NA	0.12	U	0.10	U	0.12	U	0.085	U	55.3		0.124	U	32		0.080	U	0.086	U	0.076	U	0.087	U	21		0.086	U	0.084	U
1,2,4-trimethylbenzene	130	NA	0.12	U	0.10	U	0.12	U	0.085	U	164		0.34		101		0.080	U	0.086	U	0.076	U	0.087	U	40		0.086	U	0.084	U
1,2,3-trimethylbenzene	NE	NA	NS		NS		NS		NS		33.3		0.124	U	21.3		0.080	U	0.086	U	0.076	U	0.087	U	0.94	U	0.086	U	0.084	U
sec-butylbenzene	130	NA	0.12	U	0.10	U	0.12	U	0.085	U	3.93		0.124	U	2.2	U	0.080	U	0.086	U	0.076	U	0.087	U	1.7		0.086	U	0.084	U
n-butylbenzene	110	NA	0.12	U	0.10	U	0.12	U	0.085	U	10.4		0.124	U	6.16		0.080	U	0.086	U	0.076	U	0.087	U	0.94	U	0.086	U	0.084	U
4-isopropyltoluene	NE	NA	0.12	U	0.10	U	0.12	U	0.085	U	3.08		0.124	U	2.2	U	0.080	U	0.086	U	0.076	U	0.087	U	1.3		0.086	U	0.084	U
naphthalene	5	28	0.12	U	0.10	U	0.12	U	0.085	U	14.6		0.248	U	10.2		0.080	U	0.086	U	0.076	U	0.087	U	3.5		0.086	U	0.084	U
Toluene	100	na	0.12	U	0.10	U	0.12	U	0.085	U	3.6		0.124	U	44.5		0.080	U	0.086	U	0.076	U	0.087	U	0.94	U	0.086	U	0.084	U
PAHs by EPA Method 8270E (mg/kg)																														
phenanthrene	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
fluoranthene	960	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
pyrene	720	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(a)anthracene	1	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
chrysene	120	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(a)pyrene	0.7	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(g,h,i)perylene	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
Metals by EPA Method 6020A (mg/kg)																														
antimony	9	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
arsenic	11	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
barium	1,000	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
beryllium	12	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
chromium (total)	130/1,000^A	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
copper	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
lead	400	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
mercury	7	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
nickel	400	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
zinc	1,000	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
PCBs by EPA Method 8082A (mg/kg)																														
Total PCBs	1	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
TPH by Method 8015 (mg/kg)																														
TPH C10-C36	10,000	NA	260		210	U	230	U	210	U	210	U	210	U	210	U	NS		NS		NS		NS		NS		NS		NS	

Table 6
Summary of Recent Soil Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Sample Location:			SB-10-25						SB-11-25		SB-12-25				SB-13-25				SB-14-25				SB-15-25						SB-16-25					
Sample ID:			SB-10-25 (2.5)		SB-10-25 (5.5)		SB-10-25 (11.5)		SB-11-25 (0.5)		SB-12-25 (4)		SB-12-25 (13)		SB-13-25 (3.5)		SB-13-25 (5.5)		SB-14-25 (0.5)		SB-14-25 (7.5)		SB-15-25 (2.5)		SB-15-25 (8)		SB-15-25 (10.25)		SB-16-25 (0.5)		SB-16-25 (4.5)		SB-16-25 (6.5)	
Sample Depth (feet):			2.5		5.5		11.5		0.5		4		13		3.5		5.5		0.5		7.5		2.5		8		10.25		0.5		4.5		6.5	
Date Collected:			8/2/2021						8/2/2021		8/2/2021				8/2/2021				8/2/2021				8/2/2021						8/2/2021					
Parameter*	New Hampshire SRSs ¹ (mg/kg)	NHDES RCMP S-1 ² (mg/kg)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260D (mg/kg)																																		
cis-1,2-dichloroethylene	2	NA	0.082	U	0.076	U	0.081	U	0.081	U	0.078	U	0.076	U	0.25		0.44	UJ	0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.13		0.30	
trichloroethylene	0.8	NA	0.082	U	0.076	U	0.081	UJ	0.081	U	0.078	U	0.076	U	2.0		2.2		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
tetrachloroethylene	2	NA	0.082	U	0.076	U	0.12	J	0.37		0.078	U	0.076	U	1.3		0.69		0.13		0.11	U	0.079	U	0.11		0.16		0.17		0.18		0.50	
ethylbenzene	120	NA	0.082	U	0.076	U	0.46		0.081	U	0.078	U	0.076	U	0.11	U	4.4		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
Total xylenes	500	NA	0.082	U	0.076	U	0.12		0.081	U	0.078	U	0.076	U	0.11	U	2.2		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
isopropylbenzene	330	NA	0.082	U	0.076	U	0.30		0.081	U	0.078	U	0.076	U	0.11	U	2.2		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
n-propylbenzene	85	NA	0.082	U	0.076	U	1.0		0.081	U	0.078	U	0.076	U	0.11	U	7.5		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
1,3,5-trimethylbenzene	96	NA	0.082	U	0.076	U	1.2		0.081	U	0.078	U	0.076	U	0.11	U	9.2		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
1,2,4-trimethylbenzene	130	NA	0.082	U	0.076	U	2.8		0.098		0.078	U	0.076	U	0.11	U	36		0.080	U	0.11	U	0.079	U	0.090		0.078	U	0.079	U	0.11	U	0.092	U
1,2,3-trimethylbenzene	NE	NA	0.082	U	0.076	U	0.081	U	0.081	U	0.078	U	0.076	U	0.11	U	0.44	U	0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
sec-butylbenzene	130	NA	0.082	U	0.076	U	0.23		0.081	U	0.078	U	0.076	U	0.11	U	1.7		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
n-butylbenzene	110	NA	0.082	U	0.076	U	0.081	U	0.081	U	0.078	U	0.076	U	0.11	U	0.44	U	0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
4-isopropyltoluene	NE	NA	0.082	U	0.076	U	0.17		0.081	U	0.078	U	0.076	U	0.11	U	1.4		0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
naphthalene	5	28	0.082	U	0.076	U	0.081	U	0.081	U	0.078	U	0.076	U	0.11	U	2.2		0.080	U	0.11	U	0.079	U	0.084	U	0.19		0.079	U	0.11	U	0.092	U
Toluene	100	na	0.082	U	0.076	U	1.081	U	1.081	U	1.078	U	1.076	U	1.11	U	0.44	U	0.080	U	0.11	U	0.079	U	0.084	U	0.078	U	0.079	U	0.11	U	0.092	U
PAHs by EPA Method 8270E (mg/kg)																																		
phenanthrene	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
fluoranthene	960	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
pyrene	720	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(a)anthracene	1	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
chrysene	120	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(a)pyrene	0.7	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
benzo(g,h,i)perylene	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
Metals by EPA Method 6020A (mg/kg)																																		
antimony	9	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
arsenic	11	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
barium	1,000	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
beryllium	12	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
chromium (total)	130/1,000^	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
copper	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
lead	400	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
mercury	7	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
nickel	400	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
zinc	1,000	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
PCBs by EPA Method 8082A (mg/kg)																																		
Total PCBs	1	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
TPH by Method 8015 (mg/kg)																																		
TPH C10-C36	10,000	NA	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	

Table 6
Summary of Soil Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

NOTES:

*Only analytes with detections are shown, all other sample analyses results were below the laboratory reporting limits.

Summarized results do not include soil samples from prior to 2017. Historical soil data for Site assessment in the 1990s is available in prior reports.

1 - New Hampshire Code of Administrative Rules Chapter 600 Soil Remediation Standards, Table 600-2, effective January 1, 2021

2 - New Hampshire Department of Environmental Services (NHDES) Risk Characterization and Management Policy (RCMP), Appendix E - Method 1 Soil Standards Selection, S-1, revised September 2018 (applicable only for naphthalene)

^ the total chromium concentrations were compared to the hexavalent chromium SRS and RCMP of 130 mg/kg to assess need for speciation of hexavalent chromium
mg/kg - milligrams per kilogram

NE - not established

NS - not sampled

U - Results were below the laboratory reporting limits, laboratory reporting limit shown

VOC - volatile organic compounds

PCB - polychlorinated biphenyl

TPH - total petroleum hydrocarbons

Bold Exceeds laboratory reporting limit

Black shading with white text Exceeds or equal to both New Hampshire SRS and NHDES RCMP

Table 7
Summary of Cumulative Soil Vapor and Indoor Air Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Building: Sample Location: Sample ID: PID Result (ppb): Sample Type: Date Collected:					Office/Storage Building																		Mill Building																																															
					CA-VP/IA-1						CA-VP/IA-2						CA-VP/IA-3						CA-IA-4		VP-7		CA-VP/IA-5																																											
					CA-VP-1		VP-DUP-1		CA-IA-1		CA-VP-2		CA-IA-2		CA-VP-3		CA-IA-3		CA-IA-4		VP-7		CA-VP-5		CA-VP-5		CA-IA-5																																											
					6,994						0						582						0						640						8						0						NR						2,282						0.687						26					
					SS Soil Vapor						Indoor Air						SS Soil Vapor						Indoor Air						SS Soil Vapor						Indoor Air						Indoor Air						SS Soil Vapor						Soil Vapor						Soil Vapor						Indoor Air					
5/20/2021						5/19/2021						5/20/2021						5/19/2021						5/20/2021						5/19/2021						5/19/2021						12/4/2017						5/20/2021						4/3/2023						5/19/2021										
Parameter*		Soil Gas Screening Levels ¹ (µg/m ³)		Indoor Air Screening Levels ¹ (µg/m ³)		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier																																							
		Residential	Commercial	Residential	Commercial																																																																	
VOCs TO-15/TO-15 SIM (µg/m ³)																																																																						
propylene	NE	NE	NE	NE	20.7			13.6		0.861	U	1.94	U	0.861	U	3.98		0.861	U	0.861	U	NS				2.03	U	1.79	U	0.861	U																																							
dichlorodifluoromethane	NE	NE	NE	NE	7.17	U		5.54		6.58		7.52		5.04		14.5		6.97		16.8		4.9	U			2.66		2.39		2.66																																								
chloromethane	NE	NE	NE	NE	2.99	U		2.29	U	0.907		0.933	U	0.896		0.954	U	0.921		0.789		2.1	U		0.975	U	0.855	U	0.882																																									
vinyl chloride	20	140	0.3	2.8	3.71	U		2.84	U	0.061		1.16	U	0.051		1.18	U	0.051		0.054		0.18	U		1.21	U	0.106	U	0.805																																									
ethyl alcohol	NE	NE	NE	NE	5.110			4.330		10.7		262		10.5		373		9.42	U	9.42	U	NS			290		19.6	U	12.7																																									
acetone	NE	NE	NE	NE	17.2	U		13.2	U	5.58		177		5.51		38.2		5.58		2.38	U	24	U		81.0		4.92	U	8.65																																									
trichlorofluoromethane	NE	NE	NE	NE	8.15	U		7.47		0.860		2.70		0.888		2.60	U	0.865		0.826		2.2	U		3.39		1.47		1.58																																									
iso-propyl alcohol	NE	NE	NE	NE	17.6			15.9		2.04		28.8		1.76		14.0		1.92		1.64		60			18.9		2.56	U	17.6																																									
1,1-dichloroethene	2,000	8,800	40	175	5.75	U		4.40	U	0.079	U	1.79	U	0.079	U	1.83	U	0.079	U	0.079	U				1.87	U	0.164	U	0.079	U																																								
methylene chloride	6,000	30,000	120	526	12.6	U		9.69	U	1.74	U	3.93	U	1.74	U	4.03	U	1.74	U	1.74	U	3.5	U		4.10	U	3.61	U	1.74	U																																								
1,2-dichloroethene (total)	NE	NE	NE	NE	5.75	U		4.40	U	0.975		1.79	U	0.801		1.83	U	0.761		0.971		NS			7.14		3.68		13.6																																									
1,1,2-trichloro-1,2,2-trifluoroethane	NE	NE	NE	NE	11.1	U		8.51	U	0.399		3.46	U	0.399		3.54	U	0.383		0.383	U	NS			3.62	U	0.797	U	0.406																																									
trans-1,2-dichloroethene	600	2,600	12	53	5.75	U		4.40	U	0.099		1.79	U	0.091		1.83	U	0.087		0.083		1.6	U		1.87	U	0.164	U	0.238																																									
2-butanone	NE	NE	NE	NE	10.7	U		8.23	U	1.47	U	3.33	U	1.47	U	3.48		1.47	U	1.47	U	7.3			5.22		3.07	U	1.47	U																																								
cis-1,2-dichloroethene	NE	NE	NE	NE	5.75	U		4.40	U	0.876		1.79	U	0.710		1.83	U	0.674		0.888		0.28	U		7.14		3.68		13.4																																									
chloroform	10	30	0.1	0.5	7.08	U		5.42	U	0.195		110		0.156		2.26	U	0.137		0.127		2.7			2.30	U	0.202	U	0.278																																									
tetrahydrofuran	NE	NE	NE	NE	10.7	U		8.23	U	1.47	U	3.33	U	1.47	U	3.42	U	2.03		1.99		29	U		4.78		3.07	U	1.88																																									
n-hexane	NE	NE	NE	NE	532			462		0.705	U	8.60		0.853		12.9		0.705	U	0.705	U	1.7			10.9		3.46		1.89																																									
benzene	170	170	3.3	3.3	4.63	U		3.83		0.319	U	7.64		0.319	U	9.07		0.319	U	0.319	U	1.3	U		7.99		1.74		0.367																																									
carbon tetrachloride	20	100	0.4	2.0	9.12	U		6.98	U	0.409		2.84	U	0.491		2.91	U	0.447		0.447		0.44	U		2.97	U	0.586		0.503																																									
cyclohexane	NE	NE	NE	NE	4.99	U		3.82	U	0.688	U	6.44		0.688	U	9.19		0.688	U	0.688	U	1.4	U		9.47		1.43	U	0.688	U																																								
trichloroethene	20	90	0.4	1.8	7.79	U		5.97	U	0.301		2.43	U	0.253		2.48	U	0.226		0.355		0.38	U		3.51		1.92		3.97																																									
2,2,4-trimethylpentane	NE	NE	NE	NE	6.77	U		5.18	U	0.934	U	4.64		0.934	U	7.52		0.934	U	0.934	U	1.9	U		9.29		1.93	U	0.934	U																																								
heptane	NE	NE	NE	NE	200			172		0.820	U	9.06		0.82	U	14.1		0.820	U	0.820	U	1.6	U		15.5		1.70	U	0.820	U																																								
toluene	50,000	200,000	1,000	4,380	25.1			18.2		1.12		113		1.56		155		0.539		0.724		1.5	U		191		6.78		2.40																																									
tetrachloroethene	400	1,800	8.0	35	18.0			14.2		4.32		11.2		3.30		41.5		4.52		7.39		13			6.98		25.8		26.3																																									
ethylbenzene	100	250	2.0	4.9	6.30	U		4.82	U	0.117		6.91		0.152		10.3		0.087	U	0.096		1.7	U		18.6		0.639		0.495																																									
p/m-xylene	NE	NE	NE	NE	12.6	U		9.69	U	0.326		27.4		0.413		38.0		0.222		0.243		4.3	U		69.1		2.13		1.73																																									
xylene (total)	1,000	4,400	20	29	6.30	U		4.82	U	0.447		34.8		0.578		49.1		0.222		0.334		6.1	U		92.1		2.72	U	2.25																																									
styrene	10,000	40,000	200	876	6.17	U		4.73	U	0.085	U	1.92	U	0.098		1.97	U	0.085	U	0.085	U	1.7	U		2.01	U	0.176	U	0.085	U																																								
o-xylene	NE	NE	NE	NE	6.30	U		4.82	U	0.122		7.43		0.165		11.0		0.087	U	0.091		1.7	U		22.9		0.595		0.513																																									
4-ethyltoluene	NE	NE	NE	NE	7.13	U		5.46	U	0.098	U	2.22	U	0.098	U	2.27	U	0.098	U	0.098	U	2.0	U		2.32	U	0.204	U	0.32																																									
1,3,5-trimethylbenzene	NE	NE	NE	NE	7.13	U		5.46	U	0.098	U	2.22	U	0.098	U	2.27	U	0.098	U	0.098	U	2.0	U		2.32	U	0.204	U	0.275																																									
1,2,4-trimethylbenzene	170	310	3.4	6.1	7.13	U		5.46	U	0.098	U	2.22	U	0.098	U	2.27	U	0.098	U	0.098	U	2.0	U		8.11		0.497		0.605																																									
1,2-dichlorobenzene	2,000	8,800	40	175	8.72	U		6.67	U	0.120	U	2.72	U	0.120	U	2.78	U	0.120	U	0.120	U	2.4	U		2.84	U	0.249	U	0.391																																									
naphthalene	60	60	1.1	1.1	7.60	U		5.82	U	0.262	U	2.37	U	0.262	U	2.42	U	0.262	U	0.262	U	5.2	U		2.47	U	0.545	U	0.262	U																																								

Table 7
Summary of Cumulative Soil Vapor and Indoor Air Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Building: Sample Location: Sample ID: PID Result (ppb): Sample Type: Date Collected:					Mill Building																											
					CA-VP-/IA-6								CA-IA-7		CA-VP/IA-8				CA-IA-9		CA-IA-10		CA-VP/IA-11				CA-IA-11					
					CA-VP-6		CA-VP-6		CA-VP-DUP-10		CA-IA-6		IA-DUP-1		CA-IA-7		CA-VP-8^		CA-IA-8		CA-IA-9		CA-IA-10		CA-VP-11		CA-VP-11		CA-IA-11			
					414		7.024		7.024		59				53		205		45		52		51		324		0.204		43			
					SS Soil Vapor		Soil Vapor		Soil Vapor		Indoor Air				Indoor Air		SS Soil Vapor		Indoor Air		Indoor Air		Indoor Air		SS Soil Vapor		SS Soil Vapor		Indoor Air			
					5/20/2021		4/3/2023		4/3/2023		5/19/2021				5/19/2021		5/20/2021		5/19/2021		5/19/2021		5/19/2021		5/20/2021		4/3/2023		5/19/2021			
Parameter*		Soil Gas Screening Levels ¹ (µg/m ³)		Indoor Air Screening Levels ¹ (µg/m ³)		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier			
		Residential	Commercial	Residential	Commercial																											
VOCs TO-15/TO-15 SIM (µg/m ³)																																
propylene		NE	NE	NE	NE	7.25	U	66.3	U	62.3	U	0.861	U	0.861	U	0.861	U	34.2	U	0.861	U	0.861	U	0.861	U	210		1.82	U	0.861	U	
dichlorodifluoromethane		NE	NE	NE	NE	8.31	U	76.1	U	71.7	U	2.10		2.05		1.93		39.4	U	1.95		1.93		1.92		48.8	U	2.40		1.94		
chloromethane		NE	NE	NE	NE	3.47	U	31.8	U	29.9	U	0.836		0.867		1.05		16.4	U	1.00		1.76		0.966		20.4	U	0.878	U	1.01		
vinyl chloride		20	140	0.3	2.8	4.29	U	3.94	U	3.71	U	0.792		0.795		0.606		2.03	U	0.672		0.493		0.688		2.52	U	0.206		0.544		
ethyl alcohol		NE	NE	NE	NE	303		725	U	682	U	9.42	U	9.42	U	9.50		375	U	9.42	U	9.42	U	9.42	U	464	U	20.0	U	11.7		
acetone		NE	NE	NE	NE	145		183	U	172	U	11.1		9.36		10.9		94.5	U	9.55		9.88		9.17		163		14.7		8.27		
trichlorofluoromethane		NE	NE	NE	NE	9.44	U	21.6	U	20.3	U	1.38		1.37		2.58		44.7	U	2.35		2.41		2.21		55.4	U	7.25		2.46		
iso-propyl alcohol		NE	NE	NE	NE	20.4		94.6	U	89.0	U	17.0		16.8		5.14		48.9	U	4.45		3.29		4.15		60.5	U	2.61	U	3.76		
1,1-dichloroethene		2,000	8,800	40	175	6.66	U	6.11	U	5.75	U	0.079	U	0.079	U	0.079	U	31.6	U	0.079	U	0.079	U	0.079	U	39.1	U	0.169	U	0.079	U	
methylene chloride		6,000	30,000	120	526	14.6	U	134	U	126	U	1.74	U	1.74	U	1.74	U	69.1	U	1.74	U	1.74	U	1.74	U	85.5	U	3.68	U	1.74	U	
1,2-dichloroethene (total)		NE	NE	NE	NE	344		288		271		14.0		13.8		9.63		31.6	U	10.2		7.57		10.8		90.0		31.0		8.72		
1,1,2-trichloro-1,2,2-trifluoroethane		NE	NE	NE	NE	12.9	U	29.5	U	27.7	U	0.406		0.391		0.399		61.0	U	0.391		0.414		0.391		75.6	U	2.45		0.383		
trans-1,2-dichloroethene		600	2,600	12	53	44.4		39.3		36.8		0.246		0.246		0.174		3.16	U	0.182		0.147		0.194		3.91	U	0.741		0.147		
2-butanone		NE	NE	NE	NE	12.4	U	114	U	107	U	1.47	U	1.47	U	1.47	U	58.7	U	1.47	U	1.47	U	1.47	U	72.6	U	3.13	U	1.47	U	
cis-1,2-dichloroethene		NE	NE	NE	NE	299		249		234		13.8		13.6		9.48		3.16	U	10.1		7.45		10.6		94.8		30.2		8.56		
chloroform		10	30	0.1	0.5	8.20	U	7.52	U	7.08	U	0.166		0.166		0.195		38.9	U	0.259		0.874		0.234		48.2	U	0.218		0.293		
tetrahydrofuran		NE	NE	NE	NE	12.4	U	114	U	107	U	1.47	U	1.47	U	1.47	U	58.7	U	1.47	U	1.47	U	1.47	U	72.6	U	3.13	U	5.37		
n-hexane		NE	NE	NE	NE	6.66		54.3	U	51.1	U	0.814		0.853		2.65		28.1	U	2.10		2.14		1.71		34.7	U	6.45		6.10		
benzene		170	170	3.3	3.3	6.01		24.6	U	23.2	U	0.319	U	0.319	U	0.319	U	25.4	U	0.319	U	0.319	U	0.319	U	31.5	U	2.44		0.495		
carbon tetrachloride		20	100	0.4	2.0	10.6	U	9.69	U	9.12	U	0.497		0.453		0.497		50.1	U	0.547		0.491		0.484		62.0	U	0.414		0.440		
cyclohexane		NE	NE	NE	NE	7.33		53	U	49.9	U	0.688	U	0.688	U	0.688	U	27.4	U	0.688	U	0.688	U	0.688	U	33.9	U	1.70		0.688	U	
trichloroethene		20	90	0.4	1.8	492		876		828		4.80		4.77		2.69		4.28	U	2.84		2.14		2.95		47.7		14.6		2.42		
2,2,4-trimethylpentane		NE	NE	NE	NE	8.17		71.9	U	67.7	U	0.934	U	0.934	U	0.934	U	37.2	U	0.934	U	0.934	U	0.934	U	46.1	U	1.99	U	0.934	U	
heptane		NE	NE	NE	NE	10.2		63.1	U	59.4	U	0.820	U	0.820	U	0.820	U	32.6	U	0.820	U	0.820	U	0.820	U	40.4	U	2.25		0.820	U	
toluene		50,000	200,000	1,000	4,380	152		29.0	U	27.3	U	1.50		1.48		1.24		70.1		1.99		1.32		1.37		66.3		9.31		3.49		
tetrachloroethene		400	1,800	8.0	35	3,840		25,200		23,300		42.7		41.2		14.7		55.3		16.1		12.4		16.7		141		180		13.8		
ethylbenzene		100	250	2.0	4.9	15.7		6.69	U	6.30	U	0.243		0.235		0.130		34.6	U	0.187		0.130		0.143		42.8	U	0.895		0.265		
p/m-xylene		NE	NE	NE	NE	59.1		13.4	U	12.6	U	0.786		0.769		0.434		69.1	U	0.652		0.452		0.482		85.6	U	3.12		0.899		
xylene (total)		1,000	4,400	20	29	77.3		6.69	U	6.30	U	1.03		1.01		0.595		34.6	U	0.882		0.612		0.660		42.8	U	4.06		1.21		
styrene		10,000	40,000	200	876	7.15	U	6.56	U	6.17	U	0.085	U	0.085	U	0.085	U	33.9	U	0.085	U	0.085	U	0.085	U	42.0	U	0.190		0.102		
o-xylene		NE	NE	NE	NE	17.8		6.69	U	6.30	U	0.243		0.239		0.161		34.6	U	0.230		0.161		0.178		42.8	U	0.938		0.313		
4-ethyltoluene		NE	NE	NE	NE	8.26	U	7.57	U	7.13	U	0.098	U	0.098	U	0.098	U	39.1	U	0.098	U	0.098	U	0.098	U	48.5	U	0.209	U	0.098	U	
1,3,5-trimethylbenzene		NE	NE	NE	NE	8.26	U	7.57	U	7.13	U	0.098	U	0.098	U	0.098	U	39.1	U	0.098	U	0.098	U	0.098	U	48.5	U	0.230		0.098	U	
1,2,4-trimethylbenzene		170	310	3.4	6.1	8.26	U	7.57	U	7.13	U	0.241		0.241		0.128		39.1	U	0.192		0.147		0.172		48.5	U	0.919		0.187		
1,2-dichlorobenzene		2,000	8,800	40	175	10.1	U	9.26	U	8.72	U	0.439		0.409		0.144		47.9	U	0.307		0.234		0.253		59.3	U	0.256	U	0.222		
naphthalene		60	60	1.1	1.1	8.81	U	20.2	U	19.0	U	0.262	U	0.262	U	0.262	U	41.7	U	0.341		0.273		0.262	U	51.7	U	0.556	U	0.262	U	

Table 7
Summary of Cumulative Soil Vapor and Indoor Air Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Building: Sample Location: Sample ID: PID Result (ppb): Sample Type: Date Collected:					Mill Building																							
					CA-VP/IA-12						CA-IA-MILL-FF-13				CA-IA-MILL-FF-14		CA-IA-MILL-FF-15		CA-IA-MILL-FF-16		CA-IA-MILL-FF-17		CA-IA-MILL-SF-18		CA-IA-MILL-SF-19			
					CA-VP-12		CA-VP-12		CA-IA-12		CA-IA-MILL-FF-13		IA-DUP-2		CA-IA-MILL-FF-14		CA-IA-MILL-FF-15		CA-IA-MILL-FF-16		CA-IA-MILL-FF-17		CA-IA-MILL-SF-18		CA-IA-MILL-SF-19			
					187		0.770		71		0		0		0		0		0		0		0		0			
					SS Soil Vapor		SS Soil Vapor		Indoor Air		Indoor Air		Indoor Air		Indoor Air		Indoor Air		Indoor Air		Indoor Air		Indoor Air		Indoor Air			
5/20/2021		4/3/2023		5/19/2021		9/27/2022		9/27/2022		9/27/2022		9/27/2022		9/27/2022		9/27/2022		9/27/2022		9/27/2022		9/27/2022						
Parameter*	Soil Gas Screening Levels ¹ (µg/m³)		Indoor Air Screening Levels ¹ (µg/m³)		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier				
	Residential	Commercial	Residential	Commercial																								
VOCs TO-15/TO-15 SIM (µg/m³)																												
propylene	NE	NE	NE	NE	2.10	U	1.76	U	0.861	U	0.861	U	0.861	U	0.861	U	0.861	U	0.861	U	0.861	U	0.861	U				
dichlorodifluoromethane	NE	NE	NE	NE	2.52		2.39		2.14		2.60		2.51		2.76		2.52		2.60		2.54		2.54					
chloromethane	NE	NE	NE	NE	1.01	U	0.840	U	0.849		1.03		1.01		1.12		1.01		1.08		1.07		1.07					
vinyl chloride	20	140	0.3	2.8	1.25	U	0.368		0.844		0.118		0.110		0.202		0.238		0.105		0.107		0.072					
ethyl alcohol	NE	NE	NE	NE	198		19.2	U	9.42	U	9.42	U	9.42	U	9.42	U	9.42	U	9.42	U	9.42	U	9.42	U				
acetone	NE	NE	NE	NE	45.1		4.82	U	10.0		4.13		6.18		6.49		4.44		4.80		4.63		5.37					
trichlorofluoromethane	NE	NE	NE	NE	7.14		1.59		1.40		1.55		1.52		1.77		1.68		2.78		1.62		4.07					
iso-propyl alcohol	NE	NE	NE	NE	19.1		2.51	U	19.9		1.23	U	1.23	U	1.23	U	1.23	U	1.23	U	1.23	U	1.23	U				
1,1-dichloroethene	2,000	8,800	40	175	1.94	U	0.258		0.079	U	0.079	U	0.079	U	0.079	U	0.079	U	0.079	U	0.079	U	0.079	U				
methylene chloride	6,000	30,000	120	526	4.24	U	3.54	U	1.74	U	1.74	U	1.74	U	1.74	U	1.74	U	1.74	U	1.74	U	1.74	U				
1,2-dichloroethene (total)	NE	NE	NE	NE	12.1		18.2		13.8		1.13		1.08		1.77		1.90		0.892		0.932		0.559					
1,1,2-trichloro-1,2,2-trifluoroethane	NE	NE	NE	NE	3.75	U	0.874		0.383	U	0.429		0.452		0.460		0.460		0.452		0.445		0.437					
trans-1,2-dichloroethene	600	2,600	12	53	1.94	U	1.41		0.234		0.115		0.115		0.127		0.091		0.079	U	0.079	U	0.079	U				
2-butanone	NE	NE	NE	NE	3.60	U	3.01	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U				
cis-1,2-dichloroethene	NE	NE	NE	NE	12.1		16.9		13.5		1.01		0.967		1.64		1.81		0.892		0.932		0.559					
chloroform	10	30	0.1	0.5	2.39	U	0.199	U	0.166		0.107		0.103		0.107		0.098		0.103		0.098		0.098	U				
tetrahydrofuran	NE	NE	NE	NE	3.60	U	3.01	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U				
n-hexane	NE	NE	NE	NE	6.63		1.91		0.782		0.705	U	0.705	U	0.705	U	0.705	U	0.705	U	0.705	U	0.705	U				
benzene	170	170	3.3	3.3	5.85		1.12		0.319	U	0.319	U	0.319	U	0.319	U	0.319	U	0.319	U	0.319	U	0.319	U				
carbon tetrachloride	20	100	0.4	2.0	3.08	U	0.448		0.459		0.491		0.484		0.516		0.503		0.503		0.465		0.491					
cyclohexane	NE	NE	NE	NE	5.47		1.40	U	0.688	U	0.688	U	0.688	U	0.688	U	0.688	U	0.688	U	0.688	U	0.688	U				
trichloroethene	20	90	0.4	1.8	5.05		8.01		4.04		0.554		0.532		0.623		0.586		0.344		0.376		0.167					
2,2,4-trimethylpentane	NE	NE	NE	NE	4.56		1.90	U	0.934	U	0.934	U	0.934	U	0.934	U	0.934	U	0.934	U	0.934	U	0.934	U				
heptane	NE	NE	NE	NE	8.61		1.67	U	0.820	U	0.820	U	0.820	U	0.820	U	0.820	U	0.820	U	0.820	U	0.820	U				
toluene	50,000	200,000	1,000	4,380	104		6.26		1.38		0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U				
tetrachloroethene	400	1,800	8.0	35	13.3		26.1		26.8		7.87		7.59		7.05		5.24		3.93		4.40		1.81					
ethylbenzene	100	250	2.0	4.9	6.86		0.769		0.243		0.087	U	0.087	U	0.087	U	0.087	U	0.087	U	0.087	U	0.087	U				
p/m-xylene	NE	NE	NE	NE	26.2		2.62		0.799		0.174	U	0.174	U	0.178		0.174	U	0.174	U	0.174	U	0.174	U				
xylene (total)	1,000	4,400	20	29	33.7		3.45		1.07		0.087	U	0.087	U	0.178		0.087	U	0.087	U	0.087	U	0.087	U				
styrene	10,000	40,000	200	876	2.08	U	0.173	U	0.085	U	0.085	U	0.085	U	0.085	U	0.089		0.085	U	0.085	U	0.085	U				
o-xylene	NE	NE	NE	NE	7.38		0.830		0.269		0.087	U	0.087	U	0.087	U	0.087	U	0.087	U	0.087	U	0.087	U				
4-ethyltoluene	NE	NE	NE	NE	2.40	U	0.200	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U				
1,3,5-trimethylbenzene	NE	NE	NE	NE	2.40	U	0.200	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U				
1,2,4-trimethylbenzene	170	310	3.4	6.1	2.40	U	0.782		0.226		0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U	0.098	U				
1,2-dichlorobenzene	2,000	8,800	40	175	2.94	U	0.245	U	0.403		0.150		0.132		0.120	U	0.120	U	0.120	U	0.120	U	0.120	U				
naphthalene	60	60	1.1	1.1	2.56	U	0.535	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.336					

Table 7
Summary of Cumulative Soil Vapor and Indoor Air Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Building: Sample Location: Sample ID: PID Result (ppb): Sample Type: Date Collected:					Retail Building**								Retail Building																			
					IAS-1				IAS-2				VP-1				VP-2				VP-3				VP-4		VP-5		VP-6			
					IAS-1		IAS-1		IAS-2		IAS-2		VP-1		VP-1		VP-2		VP-2		VP-3		VP-3		VP-4 (15')		VP-5 (10')		VP-6 (2')			
					NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR			
					Indoor Air		Indoor Air		Indoor Air		Indoor Air		SS Soil Vapor		SS Soil Vapor		SS Soil Vapor		SS Soil Vapor		SS Soil Vapor		SS Soil Vapor		Soil Vapor		No sample		Soil Vapor			
Date Collected:					12/4/2017		3/6/2019		12/4/2017		3/6/2019		3/9/2017		12/4/2017		3/9/2017		12/4/2017		3/9/2017		12/4/2017		12/4/2017		12/4/2017		12/4/2017			
Parameter*		Soil Gas Screening Levels ¹ (µg/m ³)		Indoor Air Screening Levels ¹ (µg/m ³)		Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier			
		Residential	Commercial	Residential	Commercial																											
VOCs TO-15/TO-15 SIM (µg/m ³)																																
propylene	NE	NE	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
dichlorodifluoromethane	NE	NE	NE	NE	4.1		12	U	3.7		9.9	U	3,200		5,300		2,000		2,800		1,600		3,500		310	U	NS		6.1			
chloromethane	NE	NE	NE	NE	1.1		5	U	1.1		4.1	U	59	U	370	U	24	U	36	U	170	U	270	U	130	U	NS		1.0		U	
vinyl chloride	20	140	0.3	2.8	0.089	U	0	U	0.089	U	0.360	U	29	U	32	U	12	U	3	U	83	U	23	U	11	U	NS		0.089		U	
ethyl alcohol	NE	NE	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
acetone	NE	NE	NE	NE	12	U	59	U	12	U	48	U	680	U	4200	U	270	U	410	U	1900	U	3100	U	1500	U	NS		12		U	
trichlorofluoromethane	NE	NE	NE	NE	1.1		6	U	1.1		4.50	U	64	U	400	U	26	U	39	U	180	U	290	U	140	U	NS		1.1		U	
iso-propyl alcohol	NE	NE	NE	NE	12	U	61	U	12	U	49	U	700	U	4400	U	280	U	430	U	2000	U	3200	U	1600	U	NS		12		U	
1,1-dichloroethene	2,000	8,800	40	175																												
methylene chloride	6,000	30,000	120	526	1.7	U	430		1.7	U	300		99	U	620	U	40	U	60	U	280	U	460	U	220	U	NS		1.7		U	
1,2-dichloroethene (total)	NE	NE	NE	NE	1.6	U	8	U	1.6	U	6.3	U	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
1,1,2-trichloro-1,2,2-trifluoroethane	NE	NE	NE	NE	NS		NS		NS		NS		62	U	390	U	25	U	38	U	180	U	290	U	140	U	NS		1.1		U	
trans-1,2-dichloroethene	600	2,600	12	53	0.79	U	4	U	0.79	U	3.2	U	45	U	280	U	18	U	27	U	130	U	210	U	100	U	NS		0.79		U	
2-butanone	NE	NE	NE	NE	2.7		7.0	U	1.8		5.9	U	84	U	520	U	34	U	51	U	240	U	390	U	190	U	NS		1.5		U	
cis-1,2-dichloroethene	NE	NE	NE	NE	0.88		1.6		0.68		0.93		460		1,500		210		83		130	U	36	U	18	U	NS		0.14		U	
chloroform	10	30	0.1	0.5	0.98	U	5	U	0.98	U	3.9	U	72		350	U	320		60		160	U	260	U	120	U	NS		22			
tetrahydrofuran	NE	NE	NE	NE	15	U	7	U	15	U	59	U	840	U	5200	U	340	U	510	U	2400	U	3900	U	1900	U	NS		15		U	
n-hexane	NE	NE	NE	NE	0.70	U	4	U	0.70	U	2.80	U	40	U	250	U	16	U	24	U	110	U	180	U	3800		NS		0.70		U	
benzene	170	170	3.3	3.3	0.78		3	U	0.82		2.6	U	36	U	230	U	15	U	22	U	100	U	170	U	81	U	NS		0.64		U	
carbon tetrachloride	20	100	0.4	2.0	0.42		1	U	0.42		0.88	U	72	U	78	U	29	U	7.6	U	210	U	58	U	28	U	NS		0.22		U	
cyclohexane	NE	NE	NE	NE	0.69	U	3	U	0.69	U	2.8	U	39	U	240	U	16	U	24	U	110	U	180	U	1,900		NS		0.69		U	
trichloroethene	20	90	0.4	1.8	17		69		13		50		610		1,900		250		190		180	U	120		24	U	NS		0.19		U	
2,2,4-trimethylpentane	NE	NE	NE	NE	0.93	U	5	U	0.93	U	3.7	U	53	U	330	U	21	U	32	U	150	U	240	U	2,400		NS		0.93		U	
heptane	NE	NE	NE	NE	0.82	U	4	U	0.82	U	5.3		47	U	290	U	19	U	28	U	130	U	210	U	1200		NS		0.19		U	
toluene	50,000	200,000	1,000	4,380	1.2		4	U	1.2		3	U	43	U	270	U	17	U	26	U	120	U	200	U	110		NS		0.75		U	
tetrachloroethene	400	1,800	8.0	35	16		150		11		120		14,000		31,000		5,300		5,800		31,000		47,000		170	U	NS		15			
ethylbenzene	100	250	2.0	4.9	0.87	U	4	U	0.87	U	3.5	U	50	U	310	U	20	U	30	U	140	U	230	U	350		NS		0.87		U	
p/m-xylene	NE	NE	NE	NE	2.2	U	11	U	2.2	U	8.7	U	120	U	770	U	50	U	75	U	350	U	570	U	750		NS		2.2		U	
xylene (total)	1,000	4,400	20	29	3.0	U	15	U	3.0	U	12	U	170	U	1100	U	70	U	110	U	500	U	800	U	740		NS		3.0		U	
styrene	10,000	40,000	200	876	0.85	U	4	U	0.85	U	3.4	U	49	U	300	U	20	U	29	U	140	U	220	U	110	U	NS		0.85		U	
o-xylene	NE	NE	NE	NE	0.87	U	4	U	0.87	U	3.5	U	50	U	310	U	20	U	30	U	140	U	230	U	110	U	NS		0.87		U	
4-ethyltoluene	NE	NE	NE	NE	3.2		5.0	U	2.3		3.9	U	56	U	350	U	23	U	34	U	160	U	260	U	130		NS		0.98		U	
1,3,5-trimethylbenzene	NE	NE	NE	NE	3.4		5.0	U	2.5		3.9	U	56	U	350	U	23	U	34	U	160	U	580		180		NS		0.98		U	
1,2,4-trimethylbenzene	170	310	3.4	6.1	12		8.5		8.3		4.5		56	U	350	U	23	U	34	U	160	U	1300		400		NS		0.98		U	
1,2-dichlorobenzene	2,000	8,800	40	175	1.2	U	6	U	1.2	U	4.8	U	69	U	430	U	28	U	42	U	200	U	320	U	150	U	NS		1.2		U	
naphthalene	60	60	1.1	1.1	2.6	U	13	U	2.6	U	10	U	150	U	930	U	60	U	91	U	430	U	690	U	330	U	NS		2.6		U	

Table 7
Summary of Soil Vapor and Indoor Air Analytical Results
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

NOTES:

1 - New Hampshire Department of Environmental Services (NHDES) Vapor Intrusion Guidance, Table 1 -
Vapor Intrusion Screening Levels, revised February 2013

*Only analytes with detections are shown, all other sample analyses results were below the laboratory reporting limits.

**Retail building indoor air compared only to commercial standards due to no residential application of the building.

^ - Due to elevated reporting limits due to non-target compounds, the TO-15 SIM for just CVOC results was requested for better data quality.

$\mu\text{g}/\text{m}^3$ - micrograms per cubic meter

NE - not established

U - Results were below the laboratory reporting limits, laboratory reporting limit shown

UJ - Non-detect result is considered estimated due to laboratory nonconformance

VOC - volatile organic compounds

EPA - Environmental Protection Agency

SS Soil Vapor - sub-slab soil vapor

Soil Vapor - not from beneath a slab and collected at deeper depths

Bold Exceeds laboratory reporting limit

Grey shade with white text Results exceed residential screening level

Black shade with white text Results exceed residential and commercial screening levels

Table 8A
Summary of Cumulative GMP-Related Groundwater Monitoring Results - VOCs
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street, Lebanon, New Hampshire

NH AGWQS ^[1] (µg/L)			Petroleum Compounds (µg/L)							Non-BTEX Results (µg/L)								
			Benzene	Ethyl- benzene	Toluene	Xylenes	MTBE	Total BTEX	UIP	Tetrachloro- ethene	Trichloro- ethene	cis-1,2- Dichloroeth- ene	Vinyl Chloride	Chloroform	1,1- Dichloroet hane	1,1,1- Trichloroet hane	UIP	
			5	700	1000	10,000	13	--	--	5	5	70	2	70	81	200	--	
Locat	EPA Method	Date	ND	ND	ND	ND	ND	ND	2	--	--	--	--	--	--	--	--	
MW-1	8260	4/25/1994	ND	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	
	8260	7/19/1994	ND	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	
	8260	11/21/1994	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	--	
	8260	4/24/1995	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	--	
	8260	7/26/1995	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	--	
	8010	11/30/1995	ND	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	
	8010	6/3/1996	ND	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	
	8010	7/24/1996	ND	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	
	8010	11/27/1996	--	--	--	--	--	--	--	2.2	ND	ND	ND	ND	ND	N	0	
	8010	4/21/1997	--	--	--	--	--	--	--	0.8	ND	ND	ND	ND	ND	N	0	
	8010	7/28/1997	--	--	--	--	--	--	--	TBQ	ND	ND	ND	ND	ND	N	0	
	8010	11/17/1997	--	--	--	--	--	--	--	1.2	ND	ND	ND	ND	ND	N	0	
	8010	4/1/1998	--	--	--	--	--	--	--	2.1	ND	ND	ND	ND	ND	N	0	
	8010	8/3/1998	--	--	--	--	--	--	--	1.1	ND	ND	ND	ND	ND	N	0	
	8021b	4/26/1999	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0	
	8260b	4/25/2000	--	--	--	--	--	--	--	1.1	ND	ND	ND	ND	ND	N	0	
	8260b	4/23/2001	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0	
	8260b	4/26/2002	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0	
	8260b	4/1/2003	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0	
	8260b	4/8/2004	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/25/2005	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/13/2006	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/26/2007	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/9/2008	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/20/2010	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/14/2011	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/19/2012	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260b	4/25/2013	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	N	1	
	8260c	4/21/2014	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260c	11/10/2016	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260c	11/30/2018	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	N	0	
	8260c	11/6/2020	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	1.3	ND	N	0
	8260D	11/7/2022	0.50 U	0.50 U	0.75 U	1.0 U	1.0 U	ND		0.50 U	0.50 U	0.50	1.0 U	1.2	0.75 U	0.50 U		

Table 8A
Summary of Cumulative GMP-Related Groundwater Monitoring Results - VOCs
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street, Lebanon, New Hampshire

NH AGWQS ^[1] (µg/L)			Petroleum Compounds (µg/L)							Non-BTEX Results (µg/L)							
			Benzene	Ethyl- benzene	Toluene	Xylenes	MTBE	Total BTEX	UIP	Tetrachloro- ethene	Trichloro- ethene	cis-1,2- Dichloroeth- ene	Vinyl Chloride	Chloroform	1,1- Dichloroet hane	1,1,1- Trichloroet hane	UIP
			5	700	1000	10,000	13	--	--	5	5	70	2	70	81	200	--
Locat	EPA Method	Date															
MW-4	8260	4/25/1994	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8260	7/19/1994	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8260	11/21/1994	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8260	4/24/1995	ND	ND	ND	ND	ND	ND	0	TBQ	ND	ND	--	ND	ND	N	--
	8260	7/26/1995	ND	ND	ND	ND	ND	ND	0	TBQ	ND	ND	--	ND	ND	N	--
	8010	11/30/1995	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8010	6/3/1996	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	--
	8010	7/24/1996	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	--
	8010	11/27/1996	--	--	--	--	--	--	--	0.9	ND	ND	ND	ND	ND	N	0
	8010	4/21/1997	--	--	--	--	--	--	--	TBQ	ND	ND	ND	ND	ND	N	0
	8010	7/28/1997	--	--	--	--	--	--	--	TBQ	ND	ND	ND	ND	ND	N	0
	8010	11/17/1997	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	4/1/1998	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	8/3/1998	--	--	--	--	--	--	--	1.7	ND	ND	ND	ND	ND	N	0
	8021b	4/26/1999	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2000	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/23/2001	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/26/2002	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/1/2003	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/8/2004	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2005	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/13/2006	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/26/2007	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/9/2008	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/20/2010	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/14/2011	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/19/2012	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2013	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	N	1
	8260c	4/21/2014	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/10/2016	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/30/2018	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/6/2020	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260D	11/7/2022	0.50 U	0.50 U	0.75 U	1.0 U	1.0 U	ND		0.50 U	0.50 U	0.50	1.0 U	0.75 U	0.75 U	0.50 U	

Table 8A
Summary of Cumulative GMP-Related Groundwater Monitoring Results - VOCs
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street, Lebanon, New Hampshire

			Petroleum Compounds (µg/L)							Non-BTEX Results (µg/L)							
			Benzene	Ethyl- benzene	Toluene	Xylenes	MTBE	Total BTEX	UIP	Tetrachloro- ethene	Trichloro- ethene	cis-1,2- Dichloroeth- ene	Vinyl Chloride	Chloroform	1,1- Dichloroet hane	1,1,1- Trichloroet hane	UIP
NH AGWQS ^[1] (µg/L)			5	700	1000	10,000	13	--	--	5	5	70	2	70	81	200	--
Locat	EPA Method	Date															
WQ 1	8260	4/25/1994	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8260	7/19/1994	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8260	11/21/1994	--	--	--	--	--	--	DRY	--	--	--	--	--	--	--	--
	8260	4/24/1995	ND	ND	ND	ND	ND	ND	0	TBQ	ND	ND	--	ND	ND	N	--
	8260	7/26/1995	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	--	ND	ND	N	--
	8010	11/30/1995	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8010	6/3/1996	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	--
	8010	7/24/1996	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8010	11/27/1996	--	--	--	--	--	--	--	3.5	ND	ND	ND	ND	ND	N	0
	8010	4/21/1997	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	7/28/1997	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	11/17/1997	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	4/1/1998	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	8/3/1998	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8021b	4/26/1999	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2000	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/23/2001	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/26/2002	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/1/2003	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/8/2004	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2005	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/13/2006	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/26/2007	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/9/2008	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/20/2010	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/14/2011	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/19/2012	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2013	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	N	1
	8260c	4/21/2014	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/10/2016	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/30/2018	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/6/2020	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260D	11/8/2022	0.50 U	0.50 U	0.75 U	1.0 U	1.0 U	ND		0.50 U	0.50 U	0.50	1.0 U	0.75 U	0.75 U	0.50 U	

Table 8A
Summary of Cumulative GMP-Related Groundwater Monitoring Results - VOCs
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street, Lebanon, New Hampshire

NH AGWQS ^[1] (µg/L)			Petroleum Compounds (µg/L)							Non-BTEX Results (µg/L)							
			Benzene	Ethyl- benzene	Toluene	Xylenes	MTBE	Total BTEX	UIP	Tetrachloro- ethene	Trichloro- ethene	cis-1,2- Dichloroeth- ene	Vinyl Chloride	Chloroform	1,1- Dichloroet hane	1,1,1- Trichloroet hane	UIP
			5	700	1000	10,000	13	--	--	5	5	70	2	70	81	200	--
Locat	EPA Method	Date															
WQ 2	8260	4/25/1994	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	--
	8260	7/19/1994	ND	ND	ND	ND	ND	ND	3	--	--	--	--	--	--	--	--
	8260	11/21/1994	ND	ND	ND	ND	ND	ND	3	--	--	--	--	--	--	--	--
	8260	4/24/1995	ND	ND	ND	ND	ND	ND	0	34.9	6.4	9.7	--	ND	2.6	N	--
	8260	7/26/1995	ND	ND	ND	ND	ND	ND	1	21.1	5.5	ND	--	ND	TBQ	N	--
	8010	11/30/1995	ND	ND	ND	ND	ND	ND	3	--	--	--	--	--	--	--	--
	8010	6/3/1996	ND	ND	ND	ND	ND	ND	3	--	--	--	--	--	--	--	--
	8010	7/24/1996	ND	ND	ND	ND	ND	ND	2	--	--	--	--	--	--	--	--
	8010	11/27/1996	--	--	--	--	--	--	--	19.2	2.9	3.6	ND	ND	TBQ	N	0
	8010	4/21/1997	--	--	--	--	--	--	--	30.4	6.5	8.2	2.1	ND	2.0	TBQ	0
	8010	7/28/1997	--	--	--	--	--	--	--	31.2	5.7	4.1	2.2	ND	ND	TBQ	0
	8010	11/17/1997	--	--	--	--	--	--	--	27	8.0	8.2	4.7	ND	3.5	1.6	0
	8010	4/1/1998	--	--	--	--	--	--	--	34.1	8.8	13	TBQ	ND	5.8	1.5	0
	8010	8/3/1998	--	--	--	--	--	--	--	48.4	12.1	10.2	5.0	2.9	3.3	2.0	0
	8021b	4/26/1999	--	--	--	--	--	--	--	42.8	10.2	11.3	ND	1.7	2.7	1.7	0
	8260b	4/25/2000	--	--	--	--	--	--	--	8.3	2.9	5.1	5.8	ND	4.3	N	0
	8260b	4/23/2001	--	--	--	--	--	--	--	1.4	1.4	4.6	3.9	ND	5.4	N	0
	8260b	4/26/2002	--	--	--	--	--	--	--	7.7	3.3	3.8	3.9	ND	4.5	N	0
	8260b	4/1/2003	--	--	--	--	--	--	--	8.6	3.1	2.6	3.5	ND	3.7	N	0
	8260b	4/8/2004	ND	ND	ND	ND	ND	ND	0	10.6	2.5	1.7	2.2	ND	3.2	N	0
	8260b	4/25/2005	ND	ND	ND	ND	ND	ND	0	7.8	1.8	1.2	ND	ND	2.3	N	0
	8260b	4/13/2006	ND	ND	ND	ND	ND	ND	0	8.5	2.2	1.8	2.1	ND	3.0	N	0
	8260b	4/26/2007	ND	ND	ND	ND	ND	ND	0	4.2	1.3	1.9	3.3	ND	6.7	N	0
	8260b	4/9/2008	ND	ND	ND	ND	ND	ND	3	2.6	ND	1	2.2	ND	4.5	N	3
	8260b	4/20/2010	ND	ND	ND	ND	ND	ND	3	10.1	2.9	1.5	ND	ND	2.7	N	0
	8260b	4/14/2011	ND	ND	ND	ND	ND	ND	0	5.2	1.7	ND	ND	ND	3.8	N	0
	8260b	4/19/2012	ND	ND	ND	ND	ND	ND	0	13.6	3.4	1.3	ND	ND	ND	N	0
	8260b	4/25/2013	ND	ND	ND	ND	ND	ND	0	11.7	3.0	1.3	ND	ND	1.9	N	0
	8260c	4/21/2014	ND	ND	ND	ND	ND	ND	0	12.4	3.2	1.4	ND	ND	3.5	N	0
	8260c	11/10/2016	ND	ND	ND	ND	ND	ND	0	18.5	2.6	1.2	ND	ND	ND	N	0
	8260c	11/30/2018	ND	ND	ND	ND	ND	ND	0	11.5	3.1	1.6	0.6	ND	1.4	N	0
	8260c	11/6/2020	ND	ND	ND	ND	ND	ND	0	9.8	2.5	1.1	ND	ND	ND	N	0
	8260D	11/7/2022	0.50 U	0.50 U	0.75 U	1.0 U	1.0 U	ND		20	4.5	2.0	1.0 U	0.75 U	0.84	0.50 U	

Table 8A
Summary of Cumulative GMP-Related Groundwater Monitoring Results - VOCs
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street, Lebanon, New Hampshire

NH AGWQS ^[1] (µg/L)			Petroleum Compounds (µg/L)							Non-BTEX Results (µg/L)							
			Benzene	Ethyl- benzene	Toluene	Xylenes	MTBE	Total BTEX	UIP	Tetrachloro- ethene	Trichloro- ethene	cis-1,2- Dichloroeth- ene	Vinyl Chloride	Chloroform	1,1- Dichloroeth- ane	1,1,1- Trichloroeth- ane	UIP
			5	700	1000	10,000	13	--	--	5	5	70	2	70	81	200	--
Locat	EPA Method	Date															
WQ 3	8260	4/25/1994	ND	ND	ND	ND	ND	ND	1	--	--	--	--	--	--	--	--
	8260	7/19/1994	ND	ND	ND	ND	ND	ND	3	--	--	--	--	--	--	--	--
	8260	11/21/1994	ND	ND	ND	ND	ND	ND	4	--	--	--	--	--	--	--	--
	8260	4/24/1995	ND	ND	ND	ND	ND	ND	0	49.2	31.1	21.9	--	ND	3	2.1	--
	8260	7/26/1995	ND	ND	ND	ND	ND	ND	1	32.7	36.7	ND	--	ND	7	2.1	--
	8010	11/30/1995	ND	ND	ND	ND	ND	ND	4	--	--	--	--	--	--	--	--
	8010	6/3/1996	ND	ND	ND	ND	ND	ND	3	--	--	--	--	--	--	--	--
	8010	7/24/1996	ND	ND	ND	ND	ND	ND	2	--	--	--	--	--	--	--	--
	8010	11/27/1996	--	--	--	--	--	--	--	17.8	14.1	16.5	5.9	ND	3.6	1.9	0
	8010	4/21/1997	--	--	--	--	--	--	--	9.3	3.2	2.7	ND	ND	TBQ	2.7	0
	8010	7/28/1997	--	--	--	--	--	--	--	13.7	7.9	15.8	8.8	ND	4.6	1.2	0
	8010	11/17/1997	--	--	--	--	--	--	--	16.7	16.8	23.2	7.0	ND	7.8	3.1	1
	8010	4/1/1998	--	--	--	--	--	--	--	6.5	TBQ	TBQ	ND	ND	ND	2.7	0
	8010	8/3/1998	--	--	--	--	--	--	--	10.0	16.8	14.9	7.3	ND	6.0	1.2	0
	8021b	4/26/1999	--	--	--	--	--	--	--	8.3	6.4	9.7	ND	ND	3.3	1.3	0
	8260b	4/25/2000	--	--	--	--	--	--	--	6.7	ND	ND	ND	ND	ND	2.1	0
	8260b	4/23/2001	--	--	--	--	--	--	--	7.1	ND	ND	ND	ND	ND	1.8	0
	8260b	4/26/2002	--	--	--	--	--	--	--	5.6	ND	ND	ND	ND	ND	2.5	0
	8260b	4/1/2003	--	--	--	--	--	--	--	5.8	ND	ND	ND	ND	ND	3.1	0
	8260b	4/8/2004	ND	ND	ND	ND	ND	ND	0	6.8	2.5	1.9	ND	ND	1.6	1.7	0
	8260b	4/25/2005	ND	ND	ND	ND	ND	ND	0	6.3	ND	ND	ND	ND	ND	1.8	0
	8260b	4/13/2006	ND	ND	ND	ND	ND	ND	0	5.4	1.3	1.2	ND	ND	ND	1.0	0
	8260b	4/26/2007	ND	ND	ND	ND	ND	ND	0	5.1	ND	ND	ND	ND	ND	1.2	0
	8260b	4/9/2008	ND	ND	ND	ND	ND	ND	0	4.8	ND	ND	ND	ND	ND	1.5	0
	8260b	4/20/2010	ND	ND	ND	ND	ND	ND	0	5.6	ND	ND	ND	ND	ND	1.5	0
	8260b	4/14/2011	ND	ND	ND	ND	ND	ND	0	5.4	ND	ND	ND	ND	ND	1.0	0
	8260b	4/19/2012	ND	ND	ND	ND	ND	ND	0	4.4	1.2	1.3	ND	ND	1.8	N	0
	8260b	4/25/2013	ND	ND	ND	ND	ND	ND	0	5.4	ND	ND	ND	ND	ND	1.4	0
	8260c	4/21/2014	ND	ND	ND	ND	ND	ND	0	7.0	ND	ND	ND	ND	ND	N	0
	8260c	11/10/2016	ND	ND	ND	ND	ND	ND	0	11.7	3.4	3.1	1.1	ND	3.8	1.4	0
	8260c	11/30/2018	ND	ND	ND	ND	ND	ND	0	10.6	ND	ND	ND	ND	ND	N	0
	8260c	11/6/2020	ND	ND	ND	ND	ND	ND	0	12.3	0.9	ND	ND	ND	ND	3.1	0
	8260D	11/7/2022	0.50 U	0.50 U	0.75 U	1.0 U	1.0 U	ND		9.7	0.9	2.0	1.0 U	0.75 U	0.79	1.7	

Table 8A
Summary of Cumulative GMP-Related Groundwater Monitoring Results - VOCs
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street, Lebanon, New Hampshire

NH AGWQS ^[1] (µg/L)			Petroleum Compounds (µg/L)							Non-BTEX Results (µg/L)							
			Benzene	Ethyl- benzene	Toluene	Xylenes	MTBE	Total BTEX	UIP	Tetrachloro- ethene	Trichloro- ethene	cis-1,2- Dichloroeth- ene	Vinyl Chloride	Chloroform	1,1- Dichloroet hane	1,1,1- Trichloroet hane	UIP
			5	700	1000	10,000	13	--	--	5	5	70	2	70	81	200	--
Locat	EPA Method	Date	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
Trip Blank	8260	7/19/1994	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	8260	11/21/1994	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8260	4/24/1995	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	--	ND	ND	N	--
	8260	7/26/1995	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	--	ND	ND	N	--
	8010	11/30/1995	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8010	6/3/1996	ND	ND	1.1	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8010	7/24/1996	ND	ND	ND	ND	ND	ND	0	--	--	--	--	--	--	--	--
	8010	11/27/1996	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	4/21/1997	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	7/28/1997	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	11/17/1997	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	4/1/1998	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8010	8/3/1998	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8021b	4/26/1999	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8260b	4/23/2001	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/26/2002	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/1/2003	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/8/2004	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2005	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/13/2006	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/26/2007	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/9/2008	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/20/2010	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/14/2011	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/20/2012	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260b	4/25/2013	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	4/21/2014	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/10/2016	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/30/2018	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260c	11/6/2020	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	N	0
	8260D	11/2/2022	0.50 U	0.50 U	0.75 U	1.0 U	1.0 U	ND		0.50 U	0.50 U	0.50	1.0 U	0.75 U	0.75 U	0.50 U	

NOTES:

[1] New Hampshire Code of Administrative Rules, Ambient Groundwater Quality Standards, Table 600-1

-- = Not analyzed.

µg/L - micrograms per liter

U - Non detect at the limit indicated.

ND = Non Detect above laboratory detection limit (historical data). UIP = Unidentified peak.

TBQ = Trace Below Quantitation.

**UIP Aliphatic Hydrocarbon~10ppb.

Additional analytes not shown were not detected above laboratory detection limits.

Results exceed AGQS

Table 8B
Summary of Cumulative GMP-Related Groundwater Monitoring Results - PFAS
Kleen Laundry Former Dry-Cleaning Facility
1 Foundry Street, Lebanon, New Hampshire

NH AGWQS ^[1] (µg/L)			Per- and Poly-Fluoroalkyl Substances (PFAS)									
			PFBA	PFPeA	PFBS	PFHxA	PFPeS	PFHpA	PFHxS	PFOA	PFNA	PFOS
			NE	NE	NE	NE	NE	NE	0.018	0.012	0.011	0.015
Location	EPA Method	Date										
MW-4	537.1	4/27/2021	0.00436	0.00284	0.0054	0.00265	ND	0.00260	0.00413	0.0058	ND	0.0163
		11/7/2022	0.00702	0.00394	0.00697	0.00383	2.00 U	0.00313	0.00388	0.00670	2.00 U	0.0155
WQ 3		6/3/2021	0.00636	0.00857	0.00341	0.00747	ND	0.00521	0.00533	0.00750	ND	0.0128 J
		11/7/2022	2.00 U	0.00258	2.00 U	0.00261	2.00 U	0.00409	0.00295	0.00645	2.00 U	0.0141

NOTES:

[1] New Hampshire Code of Administrative Rules, Ambient Groundwater Quality Standards, Table 600-1

µg/L - micrograms per liter

U - Non-detect at the limit indicated

ND = Non Detect above laboratory detection limit.

PFBA - perfluorobutanoic acid

PFPeA - perfluoropentanoic acid

PFBS - perfluorobutanesulfonic acid

PFHxA - perfluorohexanoic acid

PFPeS - perfluoropentanesulfonic acid

PFHpA - perfluoroheptanoic acid

PFHxS - perfluorohexanesulfonic acid

PFOA - perfluorooctanoic acid

PFNA - perfluorononanoic acid

PFOS - perfluorooctanesulfonic acid

Results exceed AGQS

Results conservatively considered to exceed the AGQS based on DUA

Table 8C
Summary of Cumulative Groundwater Monitoring Results - 25 Mechanic
Kleen Laundry Former Dry-Cleaning Facility
25 Mechanic Street, Lebanon, New Hampshire

Sample Location:			MW-4								CA-MW-4													
Sample ID:			MW-4		MW-4		MW-4		MW-4		CA-MW-4		CA-DUP-1		CA-MW-4		CA-MW-4		CA-MW-4		CA-MW-4		CA-MW-4	
Date Collected:			11/7/2022		4/3/2023		11/1/2023		4/2/2024		11/8/2021				4/21/2022		11/8/2022		4/3/2023		11/1/2023		4/2/2024	
Parameter*	New Hampshire AGQS ¹ (ug/L)	NHDES RCMP GW-2 ² (ug/L)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260C (ug/L)																								
chloroform	70	70	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75		0.75	U	0.75	U	0.75	U	0.75	U
tetrachloroethene	5	240	0.50	U	0.50	U	0.50	U	0.50	U	22		21		20		18		14		11		11	
chlorobenzene	NE	NE	0.50	U	0.50	U	0.50	U	0.50	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U
1,2-dichloroethane	5	50	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
benzene	5	2,900	0.50	U	0.50	U	0.50	U	0.50	U	1.5		1.5		17		2.6		3.6		0.50	U	2.6	
toluene	1,000	50,000	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	1.8		0.75	U	0.75	U	0.75	U	0.75	U
ethylbenzene	700	1,500	0.50	U	0.50	U	0.50	U	0.50	U	1.5		1.6		4.5		0.50	U	0.50	U	0.50	U	0.50	U
vinyl chloride	2	4	1.0	U	1.0	U	1.0	U	1.0	U	3.0		3.0		1.4		3.4		1.0	U	1.8		1.0	U
trans-1,2-dichloroethene	100	560	0.75	U	0.75	U	0.75	U	0.75	U	0.83		0.84		0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trichloroethene	5	20	0.50	U	0.50	U	0.50	U	0.50	U	44		43		25		39		18		22		12	
methyl tert butyl ether	13	2,600	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
xylenes, total	10,000	17,000	1.0	U	1.0	U	1.0	U	1.0	U	3.3		3.4		3.1		1.0	U	1.0	U	1.0	U	1.0	U
cis-1,2-dichloroethene	70	NE	0.50	U	0.50	U	0.50	U	0.50	U	29		28		13		24		7.7		14		4.5	
acetone	6,000	NE	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	14		5.0	U	5.0	U	5.0	U	5.0	U
n-butylbenzene	260	NE	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.68		0.50	U	0.50	U	0.50	U	0.50	U
sec-butylbenzene	260	NE	0.50	U	0.50	U	0.50	U	0.50	U	0.83		0.85		1.3		1.3		0.59		0.69		0.50	U
isopropylbenzene	800	NE	0.50	U	0.50	U	0.50	U	0.50	U	0.60		0.62		3.4		0.50	U	0.84		0.50	U	0.65	
p-isopropyltoluene	260	NE	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
naphthalene	100	1,700	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
n-propylbenzene	260	NE	0.50	U	0.50	U	0.50	U	0.50	U	0.63		0.64		4.6		0.50	U	0.60		0.50	U	0.50	U
1,3,5-trimethylbenzene	330	NE	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-trimethylbenzene	330	1,300	2.5	U	2.5	U	2.5	U	2.5	U	3.1		3.2		7.1		2.5	U	2.5	U	2.5	U	2.5	U
isopropyl ether	NE	NE	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.1		2.0	U	2.0	U	2.0	U
t-butanol	40	NE	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2,3-trimethylbenzene	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
di-isopropyl ether	120	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
PAHs by EPA Method 8270D SIM (ug/L)																								
pyrene	210	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
PFAS by EPA Method 537.1 (ug/L)																								
Perfluorobutanoic Acid (PFBA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00670		0.00953		0.00547		0.00651	
Perfluoropentanoic Acid (PFPeA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00604		0.00905		0.00362		0.00558	J
Perfluorobutanesulfonic Acid (PFBS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.02380		0.0204		0.0117		0.00842	
Perfluorohexanoic Acid (PFHxA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00369		0.00549		0.00291		0.00500	U
Perfluoropentanesulfonic Acid (PFPeS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00200	U	0.000348	J	0.00200	U	0.00500	U
Perfluoroheptanoic Acid (PFHpA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00371		0.00505		0.00260		0.00500	U
Perfluorohexanesulfonic Acid (PFHxS)	0.018	NE	NS		NS		NS		NS		NS		NS		NS		0.00331		0.00213		0.00305		0.00500	U
Perfluorooctanoic Acid (PFOA)	0.012	0.07	NS		NS		NS		NS		NS		NS		NS		0.00997		0.00869		0.00791		0.00880	
Perfluorononanoic Acid (PFNA)	0.011	NE	NS		NS		NS		NS		NS		NS		NS		0.00200	U	0.00104	J	0.00200	U	0.00500	U
Perfluorooctanesulfonic Acid (PFOS)	0.015	0.07	NS		NS		NS		NS		NS		NS		NS		0.0182		0.0115		0.0171		0.0132	
Perfluoroundecanoic Acid (PFUNA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00200	U	0.000263	J	0.00200	U	0.00500	U
Perfluorodecanoic Acid (PFDA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00200	U	0.000618	J	0.00200	U	0.00500	U
Perfluoroheptanesulfonic Acid (PFHpS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00200	U	0.000246	J	0.00200	U	0.00500	U
Perfluorotridecanoic Acid (PFTTrDA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		0.00200	U	0.00182	U	0.00200	U	0.00500	U
8:2 fluorotelomer sulfonic acid (82FTS)			NS		NS		NS		NS		NS		NS		NS		0.00200	U	0.00182	U	0.00200	U	0.00500	U

Table 8C
Summary of Cumulative Groundwater Monitoring Results - 25 Mechanic
Kleen Laundry Former Dry-Cleaning Facility
25 Mechanic Street, Lebanon, New Hampshire

Sample Location:			MW-1-25																	
Sample ID:			MW-1-25		MW-1-25		MW-1-25		MW-1-25		MW-1-25		MW-1-25		MW-1-25		MW-1-25		MW-1-25	
Date Collected:			12/4/2017		9/9/2019		11/6/2020		4/27/2021		4/21/2022		11/7/2022		4/3/2023		11/1/2023		4/2/2024	
Parameter*	New Hampshire AGQS ¹ (ug/L)	NHDES RCMP GW-2 ² (ug/L)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260C (ug/L)																				
chloroform	70	70	1.0	U	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
tetrachloroethene	5	240	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
chlorobenzene	NE	NE	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.51		0.50	U	0.50	U	0.50	U
1,2-dichloroethane	5	50	0.5	U	0.5	U	0.5	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
benzene	5	2,900	1.5		6.7		20.6		2.4		0.50		17		0.95		1.8		0.50	U
toluene	1,000	50,000	1.0	U	1.0	U	13.2		1.0	U	0.75	U	14		0.75	U	0.75	U	0.75	U
ethylbenzene	700	1,500	12.6		2.1		44.5		22.5		0.50	U	110		4.6		5.0		0.50	U
vinyl chloride	2	4	0.5	U	0.5	U	0.5	U	0.50	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-dichloroethene	100	560	1.0	U	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trichloroethene	5	20	0.5	U	0.5	U	0.5	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
methyl tert butyl ether	13	2,600	2.0	U	2.0	U	2.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
xylene, total	10,000	17,000	2.0	U	2.0	U	32.0		2.0	U	1.0	U	58		1.0		1.0	U	1.0	U
cis-1,2-dichloroethene	70	NE	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
acetone	6,000	NE	10	U	10	U	10	U	10	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
n-butylbenzene	260	NE	1.0	U	1.0	U	1.6		1.0	U	0.50	U	2.6		0.50	U	0.50	U	0.50	U
sec-butylbenzene	260	NE	2.4		3.0		3.2		4.1		0.50	U	3.2		1.8		1.1		0.50	U
isopropylbenzene	800	NE	5.3		6.1		24.9		8.1		0.50	U	41		1.7		1.8		0.50	U
p-isopropyltoluene	260	NE	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
naphthalene	100	1,700	2.0	U	0.5	U	23.6		0.6		2.5	U	27		2.5	U	2.5	U	2.5	U
n-propylbenzene	260	NE	10.7		5.5		17.4		17		0.50	U	33		2.2		2.2		0.50	U
1,3,5-trimethylbenzene	330	NE	1.0	U	1.0	U	6.3		1.0	U	2.5	U	3.5		2.5	U	2.5	U	2.5	U
1,2,4-trimethylbenzene	330	1,300	1.0	U	1.0	U	9.3		1.0	U	2.5	U	4.6		2.5	U	2.5	U	2.5	U
isopropyl ether	NE	NE	NS		NS		NS		NS		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
t-butanol	40	NE	0.5	U	0.5	U	0.5	U	20	U	10	U	10	U	10	U	10	U	10	U
1,2,3-trimethylbenzene	NE	NE	1.0	U	1.0	U	1.8		1.0	U	NS		NS		NS		NS		NS	
di-isopropyl ether	120	NE	2.0	U	2.0	U	2.0	U	2.0	U	NS		NS		NS		NS		NS	
PAHs by EPA Method 8270D SIM (ug/L)																				
pyrene	210	NE	NS		NS		NS		NS		NS		NS		NS		NS		NS	U
PFAS by EPA Method 537.1 (ug/L)																				
Perfluorobutanoic Acid (PFBA)	NE	NE	NS		NS		NS		0.00714		NS		NS		NS		NS		NS	
Perfluoropentanoic Acid (PFPeA)	NE	NE	NS		NS		NS		0.00808		NS		NS		NS		NS		NS	
Perfluorobutanesulfonic Acid (PFBS)	NE	NE	NS		NS		NS		0.0360		NS		NS		NS		NS		NS	
Perfluorohexanoic Acid (PFHxA)	NE	NE	NS		NS		NS		0.00885		NS		NS		NS		NS		NS	
Perfluoropentanesulfonic Acid (PFPeS)	NE	NE	NS		NS		NS		0.0227		NS		NS		NS		NS		NS	
Perfluoroheptanoic Acid (PFHpA)	NE	NE	NS		NS		NS		0.00314		NS		NS		NS		NS		NS	
Perfluorohexanesulfonic Acid (PFHxS)	0.018	NE	NS		NS		NS		0.154		NS		NS		NS		NS		NS	
Perfluorooctanoic Acid (PFOA)	0.012	0.07	NS		NS		NS		0.00782		NS		NS		NS		NS		NS	
Perfluorononanoic Acid (PFNA)	0.011	NE	NS		NS		NS		0.00200	U	NS		NS		NS		NS		NS	
Perfluorooctanesulfonic Acid (PFOS)	0.015	0.07	NS		NS		NS		0.0038		NS		NS		NS		NS		NS	
Perfluoroundecanoic Acid (PFUNA)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		NS		NS		NS	
Perfluorodecanoic Acid (PFDA)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		NS		NS		NS	
Perfluoroheptanesulfonic Acid (PFHpS)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		NS		NS		NS	
Perfluorotridecanoic Acid (PFTrDA)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		NS		NS		NS	
8:2 fluorotelomer sulfonic acid (82FTS)			NS		NS		NS		0.00200	U	NS		NS		NS		NS		NS	

Table 8C
Summary of Cumulative Groundwater Monitoring Results - 25 Mechanic
Kleen Laundry Former Dry-Cleaning Facility
25 Mechanic Street, Lebanon, New Hampshire

Sample Location:			MW-2-25																									
Sample ID:			MW-2-25		MW-2-25		MW-2-25		MW-2-25		MW-2-25		MW-2-25-DUP-1		MW-2-25		MW-2-25		MW-2-25-DUP		MW-2-25		MW-2-25-DUP		MW-2-25		MW-2-25-DUP	
Date Collected:			12/4/2017		9/9/2019		11/6/2020		4/27/2021		4/21/2022				11/7/2022		4/3/2023				11/1/2023				4/2/2024			
Parameter*	New Hampshire AGQS ¹ (ug/L)	NHDES RCMP GW-2 ² (ug/L)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260C (ug/L)																												
chloroform	70	70	5.0	U	1.0	U	10.0	U	10.0	U	1.5	U	0.75	U	1.9	U	0.75	U	0.75	U	1.9	U	1.9	U	0.75	U	0.75	U
tetrachloroethene	5	240	419		214		171		242		43		50		34		39	J	67	J	8.0		4.7		15	J	22	J
chlorobenzene	NE	NE	5.0	U	1.0	U	10.0	U	10.0	U	0.50	U	0.50	U	1.2	U	0.50	U	0.50	U	1.2	U	1.2	U	0.50	U	0.50	U
1,2-dichloroethane	5	50	2.5	U	0.5	U	5.0	U	5.0	U	1.0	U	0.5	U	1.2	U	0.50	U	0.50	U	1.2	U	1.2	U	0.50	U	0.50	U
benzene	5	2,900	247		107		42.4		25.2		48		45		44		23		29		67		82		3.1	J	9.0	J
toluene	1,000	50,000	2660		630		97.7		74.8		20		18		97		39	J	55	J	28		35		1.1		2.9	
ethylbenzene	700	1,500	725		350		157		68.0		150		140		200		20	J	35	J	120		200		4.8	J	13	J
vinyl chloride	2	4	7.2		2.9		5	U	5.0	U	2.0	U	1.0	U	9.9		3.5		5.4		30		33		1.0	U	1.0	U
trans-1,2-dichloroethene	100	560	15.5		8.7		10.0	U	10.0	U	1.5	U	0.75	U	5.8		1.4		2.1		17		19		0.75	U	1.3	
trichloroethene	5	20	219		140		91		150		17		18		210		75	J	110	J	290		280		22	J	51	J
methyl tert butyl ether	13	2,600	10.0	U	2.0	U	20.0	U	20.0	U	2.0	U	1.0	U	2.5	U	1.0	U	1.0	U	2.5	U	2.5	U	1.0	U	1.0	U
xylenes, total	10,000	17,000	3080		893		177.0		141		180		150		94		22	J	36	J	15		20		2.7		8.0	
cis-1,2-dichloroethene	70	NE	711		245		201		209		22		21		280		58	J	86	J	260		260		8.8	J	25	J
acetone	6,000	NE	1,000	U	10.0	U	100	U	100.00	U	10	U	5.0	U	12	U	5.0	U	5.0	U	12	U	12	U	5.0	U	5.0	U
n-butylbenzene	260	NE	8.6		4.6		10.0	U	10.0	U	3.3		3.3		5.3		0.50	U	0.81		3.2		4.7		0.50	U	0.50	U
sec-butylbenzene	260	NE	11.7		6.8		10.0	U	10.0	U	2.0		0.5	U	3.9		0.68		1.3		3.5		4.3		0.50	U	0.50	U
isopropylbenzene	800	NE	71		25.6		17.7		11.4		12		12		16		2.2		3.9		16		21		0.51		1.5	
p-isopropyltoluene	260	NE	7.5		3.0		10.0	U	10.0	U	1.0		1.1		1.9		0.50	U	0.50	U	1.2	U	1.2	U	0.50	U	0.5	U
naphthalene	100	1,700	187		64.2		39.9		18.4		36		31		40		4.6		7.8		23		32		2.5	U	4.4	
n-propylbenzene	260	NE	144		57.9		37.3		18.0		32		31		44		3.2	J	6.2	J	26		43		1.0		2.7	
1,3,5-trimethylbenzene	330	NE	286		92.3		15.5		17.4		24		21		13		2.5	U	2.5	U	6.2	U	6.2	U	2.5	U	2.5	U
1,2,4-trimethylbenzene	330	1,300	610		541		202		157		260	J	110	J	320		32	J	62	J	180		250		10		32	
isopropyl ether	NE	NE	NS		NS		NS		NS		4.0	U	2.0	U	5.0	U	2.0	U	2.0	U	5.0	U	5.0	U	2.0	U	2.0	U
t-butanol	40	NE	2000	U	20	U	200.0		200.0	U	20	U	10	U	25	U	10	U	10	U	25	U	25	U	10	U	10	U
1,2,3-trimethylbenzene	NE	NE	305		115		53.1		43.5		NS		NS		NS		NS		NS		NS		NS		NS		NS	
di-isopropyl ether	120	NE	10.0	U	2.0	U	20.0	U	20	U	NS		NS		NS		NS		NS		NS		NS		NS		NS	
PAHs by EPA Method 8270D SIM (ug/L)																												
pyrene	210	NE	NS		NS		NS		NS		NS		NS		NS													
PFAS by EPA Method 537.1 (ug/L)																												
Perfluorobutanoic Acid (PFBA)	NE	NE	NS		NS		NS		0.00427		NS		NS		0.00606		0.00107	J	0.000980	J	0.00794		0.0114		0.00200	U	0.00200	U
Perfluoropentanoic Acid (PFPeA)	NE	NE	NS		NS		NS		0.00302		NS		NS		0.00380		0.00172	J	0.00171	U	0.00331		0.00333		0.00200	UJ	0.00200	UJ
Perfluorobutanesulfonic Acid (PFBS)	NE	NE	NS		NS		NS		0.0164		NS		NS		0.00762		0.0381		0.0372		0.0136		0.0116		0.0383	J	0.0414	J
Perfluorohexanoic Acid (PFHxA)	NE	NE	NS		NS		NS		0.00262		NS		NS		0.00363		0.000581	J	0.000567	J	0.00290		0.00290		0.00200	U	0.00200	U
Perfluoropentanesulfonic Acid (PFPeS)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.000842	J	0.000836	J	0.00200	U	0.00200	U	0.00200	U	0.00200	U
Perfluoroheptanoic Acid (PFHpA)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.000653	J	0.000655	J	0.00200	U	0.00200	U	0.00200	U	0.00200	U
Perfluorohexanesulfonic Acid (PFHxS)	0.018	NE	NS		NS		NS		0.00223		NS		NS		0.00261		0.00129	J	0.00127	J	0.00255		0.00200	U	0.00200	U	0.00219	
Perfluorooctanoic Acid (PFOA)	0.012	0.07	NS		NS		NS		0.00538		NS		NS		0.00486		0.00218		0.00213		0.00486		0.00470		0.00227		0.00255	
Perfluorononanoic Acid (PFNA)	0.011	NE	NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.00251		0.00313		0.00200	U	0.00200	U	0.00200	U	0.00200	U
Perfluorooctanesulfonic Acid (PFOS)	0.015	0.07	NS		NS		NS		0.00455		NS		NS		0.00536		0.00821		0.00891		0.00468		0.00431		0.00200	U	0.00200	U
Perfluoroundecanoic Acid (PFUNA)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.00251		0.00281		0.00200	U	0.00200	U	0.00200	U	0.00200	U
Perfluorodecanoic Acid (PFDA)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.00172	U	0.00171	U	0.00200	U	0.00200	U	0.00200	U	0.00200	U
Perfluoroheptanesulfonic Acid (PFHpS)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.00172	U	0.00171	U	0.00200	U	0.00200	U	0.00200	U	0.00200	U
Perfluorotridecanoic Acid (PFTTrDA)	NE	NE	NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.00133	J	0.00173		0.00200	U	0.00200	U	0.00200	U	0.00200	U
8:2 fluorotelomer sulfonic acid (82FTS)			NS		NS		NS		0.00200	U	NS		NS		0.00200	U	0.000274	J	0.000190	J	0.00200	U	0.00200	U	0.00200	U	0.00200	U

Table 8C
Summary of Cumulative Groundwater Monitoring Results - 25 Mechanic
Kleen Laundry Former Dry-Cleaning Facility
25 Mechanic Street, Lebanon, New Hampshire

Sample Location:			MW-3-25															
Sample ID:			MW-3-25		MW-3-25		MW-3-25		MW-3-25		MW-3-25		MW-3-25		MW-3-25		MW-3-25	
Date Collected:			9/9/2019		11/6/2020		4/27/2021		4/21/2022		11/7/2022		4/3/2023		11/1/2023		4/2/2024	
Parameter*	New Hampshire AGQS ¹ (ug/L)	NHDES RCMP GW-2 ² (ug/L)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260C (ug/L)																		
chloroform	70	70	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
tetrachloroethene	5	240	0.7		1.1		0.9		0.60		0.96		0.54		0.52		0.58	
chlorobenzene	NE	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
1,2-dichloroethane	5	50	0.5	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
benzene	5	2,900	0.5	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
toluene	1,000	50,000	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
ethylbenzene	700	1,500	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
vinyl chloride	2	4	0.5	U	0.50	U	0.50	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-dichloroethene	100	560	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trichloroethene	5	20	0.5	U	0.6		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
methyl tert butyl ether	13	2,600	2.0	U	2.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
xylenes, total	10,000	17,000	2.0	U	2.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
cis-1,2-dichloroethene	70	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
acetone	6,000	NE	10	U	10	U	10	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
n-butylbenzene	260	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
sec-butylbenzene	260	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.77		0.54		0.65	
isopropylbenzene	800	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
p-isopropyltoluene	260	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
naphthalene	100	1,700	0.6		0.50	U	0.50	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
n-propylbenzene	260	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
1,3,5-trimethylbenzene	330	NE	1.0	U	1.0	U	1.0	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-trimethylbenzene	330	1,300	1.0	U	1.0	U	1.0	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
isopropyl ether	NE	NE	NS		NS		NS		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
t-butanol	40	NE	20	U	20	U	20	U	10	U	10	U	10	U	10	U	10	U
1,2,3-trimethylbenzene	NE	NE	1.0	U	1.0	U	1.0	U	NS		NS		NS		NS		NS	
di-isopropyl ether	120	NE	2.0	U	2.0	U	2.0	U	NS		NS		NS		NS		NS	
PAHs by EPA Method 8270D SIM (ug/L)																		
pyrene	210	NE	NS		NS		NS		NS		NS		NS		NS		NS	
PFAS by EPA Method 537.1 (ug/L)																		
Perfluorobutanoic Acid (PFBA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoropentanoic Acid (PFPeA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorobutanesulfonic Acid (PFBS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorohexanoic Acid (PFHxA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoropentanesulfonic Acid (PFPeS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoroheptanoic Acid (PFHpA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorohexanesulfonic Acid (PFHxS)	0.018	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorooctanoic Acid (PFOA)	0.012	0.07	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorononanoic Acid (PFNA)	0.011	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorooctanesulfonic Acid (PFOS)	0.015	0.07	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoroundecanoic Acid (PFUNA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorodecanoic Acid (PFDA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoroheptanesulfonic Acid (PFHpS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorotridecanoic Acid (PFTTrDA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
8:2 fluorotelomer sulfonic acid (82FTS)			NS		NS		NS		NS		NS		NS		NS		NS	

Table 8C
Summary of Cumulative Groundwater Monitoring Results - 25 Mechanic
Kleen Laundry Former Dry-Cleaning Facility
25 Mechanic Street, Lebanon, New Hampshire

Sample Location:			MW-6-25															
Sample ID:			MW-6-25		MW-6-25		MW-6-25		MW-6-25		MW-6-25		MW-6-25		MW-6-25		MW-6-25	
Date Collected:			9/9/2019		11/6/2020		4/27/2021		4/21/2022		11/7/2022		4/3/2023		11/1/2023		4/2/2024	
Parameter*	New Hampshire AGQS ¹ (ug/L)	NHDES RCMP GW-2 ² (ug/L)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
VOCs by EPA Method 8260C (ug/L)																		
chloroform	70	70	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
tetrachloroethene	5	240	0.50	U	0.50	U	0.50	U	2.0	U	0.50	U	0.50	U	0.50	U	0.50	U
chlorobenzene	NE	NE	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
1,2-dichloroethane	5	50	0.7		0.50	U	0.50	U	2.0	U	0.50	U	0.50	U	0.50	U	0.50	U
benzene	5	2,900	1.8		72.9		104		45		77		33		10		30	
toluene	1,000	50,000	1.0	U	2.2		1.6		3.0	U	1.4		0.75	U	0.75	U	0.75	U
ethylbenzene	700	1,500	1.0	U	1.4		9.4		13		2.3		2.2		0.50	U	1.8	
vinyl chloride	2	4	0.50	U	0.50	U	0.50	U	4.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-dichloroethene	100	560	1.0	U	1.0	U	1.0	U	3.0	U	0.75	U	0.75	U	0.75	U	0.75	U
trichloroethene	5	20	0.50	U	0.50	U	0.50	U	2.0	U	0.50	U	0.50	U	0.50	U	0.50	U
methyl tert butyl ether	13	2,600	5.0	U	2.7		2.1		4.0	U	1.6		1.0	U	1.2		1.0	U
xylenes, total	10,000	17,000	2.0	U	2.0	U	2.0		7.8		1.4		1.0	U	1.0	U	1.0	U
cis-1,2-dichloroethene	70	NE	1.0	U	1.0	U	1.0	U	2.0	U	0.50	U	0.50	U	0.50	U	0.50	U
acetone	6,000	NE	10.0	U	10.0	U	12.5		20	U	5.0	U	5.0	U	5.0	U	5.0	U
n-butylbenzene	260	NE	1.0	U	1.3		2.2		3.6		4.1		2.2		1.2		1.8	
sec-butylbenzene	260	NE	2.8		3.6		3.9		3.3		5.9		2.5		4.8		2.3	
isopropylbenzene	800	NE	1.0	U	3.6		7.1		7.2		5.4		3.0		1.7		3.1	
p-isopropyltoluene	260	NE	1.0	U	1.0	U	1.0	U	2.0	U	0.50	U	0.50	U	0.50	U	0.50	U
naphthalene	100	1,700	0.5	U	0.7		1.3		10	U	2.5	U	2.5	U	2.5	U	2.5	U
n-propylbenzene	260	NE	1.0	U	1.0	U	5.4		9.4		2.2		1.9		0.50	U	2.0	
1,3,5-trimethylbenzene	330	NE	1.0	U	1.0	U	1.0	U	10	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-trimethylbenzene	330	1,300	1.0	U	1.0	U	2.2		10		2.5	U	2.5	U	2.5	U	2.5	U
isopropyl ether	NE	NE	NS		NS		NS		8.0	U	6.9		3.4		8.7		2.9	
t-butanol	40	NE	20	U	21.1		23.5		40	U	13		10	U	10		10	U
1,2,3-trimethylbenzene	NE	NE	1.0	U	1.0	U	1.0	U	NS		NS		NS		NS		NS	
di-isopropyl ether	120	NE	10.3		12.8		11.0		NS		NS	U	NS		NS		NS	
PAHs by EPA Method 8270D SIM (ug/L)																		
pyrene	210	NE	NS		NS		NS		NS		NS		NS		NS		NS	
PFAS by EPA Method 537.1 (ug/L)																		
Perfluorobutanoic Acid (PFBA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoropentanoic Acid (PFPeA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorobutanesulfonic Acid (PFBS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorohexanoic Acid (PFHxA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoropentanesulfonic Acid (PFPeS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoroheptanoic Acid (PFHpA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorohexanesulfonic Acid (PFHxS)	0.018	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorooctanoic Acid (PFOA)	0.012	0.07	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorononanoic Acid (PFNA)	0.011	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorooctanesulfonic Acid (PFOS)	0.015	0.07	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoroundecanoic Acid (PFUNA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorodecanoic Acid (PFDA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluoroheptanesulfonic Acid (PFHpS)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
Perfluorotridecanoic Acid (PFTTrDA)	NE	NE	NS		NS		NS		NS		NS		NS		NS		NS	
8:2 fluorotelomer sulfonic acid (82FTS)			NS		NS		NS		NS		NS		NS		NS		NS	

Table 8C
Summary of Cumulative Groundwater Monitoring Results - 25 Mechanic
Kleen Laundry Former Dry-Cleaning Facility
25 Mechanic Street, Lebanon, New Hampshire

NOTES:

ug/L - micrograms per liter

*Only analytes with detections are shown, all other sample analyses results were below the laboratory reporting limits.

1 - New Hampshire Code of Administrative Rules Chapter 600 Ambient Groundwater Quality Standards, Table 600-1, effective January 1, 2021

2 - New Hampshire Department of Environmental Services (NHDES) Risk Characterization and Management Policy (RCMP),

Table 2 - Method 1 Groundwater Standards, GW-2, revised September 2018

NE - not established

NS - not sampled

U - Results were below the laboratory reporting limits, laboratory reporting limit shown

Bold Exceeds laboratory reporting limit

Black shading with white text Exceeds or equal to New Hampshire AGQS, but below RCMP

Black shading with red text Exceeds or equal to New Hampshire AGQS and RCMP

Gray shading with white text Conservatively considered to exceed the AGQS based DUA.

Double border Laboratory reporting limit exceeds applicable regulatory criteria

VOCs - volatile organic compounds

PAHs - polycyclic aromatic hydrocarbons

EPA - Environmental Protection Agency

PFAS - Per- and polyfluoroalkyl substances

SIM - Selective Ion Monitoring

PCB - Polychlorinated biphenyl

Table 8D
Summary of Groundwater Analytical Results - Historical Data
Kleen Laundry Former Dry-Cleaning Facility
25 Mechanic Street, Lebanon, New Hampshire

Sample Location: Sample ID: Date Collected:			CA-MW-1				CA-MW-3		CA-BR-4		MW-4-25						MW-5-25						MW-4								CA-SUMP-1		CA-PZ-15			
			CA-MW-1		MW-DUP-1		CA-MW-3		CA-BR-4		MW-4-25		MW-4-25		MW-4-25		MW-5-25		MW-5-25		MW-5-25		MW-4		MW-4		MW-4		MW-4		CA-SUMP-1		CA-PZ-15			
			6/3/2021				6/3/2021		11/8/2021		9/9/2019		11/6/2020		4/27/2021		9/9/2019		11/6/2020		4/27/2021		12/4/2017		9/9/2019		11/6/2020		4/27/2021		10/21/2021		4/5/2023			
Parameter*	New Hampshire AGQS ¹ (ug/L)	NHDES RCMP GW-2 ² (ug/L)	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier				
VOCs by EPA Method 8260C (ug/L)																																				
tetrachloroethene	5	240	0.72		0.69		0.50	U	0.50	U	0.5	U	2.5	U	2.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.89		1.7	U		
acetone	6,000	NE	5.0	U	5.0	U	5.0	U	5.0	U	36.9		50	U	50	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	5.0	U	5.0	U		
di-isopropyl ether	120	NE	NS		NS		NS		NS		36.1		31.1		29.7		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
benzene	5	2,900	0.50	U	0.50	U	44		1.9		480		421		373		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.50	U	0.50	U		
1,2-dichloroethane	5	50	0.50	U	0.50	U	0.50	U	0.50	U	20.4		13.8		14.2		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.75	U	0.50	U		
toluene	1,000	50,000	0.75	U	0.75	U	7.9		0.75	U	18.0		14.6		12.0		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U		
ethylbenzene	700	1,500	0.50	U	0.50	U	27		2.0		209		81.5		146		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
vinyl chloride	2	4	1.0	U	1.0	U	1.0	U	1.0	U	0.5	U	2.5	U	2.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.0	U	1.0	U		
trans-1,2-dichloroethene	100	560	0.75	U	0.75	U	0.75	U	0.75	U	1.0	U	5.0	U	5.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.75	U	0.75	U		
methyl tert butyl ether	13	2,600	1.0	U	1.0	U	1.1		1.0	U	7.0	U	10.0	U	10.0	U	11.4		5.1		3.0		2.0	U	2.0	U	2.0	U	2.0	U	1.0	U	1.0	U		
xylenes, total	10,000	17,000	1.0	U	1.0	U	42		3.3		67.6		82.6		95.9		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	1.0	U	1.0	U		
n-butylbenzene	260	NE	0.50	U	0.50	U	1.6		0.50	U	9.9		7.9		7.9		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
sec-butylbenzene	260	NE	0.50	U	0.50	U	2.4		0.85		8.3		6.8		6.9		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
isopropylbenzene	800	NE	0.50	U	0.50	U	8.5		0.81		31.5		27.9		26.6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
p-isopropyltoluene	260	NE	0.50	U	0.50	U	0.81		0.50	U	2.0		5.0	U	5.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
naphthalene	100	1,700	2.5	U	2.5	U	16		2.5	U	49.9		55.8		53.5		1.8		0.5	U	0.5	U	2.0	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U		
t-butanol	40	NE	10	U	10	U	10	U	10	U	70.0	U	100	U	100.0	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	NS		NS			
n-propylbenzene	260	NE	0.50	U	0.50	U	14		0.84		59.4		38.8		50.6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
1,2,4-trimethylbenzene	330	1,300	2.5	U	2.5	U	2.5	U	3.6		57.7		79.6		109		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	2.5	U	2.5	U
cis-1,2-dichloroethene	70	NE	0.50	U	0.50	U	0.50	U	0.50	U	1.0	U	5.0	U	5.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
trichloroethene	5	20	0.50	U	0.50	U	0.50	U	0.50	U	0.5	U	2.5	U	2.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.50	U	0.50	U		
1,3,5-trimethylbenzene	330	NE	2.5	U	2.5	U	2.5	U	2.5	U	42.4		36.7		44.6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.50	U	0.50	U		
1,2,3-trimethylbenzene	NE	NE	NS		NS		NS		NS		8.6		11.0		11.6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NS		NS			
isopropyl ether	NE	NE	2.0	U	2.0	U	3.6		2.0	U	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		2.0	U	2.0	U		
PAHs by EPA Method 8270D SIM (ug/L)																																				
pyrene	210	NE	0.24		0.26		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS			
PFAS by EPA Method 537.1 (ug/L)																																				
Perfluorobutanoic Acid (PFBA)	NE	NE	0.0160		NS		0.0100		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00436		NS		NS			
Perfluoropentanoic Acid (PFPeA)	NE	NE	0.00652		NS		0.00691		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00284		NS		NS			
Perfluorobutanesulfonic Acid (PFBS)	NE	NE	0.0354		NS		0.00756		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.0054		NS		NS			
Perfluorohexanoic Acid (PFHxA)	NE	NE	0.00690		NS		0.00469		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00265		NS		NS			
Perfluoropentanesulfonic Acid (PFPeS)	NE	NE	0.00200	U	NS		0.00200	U	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00200	U	NS		NS			
Perfluoroheptanoic Acid (PFHpA)	NE	NE	0.00590		NS		0.00382		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00260		NS		NS			
Perfluorohexanesulfonic Acid (PFHxS)	0.018	NE	0.00607		NS		0.00284		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00413		NS		NS			
Perfluorooctanoic Acid (PFOA)	0.012	NE	0.0168		NS		0.0106		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.0058		NS		NS			
Perfluorononanoic Acid (PFNA)	0.011	NE	0.00269		NS		0.00241	J	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00200	U	NS		NS			
Perfluorooctanesulfonic Acid (PFOS)	0.015	NE	0.0188		NS		0.0121		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.0163		NS		NS			

NOTES:
ug/L - micrograms per liter
*Only analytes with detections are shown, all other sample analyses results were below the laboratory reporting limits.
1 - New Hampshire Code of Administrative Rules Chapter 600 Ambient Groundwater Quality Standards, Table 600-1, effective January 1, 2021
2 - New Hampshire Department of Environmental Services (NHDES) Risk Characterization and Management Policy (RCMP),
Table 2 - Method 1 Groundwater Standards, GW-2, revised September 2018

NE - not established
NS - not sampled
U - Results were below the laboratory reporting limits, laboratory reporting limit shown

Bold Exceeds laboratory reporting limit

Black shading with white text

Black shading with red text

Gray shading with white text

Double border Laboratory reporting limit exceeds applicable regulatory criteria

VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
EPA - Environmental Protection Agency
PFAS - Per- and polyfluoroalkyl substances
SIM - Selective Ion Monitoring

APPENDIX A

Confirmatory Sample Reference Table

Confirmatory Sample Reference Table
Kleen Laundry Former Dry-Cleaning Facility
NHDES Site No. 198801003 and 201704036
1 Foundry Street and 25 Mechanic Street, Lebanon, New Hampshire

Media to be Collected	Proposed Sample IDs	QA/QC Samples (per sample type)	Boring/Screen Target Depth	Sample Depth (feet bgs)	Sample/Location Rationale	Field Analysis/ Observations	Analytical Methods	Sample Container Information & Preservative (per location) ¹	Laboratory To be Used
Building Materials - Confirmatory	CA-AC-1 , CA-AC-2, etc. (consecutively numbered)	None	NA	4-feet above the floor (i.e., within the breathing zone)	Air clearance sampling required prior to releasing an asbestos regulated work area (# of samples TBD based on regulated area[s])	Visual clearance required prior to sampling	Phase Contrast Microscopy (NIOSH 7400)	Filter in dedicated cassette	EMSL Analytical, Inc., South Portland, Maine
	FB-AC-1	Field Blank			Field QC sample				
	CA-PCB-CFA, CA-PCB-CFB, etc	PCB-CFDUP	Remediated substrate that remains after removal of PCB Bulk Product Waste and PCB Remediation Waste removal	New surface 0-0.5 inches	Confirmatory samples. At least three per type of material and at least every 10 linear feet along walls (approximately one per 75 square feet).	Visual	PCBs (EPA Method 8082A with soxhlet extraction method 3540C)	(1) 4oz glass with Teflon lined cap and at least 20 grams of sample per sample	Alpha Analytical, Westborough, Massachusetts
	CA-LW-1, CA-LW-2, etc. (consecutively numbered)	LW-DUP	Redeveloped residential units	Window sill, window well, and floor surfaces	Confirmatory samples. Two wipe samples per unit (one window sill or well and one floor) and one floor wipe sample per 2,000 square feet.	Visual	Lead (SW-846-7000B)	(1) ghost wipe placed in (1) plastic centrifuge tube, per sample	EMSL Analytical, Inc., South Portland, Maine
Soil Excavation - Confirmatory	CA-EX-1	EC-DUP	Sidewall - north/northeast	Biased to excavation margins with highest PID response.	Confirmatory samples to document VOC concentrations prior to application of treatment chemicals.	PID, visual	VOCs (EPA Method 8260D)	2 - 40 mL VOA (methanol)	Alpha Analytical, Westborough, Massachusetts
	CA-EX-2							1 - 40 mL VOA (methanol)	
	CA-EX-3								
	CA-EX-4								
	CA-EX-5		Sidewall - east						
	CA-EX-6								
	CA-EX-7		Sidewall - South						
	CA-EX-8	MS/MSD							
	CA-EX-9		Sidewall - west						
	CA-EX-10								
	CA-EX-11		Base						
	CA-EX-12								
	CA-EX-13								
	CA-EX-14								
Indoor Air - Confirmatory	CA-IA-6	None	NA	Breathing zone	To confirm the efficacy of the SSDS	PID ppb	VOCs (EPA Method TO-15 SIM)	(1) 6 L summa canister with 24-hr regulator	Alpha Analytical, Westborough, Massachusetts
	CA-IA-9				(1) 6 L summa canister with 24-hr regulator				
	CA-IAFF-14				(1) 6 L summa canister with 24-hr regulator				
	CA-IAFF-16				(1) 6 L summa canister with 24-hr regulator				
	CA-IASF-18				(1) 6 L summa canister with 24-hr regulator				
	CA-AA-1				To confirm chloroform and carbon tetrachloride concentrations in the ambient environment and docment exterior ambient conditions.			(1) 6 L summa canister with 24-hr regulator	
								(1) 6 L summa canister with 24-hr regulator	
Groundwater	MW-2-25		Screened interval	Screened interval	To assess attenuation of the source area after treatment. To be sampled biannually for the first two years after treatment application.	PID, DO, ORP, pH, conductivity, temperature, turbidity	VOCs (EPA Method 8260D)	(2) 40mL VOA (HCl)	Alpha Analytical, Westborough, Massachusetts
	CA-MW-4				To assess attenuation of the plume downgradient of the source area after treatment. To be sampled biannually for the first two years after treatment application.		VOCs (EPA Method 8260D)	(2) 40mL VOA (HCl)	

Notes:

1 - Soil, groundwater, and PCB-containing building material samples will be chilled to 4°C (+/- 2°C) and submitted to the laboratory on ice. Additional details regarding analytical method, sample preservation, sample volume and hold times can be found in Table 7-3 of Credere's Generic QAPP For Brownfields Work in Maine, New Hampshire, Massachusetts, and Vermont RFA #19043.

SB - soil boring
MW - monitoring well
IA - indoor air
VP - vapor point
EPA - US Environmental Protection Agency

SACM - suspect asbestos-containing material
PCB - polychlorinated biphenyls
DO - dissolved oxygen
ORP - oxidation-reduction potential
MS/MSD - matrix spike/matrix spike duplicate

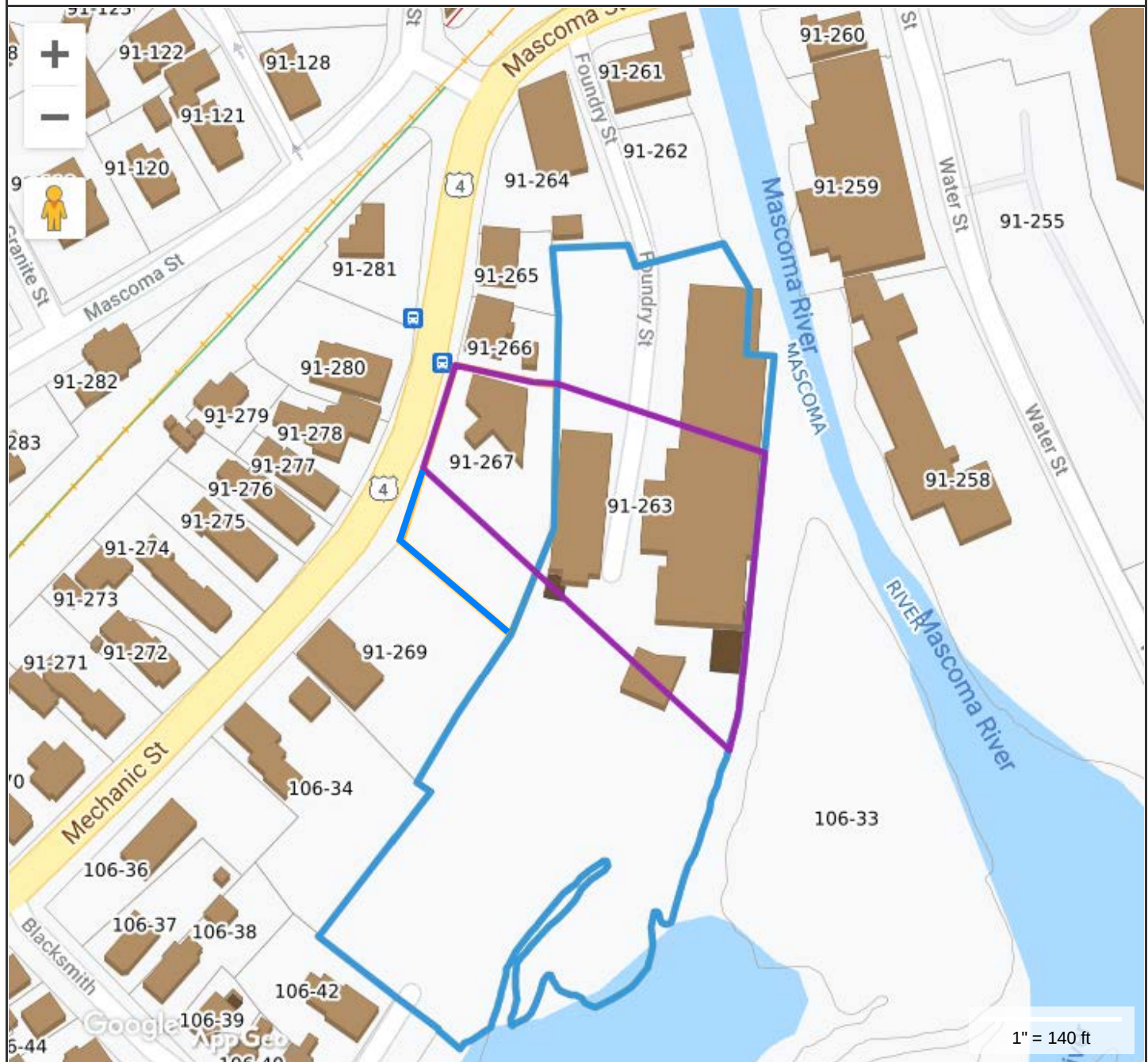
QA/QC - quality assurance/quality control
bgs - below ground surface
PID - photoionization detector
NA - not applicable
CVOC - chlorinated volatile organic compound
VOCs - volatile organic compounds

mL - milliliter
L - liter
HCl - hydrochloric acid
NIOSH - National Institute for Occupational Safety and Health
VOA - volatile organic analyte (vial)

APPENDIX B

Proposed GMZ Tax Map

Proposed GMZ for CVOC Release at 25 Mechanic Street and 1 Foundry Street



Property Information

Property ID 91-263
 Location 1 FOUNDRY ST
 Owner LWM RESIDENTIAL LLC

- Site boundary
- Proposed GMZ boundary



MAP FOR REFERENCE ONLY NOT A LEGAL DOCUMENT

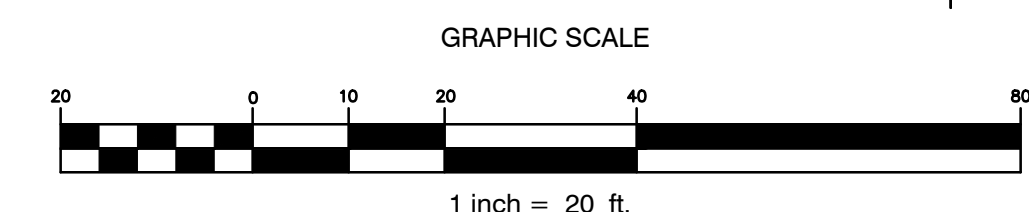
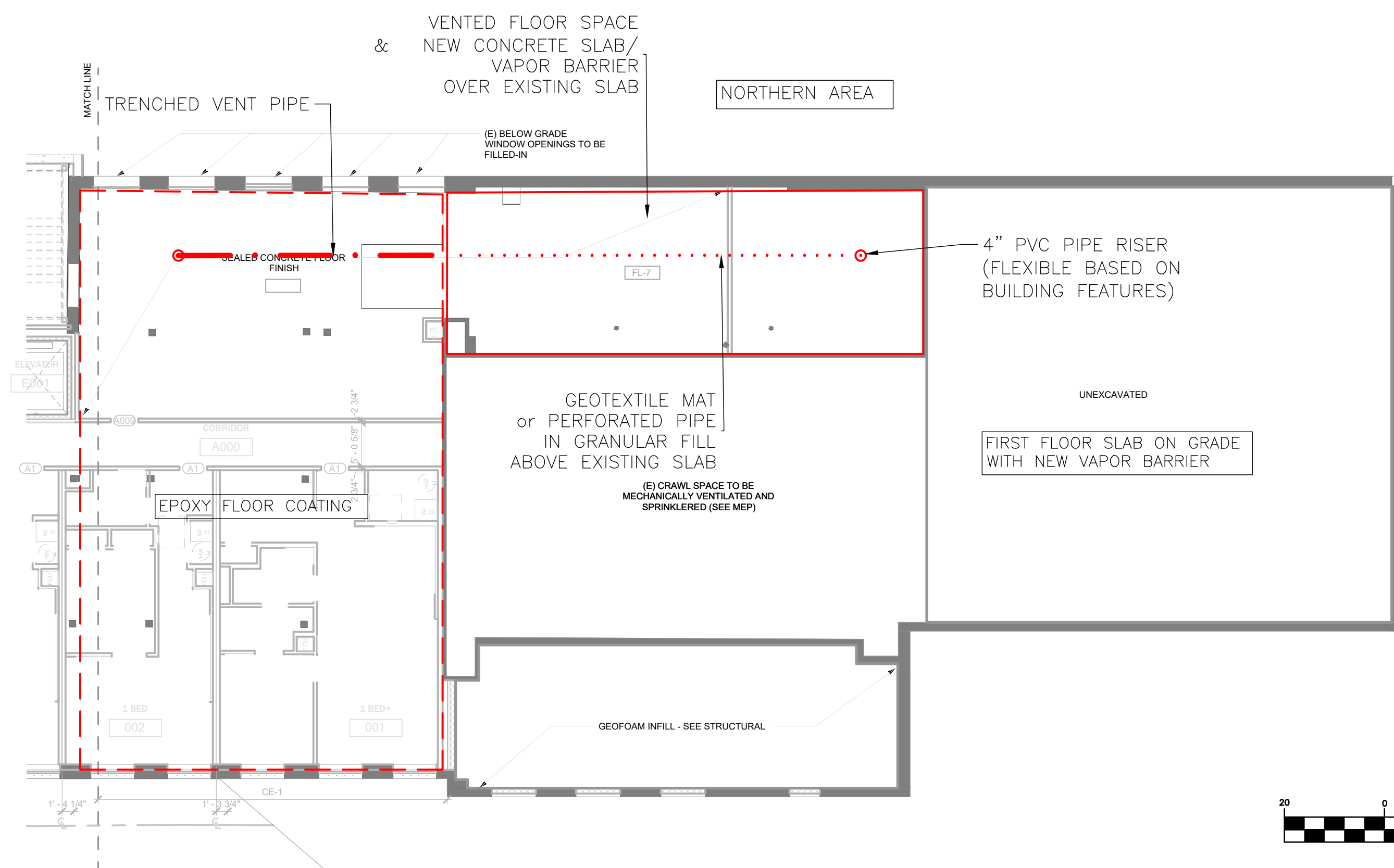
City of Lebanon, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 12/29/2021
 Data updated 11/18/2018

Print map scale is approximate.
 Critical layout or measurement activities should not be done using this resource.

APPENDIX C

Vapor Mitigation Design

[illegible]

PRELIMINARY
NOT FOR
CONSTRUCTION

FOR
REVIEW
ONLY



CREDERE ASSOCIATES, LLC
776 MAIN STREET
WESTBROOK, MAINE 04092
TEL: 207.828.1272
FAX: 207.887.1051
WWW.CREDEREILLC.COM

PROJECT # 21001623	
TASK: REMEDIAL ACTION PLAN	
PHASE:	SCALE: 1" =
CLIENT:	
CLIENT NAME	
ADDRESS LINE 1	
ADDRESS LINE 2	

LEVEL 0 VAPOR MITIGATION PLANS

KLEEN LAUNDRY FORMER DRYCLEANING
1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE 03766

SHEET #
A-110

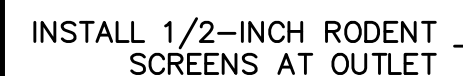
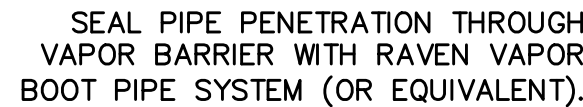
REV.
A



SECTION DETAIL 1
VAPOR BARRIER INSTALLATION AT EXTERIOR WALL
SCALE: NTS



SCALE: NTS



NOTES:

1. PIPE DISCHARGE SHALL NOT BE LESS THAN TEN (10) FEET FROM THE PROPERTY LINE, ANY WINDOW, DOOR, OR OTHER OPENING OF THE BUILDING, INCLUDING HEATING, VENTILATING, AND AIR CONDITIONING INTAKE POINTS.
2. TELEMETRY SHALL BE INSTALLED FOR MONITORING AIR FLOW THROUGH THE VAPOR MITIGATION SYSTEM. TELEMETRY SYSTEM SHALL USE CELLULAR CONNECT TO CONTACT BUILDING SUPERINTENDENT WHEN OUTAGE OCCURS.
3. AN ALTERNATE EXHAUST PIPE CONFIGURATION MAY BE INSTALLED WITH APPROVAL FROM THE ENGINEER.



SCALE: MTS



SCALE: NTS



CREDERE ASSOCIATES, LLC
776 MAIN STREET
WESTBROOK, MAINE 04092
TEL: 207.828.1272
FAX: 207.887.1051
WWW.CREDERELLC.COM

SCALE:

CLIENT: LWM RESIDENTIAL, LLC
212 W 11th STREET #4
NEW YORK, NY

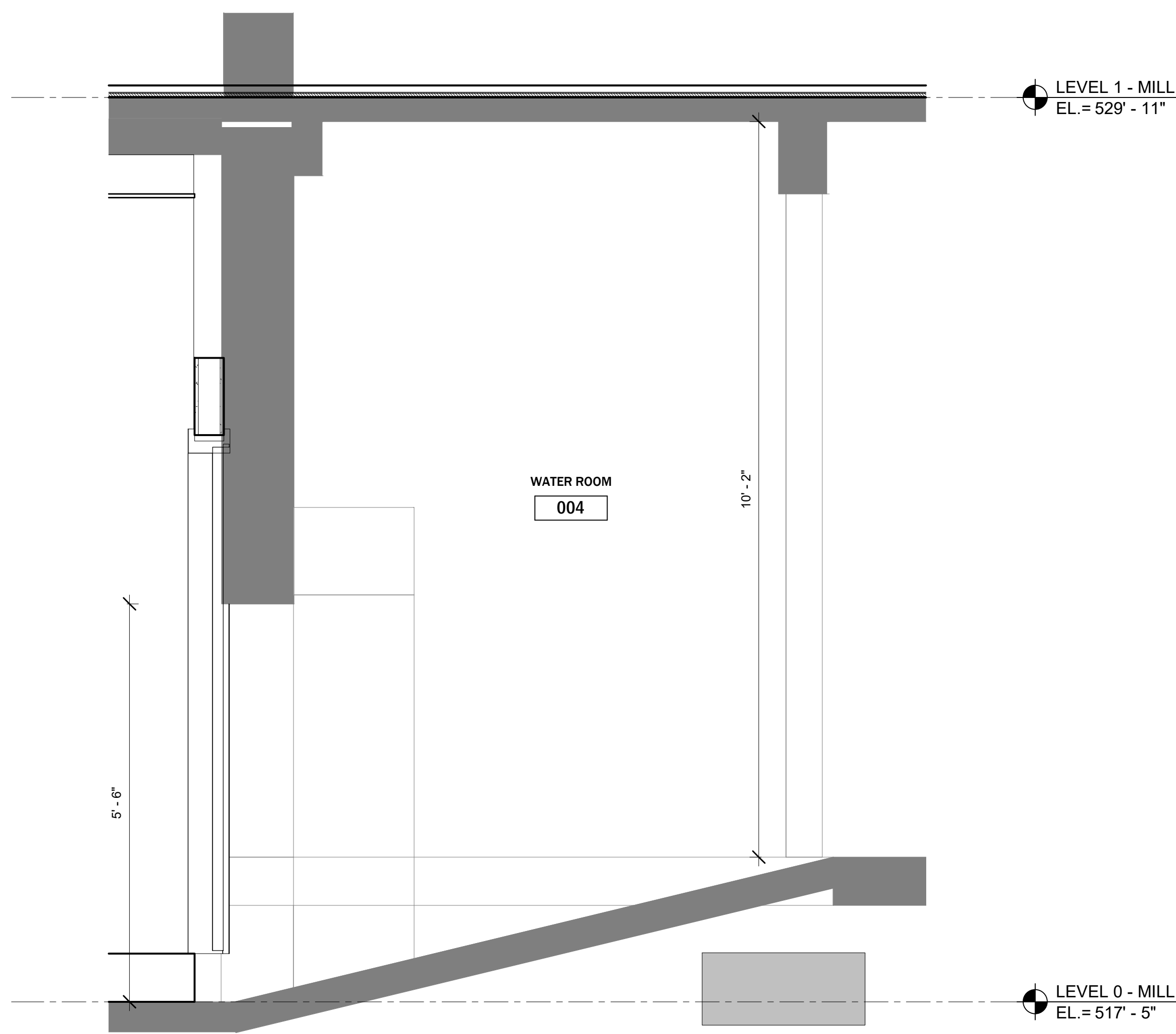
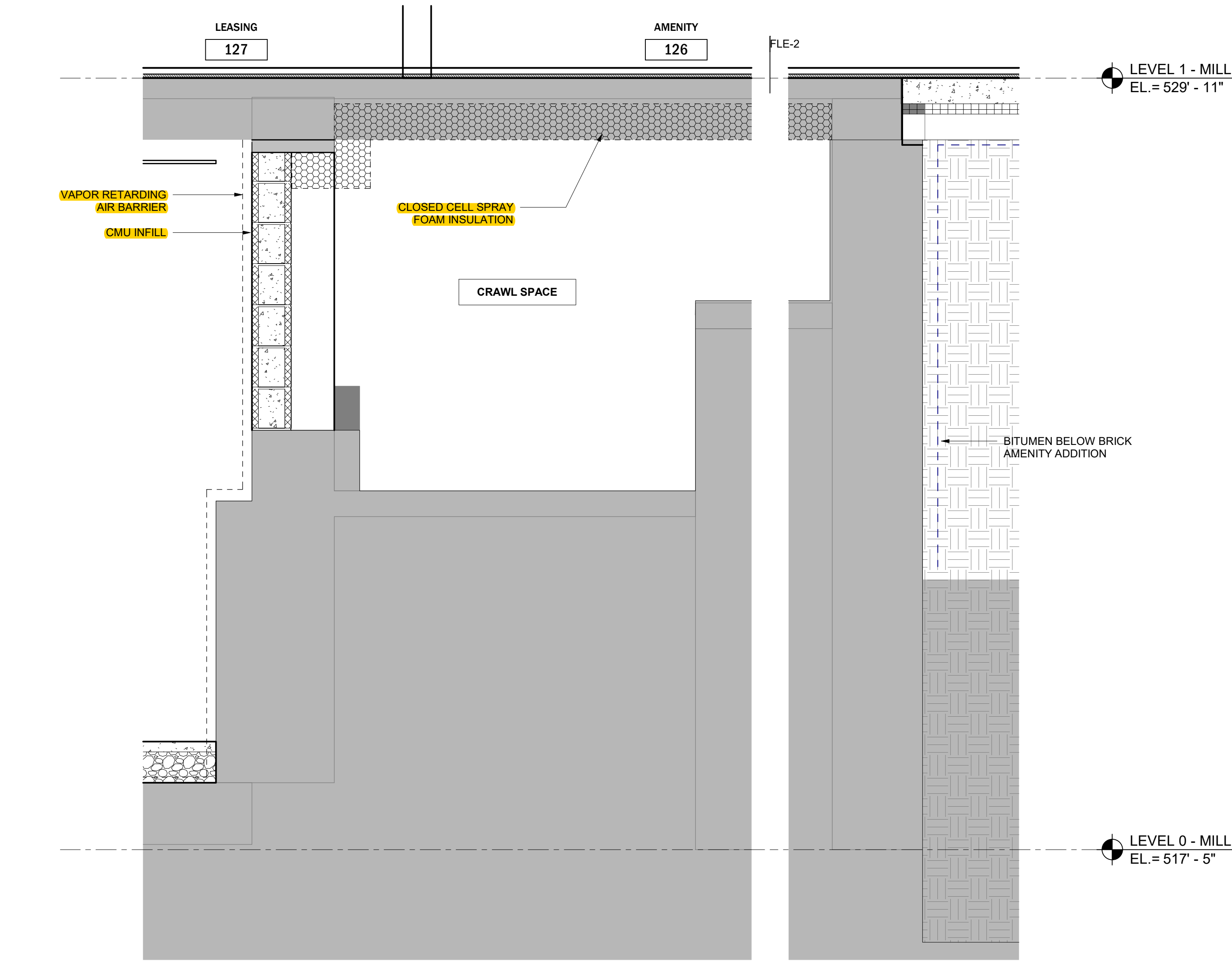
SUB-SLAB DEPRESSURIZATION SYSTEM STANDARD CONSTRUCTION DETAILS

1 FOUNDRY STREET AND 25 MECHANIC STREET
LEBANON, NEW HAMPSHIRE

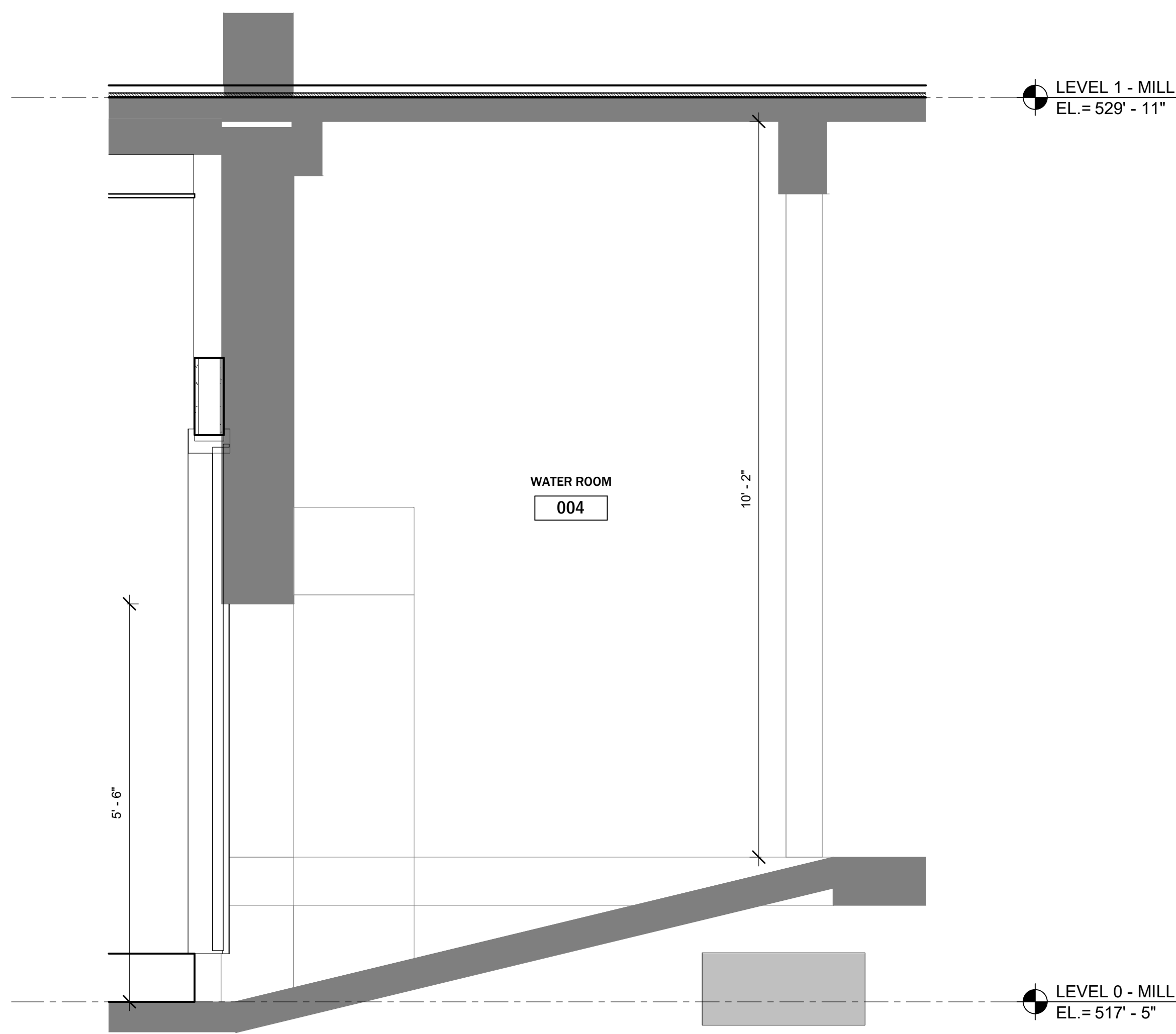
REV.

9/12/2024 11:54:41 AM

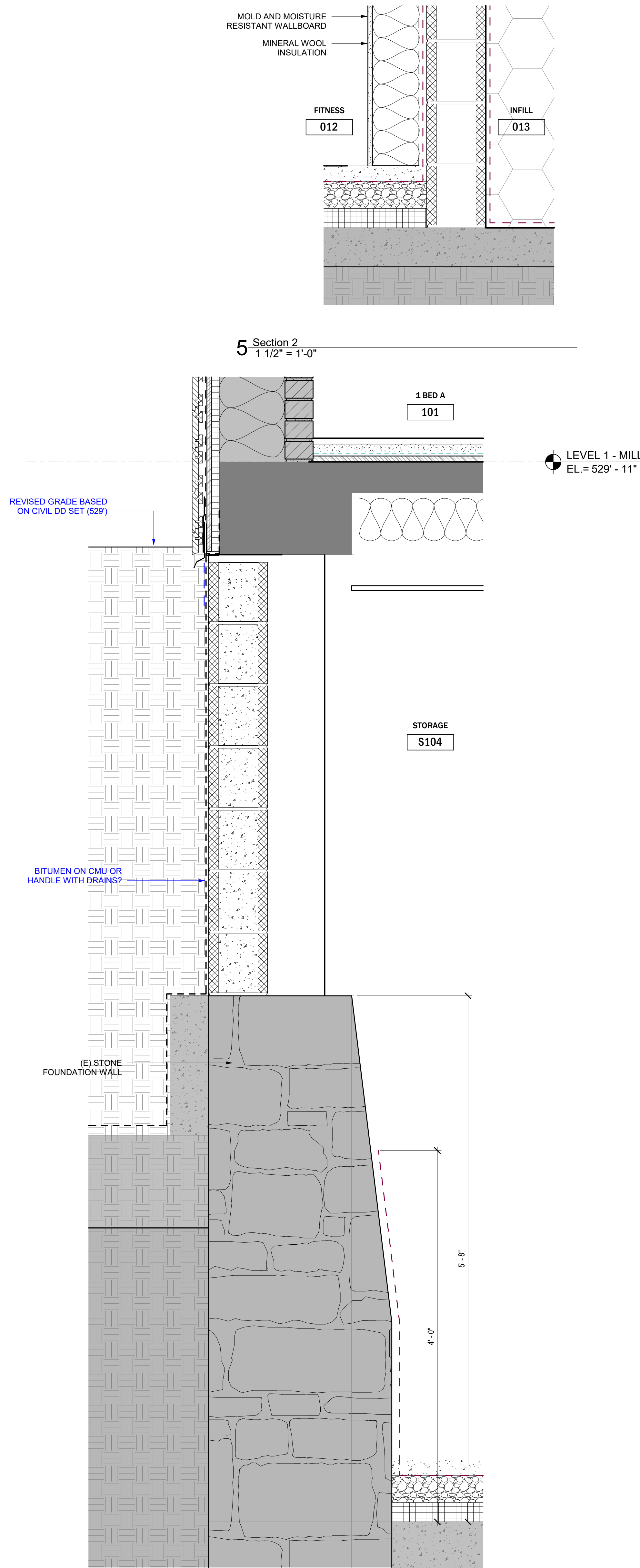
2 Section 27
3/4" = 1'-0"



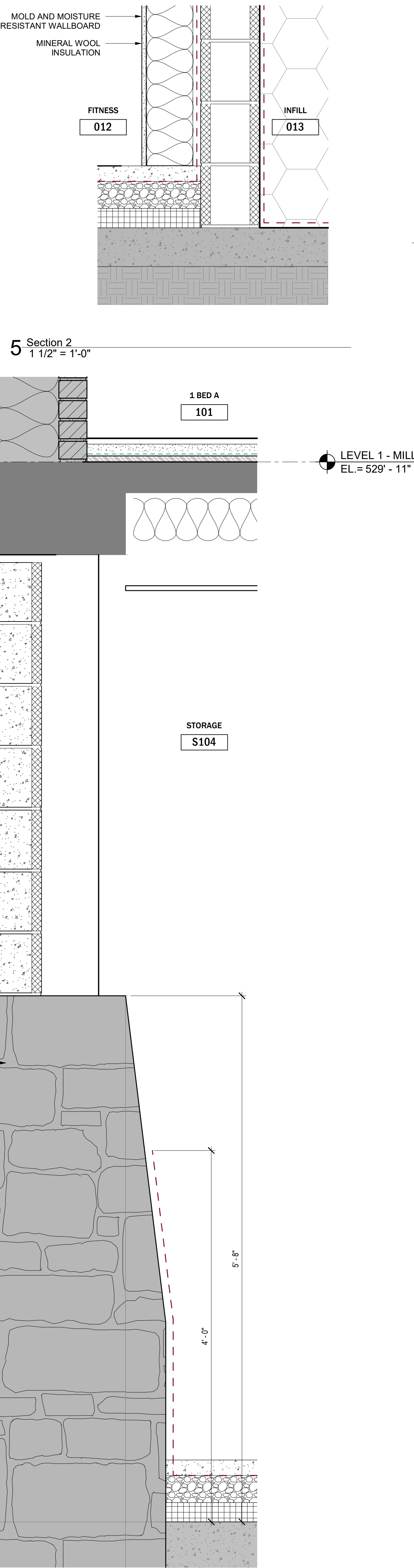
7 WATER ROOM ENTRY
3/4" = 1'-0"



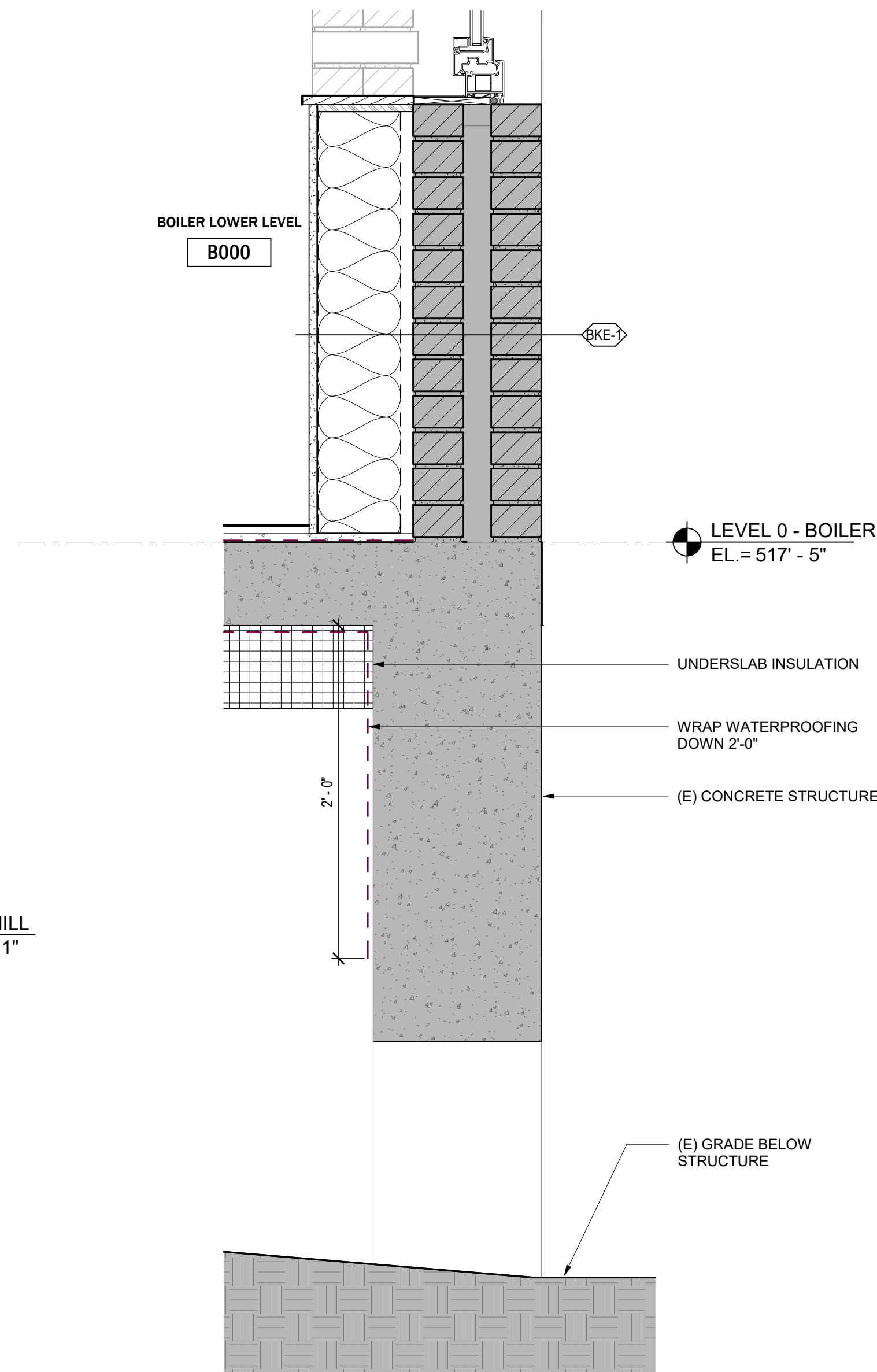
1 MILL FOUNDATION @ UNOCCUPIED WEST
1 1/2" = 1'-0"



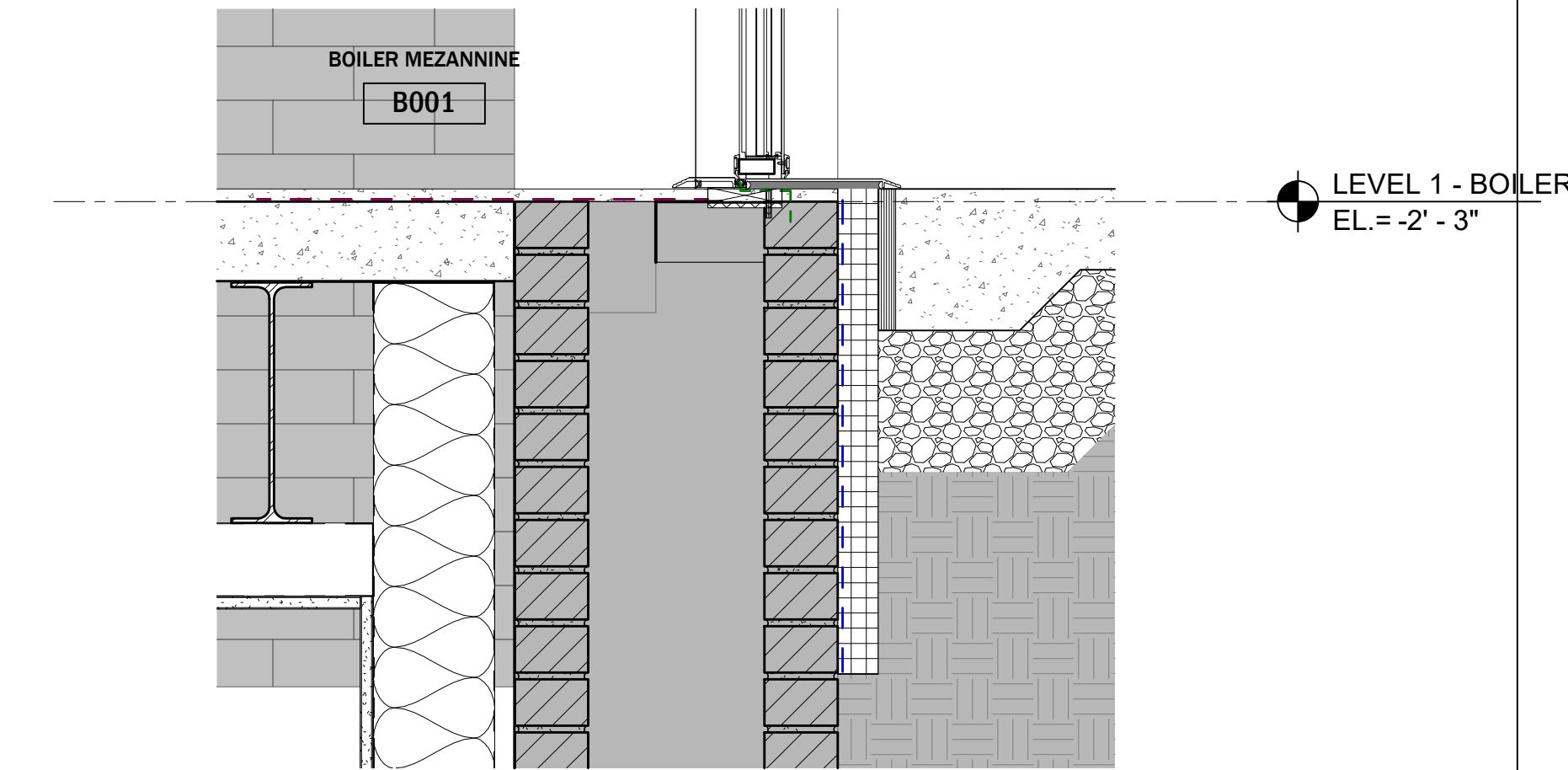
5 Section 2
1 1/2" = 1'-0"



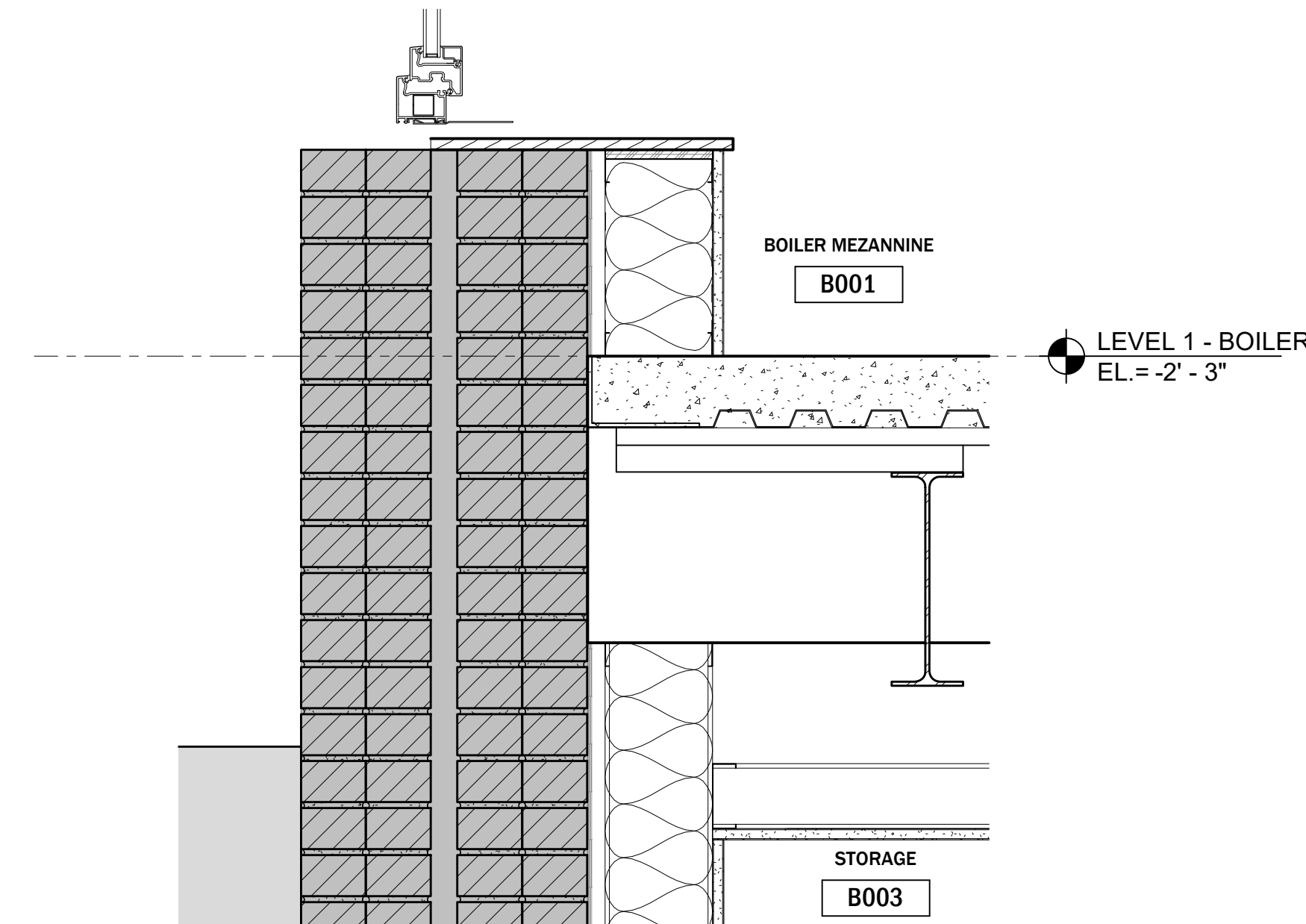
6 FOUNDATION DETAIL @ BOILER EAST
1 1/2" = 1'-0"



3 FOUNDATION DETAIL @ BOILER NORTH 1
1 1/2" = 1'-0"



4 WALL DETAIL @ BOILER WEST
1 1/2" = 1'-0"



DRAFT SET
NOT FOR
CONSTRUCTION

RODE

535 Albany Street | 405
Boston, MA 02118
617.422.0090 | T
rodearchitects.com

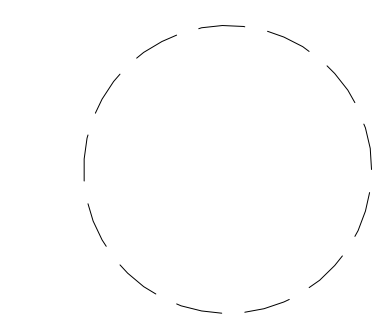
Design Team

SURVEY
Company
Address Line 1
Boston, MA 02118
617.000.0000 | T

CIVIL
Company
Address Line 1
Boston, MA 02118
617.000.0000 | T

STRUCTURAL
Company
Address Line 1
Boston, MA 02118
617.000.0000 | T

MEP
Company
Address Line 1
Boston, MA 02118
617.000.0000 | T



1 FOUNDRY ST.
LEBANON, NH

LWM RESIDENTIAL LLC
25 Hubbard Ave #2
Cambridge, MA 02140

PROJECT:

No.	Description	Date

DATE: 07/12/2024

SCALE: As indicated

**TYPICAL VERTICAL
DETAILS**

A-413



GX PRO SERIES FANS

Radon and Vapor Intrusion Mitigation Fans

Experience the power of a GX Series Fan! Capable of operating at over 4" of vacuum, our GX fans will blow you away. GX fans are recommended for moderate to tight soils.

Vapor Tite™ Technology & Eternalast™

Vapor Tite™ sealing technology is an induction welding process where the housing is permanently bonded together, inhibiting radon and soil gas leakage.

Eternalast™ polycarbonate plastic housing protects the fan from color fade over time, keeping the exterior coloration brilliant throughout the system duration.

Features

- Optimal for moderate to tight soils
- Eternalast™ polycarbonate plastic housing
- Vapor Tite™ technology to inhibit radon and soil gas leakage
- Water-hardened thermally-protected motor
- Quiet operation
- Rated for commercial and residential use
- Rated for indoor and outdoor use
- ETL Listed



Made in USA with U.S. and imported parts.



ETL Listed



All RadonAway® inline radon fans are covered by our 5-year, hassle-free warranty.



radonaway.com



GX PRO SERIES

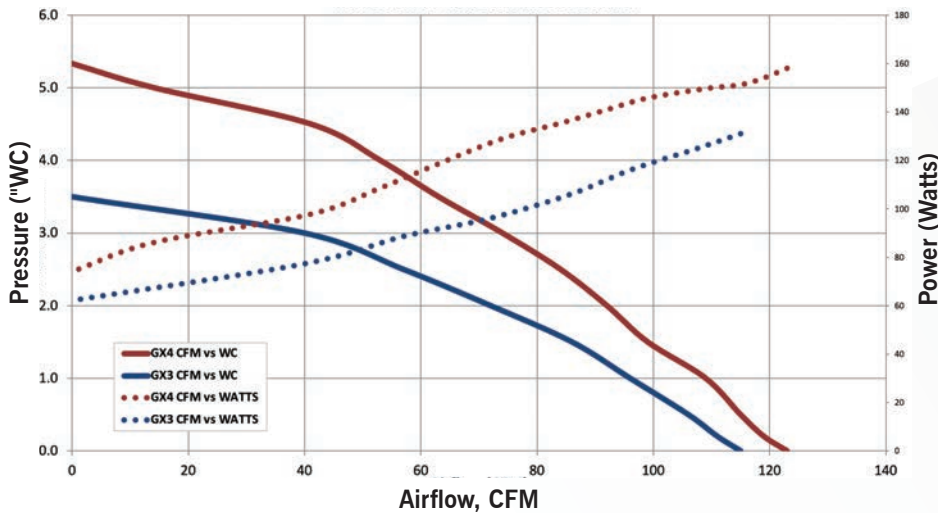
TECHNICAL SPECIFICATIONS

MODEL	P/N	FAN DUCT DIAMETER	WATTS	RECOM. MAX. OP. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC							
					1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"	4.5"
GX3	28584	3"	60-135	3.3	96	86	72	57	40	-	-	-
GX4	28585	3"	74-158	4.8	-	-	-	84	74	63	53	41



All RadonAway® inline radon fans are covered by our 5-year, hassle-free warranty.

PERFORMANCE CURVE



FAN DIMENSIONS



MODEL	A	B	C
GX3	3.5"	11.9"	10.9"
GX4	3.5"	11.9"	10.9"



TECHNICAL DATA SHEET



DESCRIPTION

ProPOxy MB is a **MoistureBLOK** system. It is a clear, two component, 100% solids epoxy hybrid for on or below grade concrete slabs. It has been specially designed for faster cure and maximum moisture vapor protection while reducing the risk of outgassing & “fish eyes” typically associated with porous & contaminated concrete. The **ProPOxy MB** primer system can be used under all **ProREZ** seamless flooring materials.

ProPOxy MB can be applied to concrete slabs with relative humidity as high as 99% RH and provides protection from sustained exposure to pH 14. **ProPOxy MB** is engineered to reduce moisture vapor emission levels up to 25lbs/1,000s.f./24hrs to 3lbs/1,000s.f./24hrs or less, or 99% RH to ≤75%. **ProPOxy MB** is an excellent and extremely effective, long-term moisture blocker, with good surface contaminant resistance for both resinous and resilient flooring systems. Furthermore, **ProPOxy MB** is compliant with all states and federal VOC regulations. Its VOC content of <5 g/L allows installation in sensitive areas such as hospitals, schools, retail stores, and other occupied spaces.

FEATURES & BENEFITS

- ◆ Single Coat Application
- ◆ Minimal downtime- 4 hour Tack-Free Cure
- ◆ Built-In Adhesion Promoter
- ◆ Excellent Inter-Coat Adhesion
- ◆ Low Temperature Curable (45°F)
- ◆ Zero VOCs
- ◆ Green Concrete Primer (min. 7 days old)
- ◆ Moisture tolerant system reducing moisture vapor emission levels up to 25 lbs/1000 sq. ft./24 hours to 3 lbs/1000 sq. ft./24 hours or less (or 99% RH to ≤75%)

COLORS

See “Color Guide

TYPICAL USES

- ◆ Moisture Mitigation System applied under all **ProREZ** seamless flooring materials
- ◆ Concrete slabs- on or below-grade without vapor barrier or retarder
- ◆ “Green Concrete” slabs 7-days or older
- ◆ Industrial, commercial, institutional, and residential applications

OPTIONAL

ProThickener (aerosil thickener)

ProColor Universal Colorants(on-site pigmenting)

ProMetallic (iridescent colorant)

Microbe•BLOK (anti-microbial)

ProPOxy Accelerator (on-site accelerator)

PACKAGING

- ◆ 5 gallon white pail - Resin
- ◆ 5 gallon black pail - Hardener
- ◆ 1 gallon metal pail - Resin
- ◆ 1 gallon black pail - Hardener
- ◆ 50 gallon drum

STORAGE

Materials should be stored indoors between 50°F (10°C) and 90°F (32°C).

SHELF LIFE

One (1) year from date of manufacture.

LIMITATIONS

This product is best suited for application in temperatures between 50°F and 90°F. It is designed as a moisture mitigation primer system for indoor use. It should only be applied to properly prepared, sound and stable concrete.

PRODUCTS GUIDE

1. **ProPOxy MB Resin** is a specially engineered hybrid epoxy used to mitigate moisture vapor when combined with **MB Hardener**.
2. **ProPOxy MB S-Hardener** is a lower viscosity, moderately fast curing hardener for improved wetting and working time when combined with **ProPOxy MB Resin**.
3. **ProPOxy MB F-Hardener** is a fast curing hardener when combined with **ProPOxy MB Resin**.

COVERAGE RATE

A gallon of **ProPOxy MB** will cover in the following manner, with a **standard spread rate**: 10-16 mils or 100-160 s.f. per gallon. A nominal thickness of 16 mils is required for mitigating moisture vapor emissions greater than 16lbs/1000 sq. ft./24 hours or 92% internal RH.

TYPICAL SLAB TESTING PRIOR TO APPLICATION

It is recommended that the owner of the facility or a certified **ProREZ** applicator test the slab(s) with unknown history for contaminants (e.g. hydrocarbons, other organic compounds, water soluble ions, ASR, sulfurous compounds, etc.) to determine suitability for **ProPOxy MB**. **ProREZ** strongly recommends “Anhydrous Calcium Chloride” per ASTM F 1869-11 to determine the MVER (moisture vapor emission rate) in lbs/24hrs/1000 sq. ft or “In-Situ” per ASTM F 2170-11 to determine the internal relative humidity for slabs to be treated. Low permeability flooring finishes like seamless polymer coatings require MVER to be below 3lbs/24hrs/1,000s.f. or 75% internal relative humidity (RH). Internal RH is the test method preferred by most floor covering and coating manufacturers. MVER fluctuates within slab areas, and can have significant seasonal variations. The testing must be carried out before application of the **ProPOxy MB** to obtain the manufacturer’s warranty. Contact **ProREZ** for additional details and guidelines concerning pre-installation concrete testing.

EXAMINING CONCRETE SUBSTRATES

ProREZ recommends taking core samples of older, existing concrete slabs, especially when the building’s history is unknown for analysis. The cores should be analyzed by a qualified laboratory for various compounds that may cause floor failures such as soluble salts, ASR (Alkali Silica Reaction), unreacted water soluble silicates, organic substances etc. Water soluble silicates are found in some curing compounds, floor hardeners, and some manufacturers’ vapor reduction products.

SURFACE PREPARATION

Concrete substrate must be clean and sound, with a properly abraded surface. Do not apply to surfaces that have been previously treated with any kind of penetrating sealer. Remove existing floor coverings, coatings, adhesives, curing compounds, efflorescence, dust, grease, laitance, etc. down to bare concrete with steel shot blasting, scarifying or aggressive diamond grinding to ensure the concrete surface has been properly prepared. The recommended surface profile using ICRI baseline configurations is between CSP4 -5. Once the prep work has been completed, the concrete surfaces must be vacuumed, be free of all dust, dirt and debris prior to the application of **ProPOxy MB**.

MIXING INSTRUCTIONS

Application Equipment:

- ◆ Personal Protective Equipment (PPE) & clothing per SDS (Safety Data Sheet)
- ◆ Jiffy® Mixer Blade (ES Model)
- ◆ Clean Mixing Container
- ◆ Low Speed /High Torque Power Drill
- ◆ Shed-Resistant Roller Cover- 3/8" Nap
- ◆ Application Squeegee

Mix ratio for **ProPox MB** is **2 parts Resin to 1 part Hardener** by volume. **8 oz. of ProColor Universal Colorant** is recommended **per gallon** of material. When field pigmenting, it should be added and mixed in homogenously to the resin prior to adding the hardener. When combining, be sure to add the hardener into the clean mixing container first. Then add the resin (clear or pigmented) scraping out the container. Always pour into the **center** of the mixing container. Mix the components thoroughly for **1-2 minutes** with a Jiffier ES style mix blade. Mix only enough material at one time that can be applied without exceeding the pot life.

SPECIAL NOTES

Concrete surface voids may arise due to aggressive surface preparation and relative quality of concrete. The **ProPox MB** when applied may flow into these voids. As the material flows into these voids, the air is displaced resulting in “outgassing.” If there are excessive surface voids, pin holes, or bubbles encountered, STOP, and contact an **ProREZ** representative before proceeding. Keep the **ProPox MB** clean and free of dust, dirt, and debris prior to any floor coating or covering systems. Sanding is not required if applying within the recoat window. If installing coatings over **ProPox MB** such as epoxy or polyurethane, the recoat window is between 48-72 hours. If the **ProPox MB** system is to remain uncovered for an extended period of time, contact an **ProREZ** representative prior to installing subsequent floor coating or covering systems.

JOINT GUIDELINES

Static, nonmoving joints, cracks and voids can be treated by using **ProPox MB** with the **ProThickener** aerosil additive. Nonmoving joints and cracks can be reinforced using FibaTape™ 6" fiberglass tape. “Hairline” cracks may be directly flooded with **ProPox MB** as applied during installation. Wider/deeper voids and cracks need to be treated after surface preparation has been completed. Clean cracks using a wire brush then vacuum to remove debris. Cracks may be cut 1/8" wide x 1/8 " deep using a thin, diamond-rimmed abrasive

blade on an angle grinder. Brush and vacuum to remove dust and debris. Spackle the deep voids and cracks with **ProPox MB** thickened with **ProThickener** aerosil additive at a mixing ratio that results in a spreadable consistency using a flat spackle knife.

Larger voids, spalls, and wider cracks must be treated first prior to shot-blasting or diamond grinding. Remove all debris, loose particles, dust, contaminants etc. Fill the voids using suitable moisture tolerant repair mortar.

Allow sufficient curing time of the repair mortar before mechanically shotblasting to CSP 4-5.

Dynamic, moving joints and cracks must be honored through the entire flooring system and filled with an elastomeric material that is suited for the general conditions, the use of the facility, and the anticipated type and amount of movement.

If there is any doubt as to the integrity of any existing backing materials, it is always best to remove, clean and re-fill the joint.

Clean the joint completely and remove all remnants of the old elastomeric material from the side walls. Joints or cracks in concrete slabs that have dirt, residue from previous coating, or other contaminants should be cut 1/4" wide x 1/2" deep to remove the contaminants. Clean the joint or crack thoroughly until it is free of dust and debris. Coat the side walls of the joint with **ProPox MB** in the area where the joint sealant is intended to bond to the side of the joint. Do not flood the joint. The elastic joint must be installed so that the joint runs through

the entire flooring system, including all final floor coatings or coverings. Then the joint is fitted with a backer rod and a suitable elastic joint sealant is installed.

TECHNICAL SUPPORT

For any application questions, please call **ProREZ** technical support at 877.511.3456.

DISPOSAL

Dispose in accordance with federal, state and local regulations.

SDS

PLEASE SEE SAFETY DATA SHEET (SDS) FOR SAFETY AND PRECAUTIONS. USE PRODUCT AS DIRECTED. **KEEP OUT OF THE REACH OF CHILDREN.**

PHYSICAL CHARACTERISTICS	
Percentage solid by wt	100%
Mix Ratio (by volume)	2 parts Resin & 1 part Hardener
Viscosity at 70°F	1600 cps
Pot life at 70°F	15 minutes
Cure Time, Tack-Free at 70°F	4-5 hours foot traffic 12-18 hours for normal operation
Working Time at 70°F	15 minutes
Recoat Window	Maximum of 72 hours
Coverage Rate	16 mils, 100 sq ft/US gal
Volatile Organic Compound	(VOC) nil

PHYSICAL PROPERTY	TEST METHOD	RESULT
Hardness (Shore D)	ASTM D-2240	70-75 D
Compressive Strength	ASTM D-695	15,000 psi
Tensile Strength	ASTM D-638	5,000 psi
Tensile Elongation	ASTM D-638	7.50%
Adhesion to Concrete	ASTM D-7234	>400 psi, substrate fails
Impact Resistance	ASTM D-2794	>160 in/lb
Water Absorption	ASTM D-570	<0.1%
Flame Spread/NFPA 101 (3mils over cement board)	ASTM E-684	Class 1
Abrasion Resistance CS17 Wheel 1000 GM Load 1000 Cycles	ASTM D-4060	30 mg loss
Coefficient of Friction (James Friction Tester)	ASTM D-2047 (ADA 0.6 min. req.)	Wet 0.7 Dry 0.8
Perm Rating- Water Method at 73°F/50% RH	ASTM E-96	0.085 grains/hr/ft²/in.Hg

Warranties: Seller warrants that its goods, as described on the face hereof, are free from any defects in material or workmanship. Seller makes no other warranty, express or implied, and all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Seller shall not be liable for prospective profits or special indirect or consequential damages. Seller's sole liability and buyer's exclusive remedy for breach of any warranty as expressly limited, at seller's option, to replacement at the original F.O.B. point or refund of purchase price. Seller shall not be responsible for any claim resulting from failure to utilize product in the manner in which it was intended and in accordance with instruction provided for use of product. Any claim for breach of warranty shall be deemed waived unless buyer shall give seller written notice of such claim within sixty (60) days after delivery and shall allow seller reasonable opportunity to investigate claim and inspect product.

TECHNICAL DATA SHEET



DESCRIPTION

ProPOXY is a uniquely versatile **3:1** epoxy coating system that balances working and cure time. **ProPOXY** is a clear two component thermosetting, low odor, 100% solids epoxy designed as a coating system for various conditions and substrates.

FEATURES & BENEFITS

- ◆ Up to 30+ Minute Working Time
- ◆ Hard-Cure - Screened or Sanded Next Day
- ◆ Lower Temperature Cure
- ◆ Primer, Binder, and Grout Coat
- ◆ 3 Hardeners - Standard, Fast Setting, & Long Working Time (LWT)
- ◆ 2 Resins - Standard & Cove
- ◆ Universal Colorants - 6 gal. Resin Pails for in the field disbursement
- ◆ **MicrobeBLOK** Antimicrobial
- ◆ Can be applied to concrete with moisture vapor emission levels up to 6lbs/1,000sqft/24hrs, or 82% internal RH.
- ◆ Meets USDA & FDA Standards
- ◆ OSHA and ADA Compliant
- ◆ Complies with VOC Regulations by the EPA for AIM Coatings

COLORS

See "Color Guide"

TYPICAL USES

- | | |
|-------------------------|---------------------|
| ◆ Laboratories | ◆ Hospitals |
| ◆ Garages | ◆ Laundries |
| ◆ Pharmaceutical Plants | ◆ Kennels |
| ◆ Clean Rooms | ◆ Schools |
| ◆ Manufacturing | ◆ Commercial/Retail |

PACKAGING

- ◆ 6 gallon white pail - Resin
- ◆ 5 gallon black pail - Hardener
- ◆ 1 gallon metal pail - Resin
- ◆ 1 gallon black pail - Hardener
- ◆ 50 gallon drum

STORAGE

Materials should be stored indoors between 60°F (16°C) and 90°F (32°C).

SHELF LIFE

One (1) year from date of manufacture.

LIMITATIONS

This product is best suited for application in temperatures between 45°F and 90°F. Epoxy is light-sensitive to ambering over time, and requires a UV stable topcoat. Some light colors may require multiple coats for adequate hiding power. Certain colors appear white when scratched. Slight batch-to-batch color variations may occur. When ordering to match a previous color, inquire if the same batch number or quality control number is still available.

OPTIONAL

ProThickener (aerosol thickener)

ProColor Universal Colorants (on-site pigmenting)

ProMetallic (iridescent colorant)

MicrobeBLOK (anti-microbial)

ProPOXY Accelerator (on-site accelerator)

PRODUCTS GUIDE

1. **ProPOXY S Resin** is a well-rounded and versatile **3:1** epoxy to be used as a primer, body, self-level, or grout/top coat. When used as a self-level system ranging from 30-100 mils, combine with **ProFill SL Filler**.

2. **ProPOXY Cove Resin** is a thickened and versatile **3:1** epoxy to be used as a vertical primer and binder when mixed with silica quartz aggregates. Can also be used as a grout coat over epoxy troweled mortars and to repair non-moving control joints & cracks.

3. **ProPOXY S-Hardener** is a versatile epoxy hardener that balances longer working time with an 8 hour cure (70°F) when combined with **ProPOXY Resins**.

4. **ProPOXY F-Hardener** is an accelerated hardener when combined with either **ProPOXY** resins. It is designed for quicker turn-around and recoat with 4 hour cure time (70°F).

5. **ProPOXY LWT-Hardener** is a long working time hardener when combined with **ProPOXY** resin. It is designed specifically for **ProLumina** systems requiring extended "open" time.

COVERAGE RATE

A gallon of **ProPOXY** will cover in the following manner, with a ***standard spread rate**: 6-20 mils or 80-267 s.f. per gallon. *Application of primer, body, and topcoats are variable in thickness depending upon condition of substrate and type of system.

PRELIMINARY FLOOR INSPECTIONS

CHECK THE CONCRETE: Concrete must be structurally sound and free of curing membrane, paint or other sealer. If you suspect that the concrete has been previously sealed, call **ProREZ** technical support for further instructions.

CHECK FOR MOISTURE: Concrete must be dry before application of **ProREZ** floor coating materials. Concrete moisture testing must occur. Calcium chloride testing or in-situ relative humidity testing is recommended. Test methods can be purchased at www.astm.org, see ASTM F1869-11 or F2170-11, respectively or follow manufacturer's instructions. Readings must be below 6lbs/1,000s.f./24hrs (ASTM F1869-11) or 82% internal relative humidity (F2170-11).

***Note:** Although testing is critical, it is not a guarantee against future problems. This is especially true if there is no vapor barrier or the vapor barrier is not functioning properly and/or you suspect you may have concrete contamination from oils, chemical spills or excessive salts.

CHECK THE TEMPERATURE AND HUMIDITY:

Floor temperature and materials should be between 55°F and 85°F. Humidity must be less than 95%. DO NOT coat unless floor temperature is more than five degrees over the dew point.

SURFACE PREPARATION

This product requires preparation in order to perform as expected. Substrate must be mechanically profiled (ASTM 4259-83), clean, sound, and dry.

JOINT GUIDELINES

Depending on preference, joints may or may not be filled. If the joints are filled, nonmoving joints, i.e. contraction or control joints can be treated by using **ProPOXY** with **ProThickener**, or by using **ProUrea HF**, a hard-and-fast urea filler for **Fast-Track** applications.

Note: Coating applied over filled joints may crack if there is concrete movement.

MIXING INSTRUCTIONS

Application Equipment:

- ◆ Personal Protective Equipment (PPE) & clothing per SDS (Safety Data Sheet)
- ◆ Jiffy® Mixer Blade (ES Model)
- ◆ Clean Mixing Container
- ◆ Low Speed /High Torque Power Drill
- ◆ Shed-Resistant Roller Cover- 3/8" Nap
- ◆ Application Squeegee

Mix ratio for **ProPoxy** is **3 parts Resin to 1 part Hardener** by volume. **8-16 oz. of ProColor Universal Colorant** is recommended **per gallon** of material. (See product label.) When field pigmenting, it should be added and mixed in homogenously to the resin prior to adding the hardener. When combining, be sure to add the hardener into the clean mixing container first. Then add the resin (clear or pigmented) scraping out the container. Always pour into the **center** of the mixing container. Mix the components thoroughly for **1-2 minutes** with a Jiffler ES style mix blade. Mix only enough material at one time that can be applied without exceeding the pot life.

CLEANING GUIDELINES & MAINTENANCE

Allow floor coating to cure at least 3 days before cleaning by mechanical means (e.g., sweeper, scrubber, disc machine).

CARE

Proper maintenance will increase the service life and help maintain the appearance of your new **ProREZ** floor coating system. This product is considered to be a low maintenance coating system, however, certain textures and service environments require specific procedures. SEE "CLEANING GUIDELINES" for more information.

CAUTION

Avoid scratching or gouging the surface. All floor coatings will scratch if heavy or sharp objects are dragged across the surface.

Do not drop heavy or pointed items on the floor as this may cause chipping or concrete pop-outs in the case of a weak substrate cap.

Rubber tires can permanently stain the floor coating from plasticizer migration. In warehouse & industrial settings, the use of non-marking tires is highly recommended to prevent discoloration. Rubber burns from quick stops and starts can heat the coating to its softening temperature, causing permanent marking.

REPAIRS

Repair gouges or scratches or chip outs as soon as possible to prevent moisture or chemical contamination.

DISPOSAL

Dispose in accordance with federal, state and local regulations.

TECHNICAL SUPPORT

For any application questions, please call **ProREZ** technical support at **877.511.3456**.

SDS

PLEASE SEE SAFETY DATA SHEET (SDS) FOR SAFETY AND PRECAUTIONS. USE PRODUCT AS DIRECTED. **KEEP OUT OF THE REACH OF CHILDREN.**

PHYSICAL CHARACTERISTICS	
Percentage solids by weight	100%
Mix Ratio (by volume)	3 parts Resin & 1 part Hardener
Viscosity at 70°F	500 cps
Pot Life at 70°F	30 mins (LWT-Hardener), 20 mins (S-Hardener), 10 mins (F-Hardener)
Cure Time, Tack-Free at 70°F	ProPoxy LWT-Hardener: 18 hrs foot traffic ProPoxy S-Hardener: 8-10 hrs foot traffic ProPoxy F-Hardener: 4-5 hrs foot traffic, 12-18 hrs for normal operation
Working Time at 70°F	45 mins (LWT-Hardener), 25 mins (S-Hardener), 15 mins (F-Hardener)
Recoat Window	Maximum of 36 hrs
Coverage Rate	10 mils, 160 sq ft/US gallon. Can be applied to 6 mils, 267 sq ft/US gallon
Volatile Organic Compound	(VOC) nil

PHYSICAL PROPERTY	TEST METHOD	RESULT
Hardness (Shore D)	ASTM D-2240	70-80 D
Compressive Strength	ASTM D-695	13,100 psi
Tensile Strength	ASTM D-638	5,780 psi
Tensile Elongation	ASTM D-638	7.50%
Adhesion to Concrete	ASTM D-7234	>400 psi, substrate fails
Impact Resistance	ASTM D-2794	>160 in/lb
Water Absorption	ASTM D-570	<0.1%
Flame Spread/NFPA 101 (3 mils over cement board)	ASTM E-684	Class 1
Abrasion Resistance CS17 Wheel 1000 GM Load 1000 Cycles	ASTM D-4060	30 mg loss
Coefficient of Friction (James Friction Tester) Wet Dry	ASTM D-2047	0.7 (smooth) 0.8 (smooth)
Heat Resistance Limitation Thermal Cycling (5 min interval) (10 min interval) Continuous Heat	Hot Oil (200°F) to Ice Water (25°F) Hot Oil (200°F) to Ice Water (25°F) 1 hr 160°F Hot Oil submersion	20 cycles – no effect 20 cycles – no effect No effects
Other Tests: Mortar Mix		
Compressive Strength	ASTM C-579	15,000 psi
Tensile Strength	ASTM C-307	2,400 psi
Flexural Strength	ASTM C-580	4,000 psi
Flexural Modulus of Elasticity	ASTM C-580	1.0 × 10 ⁶
Thermal Coefficient of Linear Expansion	ASTM C-531	1.1 × 10 ⁻⁵ in./in.°C
Water Absorption	ASTM C-413	<0.1%

Warranties: Seller warrants that its goods, as described on the face hereof, are free from any defects in material or workmanship. Seller makes no other warranty, express or implied, and all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Seller shall not be liable for prospective profits or special indirect or consequential damages. Seller's sole liability and buyer's exclusive remedy for breach of any warranty as expressly limited, at seller's option, to replacement at the original F.O.B. point or refund of purchase price. Seller shall not be responsible for any claim resulting from failure to utilize product in the manner in which it was intended and in accordance with instruction provided for use of product. Any claim for breach of warranty shall be deemed waived unless buyer shall give seller written notice of such claim within sixty (60) days after delivery and shall allow seller reasonable opportunity to investigate claim and inspect product.

TECHNICAL DATA SHEET



DESCRIPTION

ProTHANE is a uniquely versatile high-performance hybrid polyurethane top coat. **ProTHANE** is a clear two component thermosetting, low odor, 100% solids, U-V stable urethane. It has been designed to be used in areas that require maximum abrasion and wear resistance. For applications with relative humidity <40% and/or temperatures <60°F ("low range"), **ProTHANE F-Resin** is available. For applications with relative humidity >70% and/or temperatures >70°F ("high range"), **ProTHANE HH-Resin** is available. For all other applications, **ProTHANE S-Resin** should be used. For installations requiring a low gloss finish, **ProTHANE Satin** and **Satin F-Resins** are available.

FEATURES & BENEFITS

- ♦ Excellent Abrasion Resistance
- ♦ No VOC, Low Odor
- ♦ U-V Stable
- ♦ High & Low Humidity Curable
- ♦ High & Low Gloss
- ♦ **ProColor Universal Colorants**
- ♦ **MicrobeBLOK** Antimicrobial
- ♦ Meets USDA & FDA Standards
- ♦ OSHA and ADA Compliant
- ♦ Complies with VOC Regulations by the EPA for AIM Coatings

COLORS

See "Color Guide"

TYPICAL USES

- ♦ Laboratories
- ♦ Garages
- ♦ Pharmaceutical Plants
- ♦ Clean Rooms
- ♦ Kitchens
- ♦ Hospitals
- ♦ Hangars
- ♦ Kennels
- ♦ Schools
- ♦ Commercial/Retail

PACKAGING

- ♦ 1 gallon metal pail - Resin
- ♦ 1 gallon black pail - Hardener.

STORAGE

Materials should be stored indoors between 60°F (16°C) and 90°F (32°C).

SHELF LIFE

One (1) year from date of manufacture.

LIMITATIONS

This product is best suited for application in temperatures between 60°F and 90°F. Some light colors may require multiple coats for adequate hiding power. Certain colors appear white when scratched. Slight batch-to-batch color variations may occur. When ordering to match a previous color, inquire if the same batch number or quality control number is still available.

OPTIONAL

ProGrip (non-skid)

ProWear (wear resistance)

ProColor Universal Colorants (on-site pigmenting)

MicrobeBLOK (anti-microbial)

PRODUCTS GUIDE

1. **ProTHANE S-Resin** offers extended working time up to 40 minutes at 70°F, 50% RH. Rising temperatures above 70°F will measurably reduce working time. When mixed at **1 part Resin and 2 parts Hardener**, it can be applied from 3-4 mils in thickness.

2. **ProTHANE F-Resin** is designed for use when the relative humidity is below 40%, and/or the ambient temperature is below 60°F. This resin will also provide an accelerated cure for fast-track applications when the relative humidity is above 50%, and/or the ambient temperature is above 60°F. When mixed at **1 part Resin and 2 parts Hardener**, it can be applied from 3-4 mils in thickness.

3. **ProTHANE HH-Resin** offers optimal working times in higher temperatures and relative humidities. It's best applied at temperatures of 70°F and rising humidities above 70%, with working times up to 40 minutes. When mixed at **1 part Resin and 2 parts Hardener**, it can be applied from 3-4 mils in thickness.

4. **ProTHANE Satin Resin** is a low gloss, high performance finish coat offering similar working time to the **ProTHANE Resin**. When mixed at **1 part Resin and 1 part Hardener**, it can be applied from 3-4 mils in thickness.

5. **ProTHANE Satin F-Resin** is designed for use when the relative humidity is below 50%, and/or the ambient temperature is below 60°F. This resin will also provide an accelerated cure for fast-track applications when the relative humidity is above 50%, and/or the ambient temperature is above 60°F. When mixed at **1 part Resin and 1 part Hardener**, it can be applied from 3-4 mils in thickness.

6. **ProTHANE Hardener** is used with ALL the **ProTHANE Resins**.

PRELIMINARY FLOOR INSPECTIONS CHECK THE TEMPERATURE AND HUMIDITY:

ProTHANE is sensitive to moisture and temperature during application and curing. Floor temperature and materials should be between 65°F (18°C) and 90°F (32°C). Humidity must be less than 90%. DO NOT coat unless floor temperature is more than five degrees over the dew point.

COVERAGE RATE

A gallon of **ProTHANE** will cover in the following manner, with a **standard spread rate** for a finish topcoat at 3-4 mils or 401-534 s.f. per gallon. *Application of body/grout and topcoats are variable in thickness depending upon condition of substrate and type of system.

RECOAT REQUIREMENTS

In the event of a recoat application beyond 36 hours, the existing topcoat should be lightly ground using 100-grit diamonds, vacuuming, and tack-wiping before re-application. Please call **ProREZ** technical support for further instructions.

MIXING INSTRUCTIONS

Application Equipment:

- ♦ Personal Protective Equipment (PPE) & clothing per SDS (Safety Data Sheet)
- ♦ Jiffy® Mixer Blade (ES Model)
- ♦ Clean Mixing Container
- ♦ Low Speed /High Torque Power Drill
- ♦ Shed-Resistant Roller Cover - 1/4" Roller Nap
- ♦ Wide-Boy Bucket for "Dip 'n' Roll"

See “Products Guide” for mix ratio. **8-16 oz. of ProColor Universal Colorant** is recommended **per gallon** of material. (See product label.) When field pigmenting, it should be added and mixed in homogenously to the resin prior to adding the hardener. When combining, be sure to add the resin (clear or pigmented) into the clean mixing container first. Then add the hardener scraping out the container. Always pour into the **center** of the mixing container. Mix the components thoroughly for **1-2 minutes** with a Jiffler ES style mix blade. Mix only enough material at one time that can be applied without exceeding the pot life.

- ◆ **ProWear** additive is available for enhanced abrasion and wear resistance in the **ProThane** finish coat. NOT to be used in WET areas. One (1) quart can per 1.5 gallon mix.
- ◆ **ProGrip** additive can be included for enhanced non-slip resistance. 4-6 ozv. per gallon of liquid.

CLEANING GUIDELINES & MAINTENANCE
Allow floor coating to cure at least 3 days before cleaning by mechanical means (e.g., sweeper, scrubber, disc machine).

CARE
Proper maintenance will increase the service life and help maintain the appearance of your new **ProREZ** floor coating system. This product is considered to be a low maintenance coating system, however, certain textures and service environments require specific procedures. SEE “CLEANING GUIDELINES” for more information.

CAUTION
Avoid scratching or gouging the surface. All floor coatings will scratch if heavy or sharp objects are dragged across the surface.

Do not drop heavy or pointed items on the floor as this may cause chipping or concrete pop-outs in the case of a weak substrate cap.

Rubber tires can permanently stain the floor coating from plasticizer migration. In warehouse & industrial settings, the use of non-marking tires is highly recommended to prevent discoloration. Rubber burns from quick stops and starts can heat the coating to its softening temperature, causing permanent marking.

REPAIRS
Repair gouges or scratches or chip outs as soon as possible to prevent moisture or chemical contamination.

Warranties: Seller warrants that its goods, as described on the face hereof, are free from any defects in material or workmanship. Seller makes no other warranty, express or implied, and all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Seller shall not be liable for prospective profits or special indirect or consequential damages. Seller's sole liability and buyer's exclusive remedy for breach of any warranty as expressly limited, at seller's option, to replacement at the original F.O.B. point or refund of purchase price. Seller shall not be responsible for any claim resulting from failure to utilize product in the manner in which it was intended and in accordance with instruction provided for use of product. Any claim for breach of warranty shall be deemed waived unless buyer shall give seller written notice of such claim within sixty (60) days after delivery and shall allow seller reasonable opportunity to investigate claim and inspect product.

DISPOSAL
Dispose in accordance with federal, state and local regulations.

TECHNICAL SUPPORT
For any application questions, please call **ProREZ** technical support at **877.511.3456**.

SDS
PLEASE SEE SAFETY DATA SHEET (SDS) FOR SAFETY AND PRECAUTIONS. USE PRODUCT AS DIRECTED. **KEEP OUT OF THE REACH OF CHILDREN.**

PHYSICAL CHARACTERISTICS	
Percentage solids by weight	100%; 96% Satin Resin
Mix Ratio (by volume)	ProThane S, F, and HH- 1 part Resin: 2 parts Hardener ProThane Satin & Satin F - 1 part Resin: 1 part Hardener
Viscosity at 70°F	800 cps (average)
Pot life at 70°F	60 minutes (average)
Cure Time, Tack-Free at 70°F, 50% Relative Humidity	ProThane S-Resin: 10-12 hours foot traffic ProThane Satin & HH-Resin: 18-24 hours foot traffic ProThane F & Satin F-Resins: 6-8 hours foot traffic
Full Traffic	48 Hours, HH-Resin; 24 Hours, S & F-Resin
Working Time at 70°F, 50% Relative Humidity	ProThane HH-Resin: 40+ minutes ProThane S-Resin: 40 minutes ProThane Satin Resin: 40+ minutes ProThane F & Satin F-Resins: 15 minutes
Recoat Window	Maximum of 36 hours (F-Resins: 24 hours)
Coverage Rate	4 mils, 401 sq ft/US gallon 3 mils, 534 sq ft/US gallon
Volatile Organic Compound	(VOC) nil

PHYSICAL PROPERTY	TEST METHOD	RESULT
Konig Hardness (3 mils)	ASTM D-4366	171
Tensile Strength	ASTM D-2370	6,500 psi
Tensile Elongation	ASTM D-2370	8%
Adhesion	ASTM D-4541	400 psi, concrete failure (applied over epoxy)
Impact Resistance	ASTM D-2794	>160 in/lb
Water Absorption	ASTM D-570	<0.1%
Flame Test (3 mils over cement board)	ASTM D-648	Class 1
Abrasion Resistance CS17 Wheel 1000 GM Load 1000 Cycles	ASTM D-4060	10-15 mg loss, 24 hours 5-10 mg loss, 72 hours
Coefficient of Friction (James Friction Tester) Wet Dry	ASTM D-2047	0.7 (smooth) 0.8 (smooth)

AquaBlok® 2080FW™ /PONDSEAL™

General Description

AquaBlok is a patented composite aggregate resembling small stones that is typically comprised of a dense aggregate core wrapped with an additive layer. In this application of the technology, crushed limestone typically serves as the core and powdered sodium bentonite clay is utilized as the coating or additive layer (Figure 1).

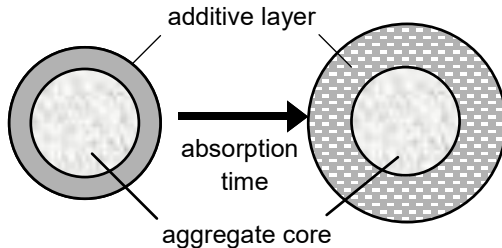


Figure 1. Configuration of stone-clay composite particle.

AquaBlok 2080FW (or PONDSEAL) is a freshwater-compatible formulation which is 20% clay by weight (based on the total quantity of raw material used in production). The high-solids content and consistency of the blend provides superior structural stability and reliable hydration/swell when exposed to water. This product will provide a low-permeable seal without the need for field blending or mechanical compaction.



Product Specifications

Aggregate Core:	Nominal AASHTO #8 (1/4-3/8") crushed limestone or non-calcareous substitute, as deemed project-appropriate (can be custom-sized to meet project-specific need)
Additive Layer	Bentonite Performance Minerals – BARA-KADE® Standard (or equivalent) - High-swell Wyoming sodium (Na) bentonite clay (montmorillonite) - Powdered (approx. 200 mesh); light grey; odorless
Binder:	Cellulosic polymer
Permeability:	1×10^{-7} to 1×10^{-9} cm/sec (depending on product thickness and overburden)
Dry Bulk Density:	88 – 90 lbs/ft ³ (consolidated); 83 – 85 lbs/ft ³ (loose)
Pre-Hydrated Moisture:	7 – 15% (maximum)

Product Storage & Handling

AquaBlok should always be stored under-roof or completely protected (i.e. tarped) from exposure to surface moisture (e.g. precipitation, run-off, excessive condensation) prior to placement. Storage in a temperature-and/or humidity-controlled environment is not necessary. However, always store in original packaging on a clean, dry pallet prior to installation.

Material can be placed using a wide range of commonly available construction equipment – e.g. loaders, excavators, conveyors. Care should be taken to keep equipment as dry as possible during handling. For optimum performance, AquaBlok should NOT be blended or mixed with resident soil. Mechanical compaction can further reduce permeability but is not necessary.



AquaBlok, Ltd.
175 Woodland Ave.
Swanton, OH 43558
www.aquablok.com
Phone: (419) 825-1325
Email: services@aquablok.com

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Rev. 02/18/2016



Standard Operating Procedure Installation and Extraction of the Vapor Pin®

Updated March 16, 2018

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® [VAPOR PIN® and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole must be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;

- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN®.



Figure 1. Assembled VAPOR PIN®

Installation Procedure:

- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Set up wet/dry vacuum to collect drill cuttings.
- 3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.
- 4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole must be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending

- 5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.
- 6) Place the lower end of VAPOR PIN® assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.



Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® shoulder. Place the protective cap on VAPOR PIN® to prevent vapor loss prior to sampling (Figure 3).



Figure 3. Installed VAPOR PIN®

- 7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).



Figure 4. Secure Cover Installed

- 8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.
- 9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN®. This connection can be made using a short piece of Tygon™ tubing to join the VAPOR PIN® with the

Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the VAPOR PIN® as possible to minimize contact between soil gas and Tygon™ tubing.



Figure 5. VAPOR PIN® sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.



Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace

the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN®.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.



Figure 7. Removing the VAPOR PIN®

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN® in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, STAINLESS – 1/2 hour, BRASS 8 minutes

- 3) Replacement parts and supplies are available online.



Standard Operating Procedure Installation of the Vapor Pin® Insert

June 2020

Scope:

This standard operating procedure describes the installation the Vapor Pin® Insert (Figure 1).

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin® Insert. The Vapor Pin® Insert is used to facilitate the collection of soil gas samples and pressure measurements beneath engineered vapor intrusion barriers (e.g., Geo-Seal®), or vapor mitigation coatings (e.g., Retro-Coat™).

Equipment Needed:

- Vapor Pin® Insert;
- Vapor Pin® Insert Cap;
- Hacksaw (optional);
- Power drill and small diameter bits (optional);
- Threaded rod (1/2" x 13); and
- Dead blow hammer.

Installation Procedure (New Construction):

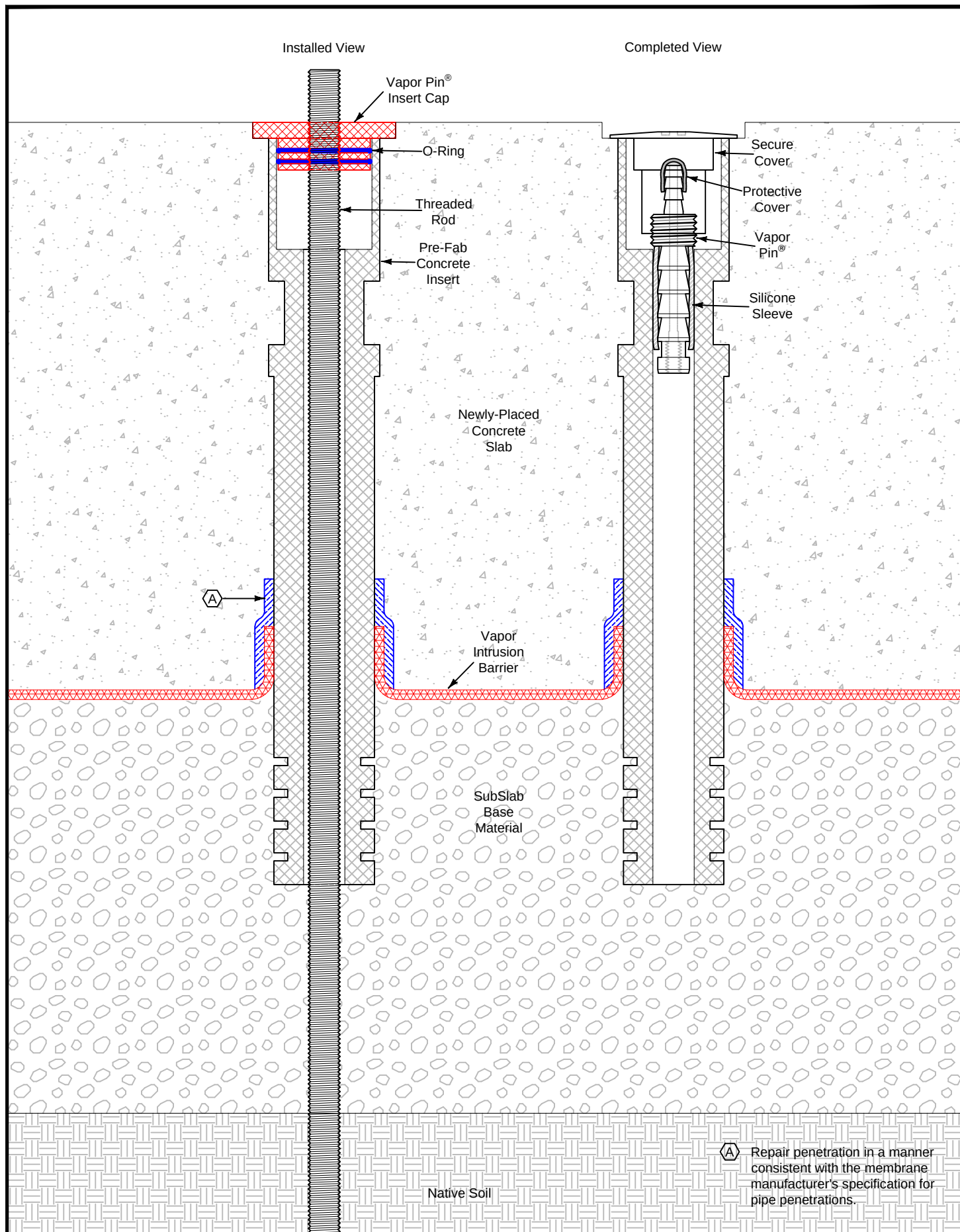
- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Locate the desired position (horizontally and vertically) of the top of the Vapor Pin® Insert.

- 3) Pierce the barrier with a threaded rod of sufficient length to extend slightly above the elevation of the finished floor and into the subgrade a sufficient depth to provide support for the Vapor Pin® Insert. Make sure the rod is perpendicular to the proposed floor surface. Avoid bending the rod, as it may inhibit its removal after the concrete has cured. Also avoid damaging the threads on the rod.
- 4) Dry fit the Vapor Pin® Insert and trim, or extend the length. Extend the length by sliding the Insert into a length of 1.5 inch diameter schedule 40 PVC pipe. The insert and pipe can be joined using PVC cement or similar material. Allow sufficient time for the adhesive to cure prior to sampling. Vent holes may be added at the bottom of the Insert or PVC extension to promote air flow.
- 5) Assemble the Vapor Pin® Insert and Cap by pressing the Cap into the top of the Insert. Position the assembly on the threaded rod so that the top of the Cap lies flush with the elevation of the finished floor. It is important that the position of the Insert be perpendicular to the slab so that the Vapor Pin® Secure Cover meets uniformly with the floor.
- 6) Marry the barrier to the Insert per the manufacture's specification prior to pouring the concrete slab.
- 7) After the concrete has set, remove the threaded rod and Cap and install the Vapor Pin® or FLX-VP Vapor Pin® product in the Insert.

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending

Installation Procedure (Existing Construction):

- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Prior to installation in an existing slab, a large diameter hole must be cored through the slab to either expose the barrier, or provide access to the base beneath the slab prior to the application of a vapor mitigation coating. Contact the vendor of the barrier or coating about the desired diameter of the hole, the procedures used to expose the seal, and the methods and materials used to marry the seal or coating to the Insert prior to proceeding.
- 3) Locate the desired position (horizontally and vertically) of the top of the Vapor Pin® Insert.
- 4) Pierce the barrier (if applicable) with a threaded rod of sufficient length to extend slightly above the elevation of the finished floor and into the subgrade a sufficient depth to provide support for the Vapor Pin® Insert. Make sure the rod is perpendicular to the proposed floor surface. Avoid bending the rod, as it may inhibit its removal after the concrete has cured. Also avoid damaging the threads on the rod.
- 5) Dry fit the Vapor Pin® Insert and trim, or extend the length. Extend the length by sliding the Insert into a length of 1.5 inch diameter schedule 40 PVC pipe. The insert and pipe can be joined using PVC cement or similar material. Allow sufficient time for the adhesive to cure prior to sampling. Vent holes may be added at the bottom of the Insert or PVC extension to promote air flow.
- 6) Assemble the Vapor Pin® Insert and Cap by pressing the Cap into the top of the Insert. Position the assembly on the threaded rod so that the top of the Cap lies flush with the elevation of the finished floor. It is important that the position of the Insert be perpendicular to the slab so that the Vapor Pin® Secure Cover meets uniformly with the floor.
- 7) If the Insert is used in conjunction with a vapor intrusion barrier, marry the barrier to the Insert per the barrier manufacturer's specification prior to pouring the concrete slab.
- 8) After the concrete has set, remove the threaded rod and Cap and install the Vapor Pin® or FLX-VP Vapor Pin® product in the Insert.





AWD SITEDRAIN™

AMERICAN WICK DRAIN SITEDRAIN™ FOR RADON, MOISTURE AND VOC REDUCTION

American Wick Drain (AWD) SiteDrain Strip products are composed of a dimpled polymeric perforated core fully wrapped in a nonwoven geotextile and are comprised of 84% air space. These products provide a value engineered alternative to perforated pipe and aggregate subsurface materials. Best for projects where a high compression strength product is required.

FEATURES

- ✓ Saves time & money
- ✓ Easy to install
- ✓ Fully wrapped polymeric core resistant to most chemicals
- ✓ Best for projects where high compression strength is required
- ✓ Complies w/RRNC 2.0 & IRC Appendix F
- ✓ Complies w/ANSI-AARST CC-1000 Standard



AWD SITEDRAIN
6000 SERIES
P/N 28636, 28637

PROPERTY	AWD SiteDrain 6412 (P/N 28636)	AWD SiteDrain 6418 (P/N 28637)	AWD SiteDrain 9412 (P/N 28634)	AWD SiteDrain 9418 (P/N 28635)
X-Sect. Area	10.08	15.2	10.08	15.2
Thickness (Inches)	1	1	1	1
Width (Inches)	12	18	12	18
Roll Length (Feet)	150	150	150	150
Core Temp (Low/Melting Point)	20 F/200 F	20 F/200 F	20 F/200 F	20 F/200 F
Compressive Strength*	6000 PSF @ 7% Compress.	6000 PSF @ 7% Compress.	9500 PSF @ 7% Compress.	9500 PSF @ 7% Compress.
Determined Flow Rate**	21 GPM / Ft.	21 GPM / Ft.	21 GPM / Ft.	21 GPM / Ft.
Rolls Per Pallet	12" = 7 Rolls per Pallet	18" = 5 Rolls per Pallet	12" = 7 Rolls per Pallet	18" = 5 Rolls per Pallet

*Maximum PSF rating where product is equivalent or greater than a cross-sectional area for a 3" (6412 / 9412) or 4" (6418 / 9418) pipe per RRNC and CC-1000.

**@ 3600 PSF and 0.01 Gradient (ASTM D4491)

PSF: Pounds per Square Foot

For Further Information, Contact sales@radonaway.com



AWD SITEDRAIN APPLICATION

AWD SiteDrain Strip can be used where a pressure field is required across obstacles or over distances; in conjunction with sand and/or gravel; or in place of perforated piping for negative pressure field extension under a concrete slab or radon vapor barrier.



BENEFITS/ADDITIONAL FEATURES

- ✔ Reduces radon, moisture and other toxic vapor levels in home, commercial or industrial buildings.*
- ✔ Reduces the potential for mold and mildew problems.*
- ✔ Maintains air flow communication across grade beams, downturns, footers and distant corners.*
- ✔ Reduces the need for an exhaust fan or basement dehumidifier reducing lifetime energy costs.*
- ✔ Manufactured in USA.
- ✔ Shortens concrete slab cure time significantly.*
- ✔ When used with Geo-Outlet (see “Accessories”), provides a more cost-effective solution vs. pipe fittings.
- ✔ When pouring slabs in existing dirt floor basements or crawlspaces, the low profile of the AWD SiteDrain Strip allows for less excavation when compared to placing perforated pipe in gravel.*

*When used in conjunction with an active fan.

APPLICATION

PRODUCT	SUBSLAB & CRAWLSPACE APPLICATIONS UP TO 6000 PSF	SUBSLAB & CRAWLSPACE APPLICATIONS UP TO 9500 PSF	REPLACEMENT FOR PIPE EQUIVALENT	IRC APPENDIX F & CC-1000 COMPLIANT	COUNTRY OF MANUFACTURE**
AWD SITEDRAIN 6412	X		3"	X	USA
AWD SITEDRAIN 6418	X		4"	X	USA
AWD SITEDRAIN 9412*		X	3"	X	USA
AWD SITEDRAIN 9418*		X	4"	X	USA

*Drop Ship Only

** Made in US with US and imported materials

PSF: Pounds Per Square Foot

ACCESSORIES & RELATED PRODUCTS



RadonAway Hybrid Sealant
P/N 28523



Geo-Outlet
P/N 28640



End Outlet
P/N 28638, 28639



SGM Connector Elbow
P/N 28642



Fitting & Joint Tape
P/N 28641



Anchoring Staples
P/N 66240
11 Gauge, 8"x1"



**RP
PRO SERIES**

Installs white, stays white

Radon Mitigation Fan

All RadonAway® fans are specifically designed for radon mitigation. RP Series Fans provide superb performance, run ultra-quiet and are attractive. They are ideal for most sub-slab radon mitigation systems.

Features

- Eternalast™ polycarbonate plastic housing
- Energy efficient
- Ultra-quiet operation
- Meets all electrical code requirements
- Water-hardened motorized impeller
- Seams sealed to inhibit radon leakage (RP140 & RP145 double snap sealed)
- ETL Listed - for indoor or outdoor use
- Thermally protected motor
- Rated for commercial and residential use
- HVI certified fan performance



MODEL	P/N	FAN DUCT DIAMETER	WATTS	RECOM. MAX. OP. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC					
					0"	.2"	.5"	1.0"	1.5"	2.0"
RP140†	28460	4"	17-21	0.7	138	110*	66*	-	-	-
RP145	28461	4"	34-66	1.7	169	150*	124*	81*	42	4
RP260	28462	6"	47-65	1.3	251	210*	157	70	-	-
RP265	28463	6"	96-136	2.3	375	340*	282*	204*	140	70
RP380	28464	8"	96-138	2.0	531	490*	415*	268*	139	41

*HVI Certified Values. †Energy Star® Rated.



ETL Listed



All RadonAway® inline radon fans are covered by our 5-year, hassle-free warranty.



RP140 Only

Model	A	B	C
RP140	4.5"	9.7"	8.5"
RP145	4.5"	9.7"	8.5"
RP260	6"	11.75"	8.6"
RP265	6"	11.75"	8.6"
RP380	8"	13.41"	10.53"



STEGO® WRAP 10-MIL CLASS A VAPOR RETARDER

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO WRAP 10-MIL CLASS A VAPOR RETARDER

2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Stego Wrap Class A is used as an exceptional vapor retarder.

COMPOSITION: Stego Wrap Class A is a multi-layer plastic extrusion manufactured with only high grade prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS: Stego Wrap Class A can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

4. TECHNICAL DATA

TABLE 1: PHYSICAL PROPERTIES OF STEGO WRAP 10-MIL CLASS A VAPOR RETARDER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E1745 Class A, B & C – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0254 perms
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F1249 – Permeance after wetting, drying, and soaking ASTM E154 Section 11, F1249 – Permeance after heat conditioning ASTM E154 Section 12, F1249 – Permeance after low temperature conditioning ASTM E154 Section 13, F1249 – Permeance after soil organism exposure	0.0258 perms 0.0259 perms 0.0241 perms 0.0245 perms
Puncture Resistance	ASTM D1709 – Test Method for Impact Resistance of Plastic Film by Free-Falling Dart Method	3,006 grams
Tensile Strength	ASTM D882 – Test Method for Tensile Properties of Thin Plastic Sheeting	50.6 lbf/in
Thickness		10 mil
Roll Dimensions	width x length: area:	14' x 210' 2,940 ft ²
Roll Weight		146 lb

Note: perm unit = grains/(ft²*hr*in-Hg)

STEGO® WRAP 10-MIL CLASS A VAPOR RETARDER

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

5. INSTALLATION

UNDER SLAB: Unroll Stego Wrap Class A over an aggregate, sand or tamped earth base. Overlap all seams a minimum of 6 inches and tape using Stego® Tape or Stego® Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap Class A and Stego Accessories.

For additional information, please refer to Stego's complete installation instructions.

6. AVAILABILITY & COST

Stego Wrap Class A is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

None required.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

Contact Number: (877) 464-7834

Website: stegoindustries.com

10. FILING SYSTEMS: stegoindustries.com



(877) 464-7834 | stegoindustries.com

DATA SHEETS ARE SUBJECT TO CHANGE. FOR MOST CURRENT VERSION, VISIT [STEGOINDUSTRIES.COM](https://stegoindustries.com)



STEGO® MASTIC

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO MASTIC

2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Stego Mastic is designed to be used as a vapor retardant membrane for use in conjunction with Stego® Wrap Vapor Barrier/Retarder. Stego Mastic can be used for sealing utility and pipe penetrations in Stego Wrap.

COMPOSITION: Stego Mastic is a medium viscosity, water-based, polymer-modified anionic bituminous/asphalt emulsion.

SIZE: Stego Mastic comes in 2-gallon or 5-gallon pails, and 20-ounce sausage tubes.

4. TECHNICAL DATA

TABLE 1: PHYSICAL PROPERTIES OF STEGO MASTIC

PROPERTY	TEST	RESULTS
Permeance Rating	ASTM E96	0.08 perms
Tensile Strength	ASTM D412	87 psi
Elongation	ASTM D412	1800%
Adhesion to Concrete	ASTM C836	Exceeds
Shore Hardness	ASTM C836	75
Crack Bridging	ASTM C836	Exceeds
Low Temp Flexibility	ASTM C836	No Cracking
VOC Content		<16 g/L

Note: perm unit = grains/(ft²*hr*in-Hg)

STEGO® MASTIC

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

5. INSTALLATION

PREPARATION:

- A test application simulating the project environment should always be done prior to final usage of Stego Mastic.
- All surfaces should be dry and free of loose materials, oils and other contaminants. The surfaces should be cleaned in the same fashion as the test surface in order to ensure proper results.
- Store above 40°F, and apply above 40°F and below 130°F.

PENETRATIONS:

To repair penetrations in Stego Wrap, cut Stego Wrap just big enough to fit over and around the penetration so as to minimize void space. Liberally apply Stego Mastic around the penetration to keep the integrity of the membrane intact. Stego Mastic can be applied from sausage tubes with a standard sausage gun and/or from pails by brush, roller, or trowel.

NOTES: 1) If needed to minimize void space around penetrations, utilize a detail patch of Stego Wrap or Stego® Pre-Cut Pipe Boot to fit over the penetration and seal the patch/boot with Stego® Tape prior to applying Stego Mastic. 2) Solvent-based products should not be applied over this product. 3) Clean all tools with kerosene and/or oil-based cleaners.

For additional information, please refer to Stego's complete installation instructions.

6. AVAILABILITY & COST

Stego Mastic is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

None required.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

Contact Number: (877) 464-7834

Website: stegoindustries.com

10. FILING SYSTEMS: stegoindustries.com



(877) 464-7834 | stegoindustries.com

DATA SHEETS ARE SUBJECT TO CHANGE. FOR MOST CURRENT VERSION, VISIT STEGOINDUSTRIES.COM



STEGO® TAPE

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO TAPE

2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Stego Tape is a low-permeance tape designed for protective sealing, hanging, seaming, splicing, and patching applications where a highly conformable material is required. It has been engineered to bond specifically to Stego® Wrap, making it ideal for sealing Stego Wrap seams and penetrations.

COMPOSITION: Stego Tape is composed of polyethylene film and an acrylic, pressure-sensitive adhesive.

SIZE: Stego Tape is 3.75" x 180'. Stego Tape ships 12 rolls in a case.

4. TECHNICAL DATA

APPLICABLE STANDARDS:

Pressure Sensitive Tape Council (PSTC)

- PSTC 101 – International Standard for Peel Adhesion of Pressure-Sensitive Tape

American Society for Testing & Materials (ASTM)

- ASTM E1643 – Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO TAPE

PROPERTY	RESULTS
Dimensions	3.75" x 180'
Total Thickness	6 mil
Permeance	0.03 perms
Tensile Strength @ Yield	>12 lbf/in
Adhesion (20 min dwell ss, PSTC 101)	84 oz/in
Ultraviolet Resistance	Excellent

Note: perm unit = grains/(ft²*hr*in-Hg)

Continued...

Note – legal notice on page 2.

STEGO® TAPE

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

5. INSTALLATION

SEAMS: Overlap Stego Wrap 6 inches and seal with Stego Tape. Make sure the area of adhesion is free from dust, dirt, moisture and frost to allow maximum adhesion of the pressure sensitive tape.

PIPE PENETRATION SEALING

- 1) Install Stego Wrap around pipe by slitting/cutting material
- 2) If void space around pipe is minimal, seal around base of pipe with Stego Tape (Stego® Mastic can be used for additional coverage)

DETAIL PATCH FOR PIPE PENETRATION SEALING

- 1) Cut a piece of Stego Wrap that creates a 6 inch overlap around all edges of the void space
- 2) Cut an "X" in the center of the detail patch
- 3) Slide detail patch over pipe, secure tightly
- 4) Tape down all sides of detail patch with Stego Tape
- 5) Seal around base of pipe with Stego Tape (Stego Mastic can be used for additional coverage)

Stego Tape should be installed above 40°F. In temperatures below 40°F take extra care to remove moisture or frost from the area of adhesion.

For additional information, please refer to Stego's complete installation instructions.

6. AVAILABILITY & COST

Stego Tape is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

None required.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

Contact Number: (877) 464-7834

Website: stegoindustries.com

10. FILING SYSTEMS: stegoindustries.com

(877) 464-7834 | stegoindustries.com

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STEGO® CRETE CLAW® TAPE (3" wide)

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO CRETE CLAW TAPE (3" wide)

2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Stego Crete Claw Tape is a multi-layered tape that is used to seal Stego® Wrap Vapor Barrier to the perimeter of the slab while the concrete is placed. Stego Crete Claw Tape allows wet concrete to cast into the textured top surface to form a mechanical bond/seal.

COMPOSITION: Stego Crete Claw Tape is composed of polyethylene film, aperture film, and an acrylic, pressure-sensitive adhesive.

SIZE: Stego Crete Claw Tape is 3" x 180'. Stego Crete Claw Tape (3" wide) ships 16 rolls in a case.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO CRETE CLAW TAPE (3" wide)

PROPERTY	RESULTS
Dimensions	3" x 180'
Total Thickness	26 mil
Permeance: ASTM F1249	0.03 perms
D903	17.6 lbf/in
Shear Adhesion Strength: 1 in ² shear test using an Instron 3345 Machine	>49 lbf/in ² *

* Specimens failed by stretching vapor barrier to failure before pulling Stego Crete Claw Tape from concrete.

Note: perm unit = grains/(ft²*hr*in-Hg)

5. INSTALLATION

- Determine where Stego Wrap should be terminated and Stego Crete Claw Tape should be installed. If it has not been clearly addressed in the construction documents, then clarification should be requested from the project design team. Should no direction be given, we recommend the project team follow the guidelines of ASTM E1643. Regardless of where the vapor barrier is determined to be terminated, ASTM E1643 requires the terminating edges to be sealed. Stego Crete Claw Tape will provide the seal upon subsequent placement of concrete.
- Ensure Stego Wrap is clean and dry when applying Stego Crete Claw Tape.
- Apply Stego Crete Claw Tape as close as possible to the terminating edge of Stego Wrap.
- Apply the entire width of Stego Crete Claw Tape only to Stego Wrap; do not lap it over the edge or attempt to adhere Stego Crete Claw Tape to footings, grade beams, stem walls, expansion materials, formwork, etc.

Continued...

Note – legal notice on page 2.

STEGO® CRETE CLAW® TAPE (3" wide)

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

5. INSTALLATION *Continued...*

- Close open gaps between Stego Crete Claw Tape without overlapping the Stego Crete Claw Tape over itself.
- Do not use Stego Crete Claw Tape for sealing utility pipe penetrations. Install Stego Crete Claw Tape last for successful installation.
- Do not cover the textured surface of Stego Crete Claw Tape with Stego® Mastic, Stego® Tape, dust, dirt, or other materials/debris.

For additional information, please refer to the complete Stego Crete Claw Tape Installation Instructions.

6. AVAILABILITY & COST

Stego Crete Claw Tape is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

Store Stego Crete Claw Tape in a dry and temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

Contact Number: (877) 464-7834

Website: stegoindustries.com

10. FILING SYSTEMS: stegoindustries.com

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STEGO® CRETE CLAW® TAPE (6" wide)

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO CRETE CLAW TAPE (6" wide)

2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Stego Crete Claw Tape is a multi-layered tape that is used to seal Stego® Wrap Vapor Barrier to the underside of the slab while the concrete is placed. Stego Crete Claw Tape allows wet concrete to cast into the textured top surface to form a mechanical bond/seal. This is useful in void/carton form applications and/or when soil movement may later occur.

COMPOSITION: Stego Crete Claw Tape is composed of polyethylene film, aperture film, and an acrylic, pressure-sensitive adhesive.

SIZE: Stego Crete Claw Tape is 6" x 180'. Stego Crete Claw Tape (6" wide) ships 8 rolls in a case.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO CRETE CLAW TAPE (6" wide)

PROPERTY	RESULTS
Dimensions	6" x 180'
Total Thickness	26 mil
Permeance: ASTM F1249	0.03 perms
180° Adhesion Peel Strength: ASTM D903	17.6 lbf/in
Shear Adhesion Strength: 1 in ² shear test using an Instron 3345 Machine	>49 lbf/in ² *

* Specimens failed by stretching vapor barrier to failure before pulling Stego Crete Claw Tape from concrete.

Note: perm unit = grains/(ft²*hr*in-Hg)

5. INSTALLATION

- Determine where Stego Wrap should be terminated and Stego Crete Claw Tape should be installed. If it has not been clearly addressed in the construction documents, then clarification should be requested from the project design team. Should no direction be given, we recommend the project team follow the guidelines of ASTM E1643. Regardless of where the vapor barrier is determined to be terminated, ASTM E1643 requires the terminating edges to be sealed. Stego Crete Claw Tape will provide the seal upon subsequent placement of concrete.
- Ensure Stego Wrap is clean and dry when applying Stego Crete Claw Tape.
- Apply Stego Crete Claw Tape as close as possible to the terminating edge of Stego Wrap at perimeter applications and centered over seams in seaming applications.

Continued...

Note – legal notice on page 2.

STEGO® CRETE CLAW® TAPE (6" wide)

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

5. INSTALLATION *Continued...*

- Apply the entire width of Stego Crete Claw Tape only to Stego Wrap; do not lap it over the edge or attempt to adhere Stego Crete Claw Tape to footings, grade beams, stem walls, expansion materials, formwork, etc.
- Close open gaps between Stego Crete Claw Tape without overlapping the Stego Crete Claw Tape over itself.
- Do not use Stego Crete Claw Tape for sealing utility pipe penetrations.
Install Stego Crete Claw Tape last for successful installation.
- Do not cover the textured surface of Stego Crete Claw Tape with Stego® Mastic, Stego® Tape, dust, dirt, or other materials/debris.

For additional information, please refer to the complete Stego Crete Claw Tape Installation Instructions.

6. AVAILABILITY & COST

Stego Crete Claw Tape is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

Store Stego Crete Claw Tape in a dry and temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

Contact Number: (877) 464-7834

Website: stegoindustries.com

10. FILING SYSTEMS: stegoindustries.com



(877) 464-7834 | stegoindustries.com

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STEGOTACK® TAPE

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGOTACK TAPE

2. MANUFACTURER

Stego® Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: StegoTack Tape is a double-sided adhesive strip used to bond and seal the Stego below-slab and crawl space water vapor barriers or retarders to concrete, masonry, wood, metal, and other surfaces.

COMPOSITION: StegoTack Tape is made from a blend of synthetic rubber and resins.

SIZE: StegoTack Tape is 2" x 50'. StegoTack Tape ships 12 rolls in a case.

FEATURES AND BENEFITS:

- Highly flexible and moldable
- Low VOC Emissions - Certified Clean Air GOLD
- Made in the USA



The versatility of StegoTack Tape makes it an excellent option for Stego Wrap, StegoHome, and StegoCrawl installation applications.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGOTACK TAPE

PROPERTY	RESULTS
Dimensions	2" x 50'
Total Thickness	30 mil
Permeance (30 mil)	0.03 perms
Color	Grey
Material	Synthetic rubber blend
Adhesion to Steel	12.5 lb/in width ASTM D1000
Installation Temperature	40°F/110°F
In Service Temperature Range	-20°F/+140°F
VOC Content	No VOCs, 100% solids

Note: perm unit = grains/(ft²*hr*in-Hg)

Continued...

Note – legal notice on page 2.

STEGOTACK® TAPE

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

5. INSTALLATION

TO WALLS: Make sure the area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion. Remove release liner on one side and stick to desired surface. When ready to apply the vapor barrier or retarder, remove the exposed release liner and press the vapor barrier or retarder firmly against StegoTack Tape to secure.

Cut StegoTack Tape using a utility knife or scissors. Cut StegoTack Tape before removing the release liner for easier cutting. Install StegoTack Tape between 40°F and 110°F. For additional information please refer to Stego's complete installation instructions.

6. AVAILABILITY & COST

StegoTack Tape is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

For longer adhesive life, store in dry, temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

Contact Number: (877) 464-7834

Website: stegoindustries.com

10. FILING SYSTEMS: stegoindustries.com



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STEGO® TERM BAR

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO TERM BAR

2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Stego Term Bar is a semi-flexible plastic termination bar used for mechanically securing Stego® Wrap or other materials to concrete, masonry, or wood.

COMPOSITION: Stego Term Bar is made from post-industrial recycled PVC.

SIZE: Stego Term Bar is 42" x 1.125".

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO TERM BAR

PROPERTY	RESULTS
Dimensions	42" x 1.125"
Color	Grey
Material	Recycled PVC
Weight	4 oz

5. INSTALLATION

UNDER SLAB: Nail through Stego Term Bar and Stego Wrap to secure material as needed. If the beveled edge is facing the wall, a pocket/lip is created for mastic/sealant to be used if required. Pre-drilled nail holes are provided every 6" for ease of installation.

To cut Stego Term Bar, score with a utility knife or wire snips. Stego Term Bar can be bent back and forth and then broken at desired locations as well.

Stego Term Bar is flexible enough to bend around corners and contours in the wall for easy installation.

For additional information, please refer to Stego's complete installation instructions.

STEGO® TERM BAR

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

6. AVAILABILITY & COST

Stego Term Bar is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

Store above 60°F. Term Bar will become less flexible at lower temperatures.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

Contact Number: (877) 464-7834

Website: stegoindustries.com

10. FILING SYSTEMS: stegoindustries.com



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STEGO® PRE-CUT PIPE BOOTS

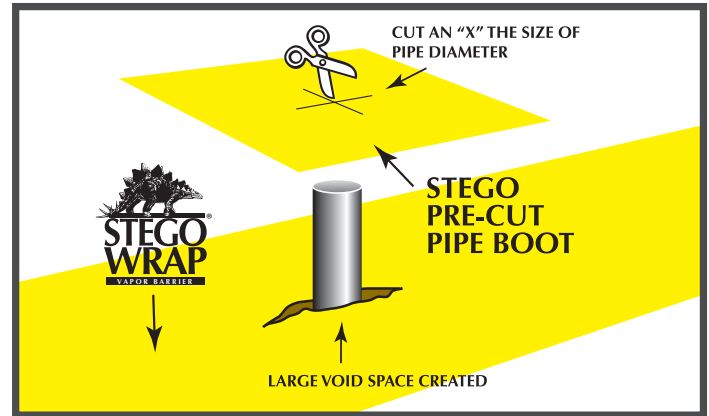
A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO PRE-CUT PIPE BOOTS

2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Stego Pre-Cut Pipe Boots are used to seal around permanent penetrations in Stego® Wrap.

COMPOSITION: Stego Pre-Cut Pipe Boots are made from Stego Wrap Vapor Barrier (15-mil), and therefore are manufactured from only high grade prime, virgin, polyolefin resins.

SIZE: Stego Pre-Cut Pipe Boots are 18" x 18" and 15 mil thick. Stego Pre-Cut Pipe Boots ship 10 packs of 25 in a case (250 boots per case).

4. TECHNICAL DATA

TABLE 1: PHYSICAL PROPERTIES OF STEGO PRE-CUT PIPE BOOTS

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E1745 Class A, B & C– Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0086 perms
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F1249 – Permeance after wetting, drying, and soaking ASTM E154 Section 11, F1249 – Permeance after heat conditioning ASTM E154 Section 12, F1249 – Permeance after low temperature conditioning ASTM E154 Section 13, F1249 – Permeance after soil organism exposure	0.0098 perms 0.0091 perms 0.0097 perms 0.0095 perms
Puncture Resistance	ASTM D1709 – Test Method for Impact Resistance of Plastic Film by Free-Falling Dart Method	2,266 grams
Tensile Strength	ASTM D882 – Test Method for Tensile Properties of Thin Plastic Sheeting	70.6 lbf/in
Thickness		15 mil
Pipe Boot Dimensions	width x length:	18" x 18"

Note: perm unit = grains/(ft²*hr*in-Hg)

5. INSTALLATION

UNDER SLAB: Cut an "X" the size of the pipe diameter in the center of the Pre-Cut Pipe Boot and slide tightly over pipe. Tape all sides of the pipe boot with Stego® Tape. Seal around the base of the pipe using Stego Tape and/or Stego® Mastic.

For additional information, please refer to Stego's complete installation instructions.

Continued...

Note – legal notice on page 2.

STEGO® PRE-CUT PIPE BOOTS

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

6. AVAILABILITY & COST

Stego Pre-Cut Pipe Boots are available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see stegoindustries.com/legal

8. MAINTENANCE

None required.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com

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STEGO® WRAP

VAPOR BARRIER AND RETARDER INSTALLATION INSTRUCTIONS



ENGINEERED PERFORMANCE
LIFE OF THE BUILDING™ PROTECTION



Additional Stego Wrap installation resources and videos are available on our website at:

stegoindustries.com/resources



CONTENTS

The installation recommendations set forth in these instructions are based on ASTM E1643 and specific applications of Stego products. Each section provides explanations and options for the varying conditions.

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Stego Installation Support - A Free Service

When you choose **Stego® Barrier Solutions** and products, you gain access to a large nationwide network of full-time technical sales representatives providing unmatched local support and service. If you ever have a question or concern regarding the following installation scenarios please contact us and take advantage of our free Stego Installation Support.



Stego Wrap

Stego Wrap is made from a proprietary blend of prime virgin resins and additives, a combination lending to great value and effectiveness in protecting the concrete slab from moisture intrusion. All rolls of Stego Wrap are continuously printed with the Stego logo. This ensures no copycat or counterfeit products show up on a job site that could expose you to liability if an incorrectly identified product fails.

- Stego® Wrap 20-Mil Vapor Barrier (Class A)
- Stego® Wrap 15-Mil Vapor Barrier (Class A)
- Stego® Wrap 10-Mil Vapor Retarder (Class A)
- Stego® Wrap 10-Mil Vapor Retarder (Class C)

Stego Accessories

At Stego, we know every project has its own unique challenges. To make a Stego Wrap installation easy and flexible, we offer an extensive line of accessory items that give you options to accomplish an effective perimeter seal that meets ASTM E1643. **Consult the project architect, owner's representative, and structural engineer of record before proceeding with any of these options.**



Stego® Tape

This low permeance and pressure-sensitive tape is engineered to bond specifically to Stego Wrap, making it ideal for sealing Stego Wrap seams and penetrations.



Stego® Mastic

A liquid vapor retardant membrane, designed to be used with Stego Wrap, for sealing utility and pipe penetrations.



Stego® Crete Claw® Tape 3"

This multi-layered tape utilizes a textured film that mechanically bonds to concrete cast against it. It is used to create a seal at Stego Wrap's terminating edges to subsequently placed slabs.



Stego® Term Bar

A semi-flexible plastic termination bar, optimal for mechanically securing Stego Wrap to concrete, wood, or masonry.



StegoTack® Tape

A double-sided adhesive strip used to bond and seal Stego Wrap to concrete, masonry, wood, metal, and other surfaces.

Creating a Monolithic Membrane

The key to an effective Stego Wrap installation is to create a monolithic layer of protection between the concrete slab and moisture sources below. This can be accomplished by following the installation instructions outlined in ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*.

ASTM E1643 discusses the selection of the vapor retarder and preparation of the subbase to minimize potential damage during installation and concrete placement.

ASTM E1643, Section 5.3.4.1 - *Select a vapor retarder material capable of withstanding potential construction site damage.*

ASTM E1643, Section 5.3.5.1 - *Select vapor retarder material capable of withstanding tear or puncture damage due to the type, gradation, and texture of the base material to be installed below the material. Prepare base material to minimize risk of puncture, for example, by rolling or compacting.*

ASTM E1643, Section 6.1 - *Level and compact base material.*

ASTM E1643 then states to create a monolithic membrane to protect the slab from adjacent moisture sources.

ASTM E1643, Section 6.4 - *... create a monolithic membrane between the surface of the slab and moisture sources below the slab as well as at the slab perimeter.*

ASTM E1643, Section 6.5 - *Lap joints minimum 6 in. (150 mm), or as instructed by the manufacturer, and seal laps in accordance with the manufacturer's recommendations.*

Stego Wrap can be installed over an aggregate, sand, or tamped earth base. It is not necessary to have a cushion layer or sand base, as Stego Wrap is tough enough to withstand rugged construction environments.



1

Unroll Stego Wrap over the area where the slab is to be placed.



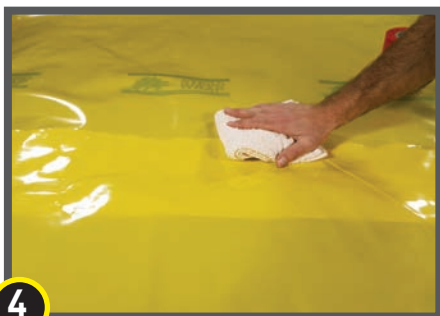
2

Unless otherwise indicated by the design professional(s) of record, unfold Stego Wrap to completely cover the placement area.



3

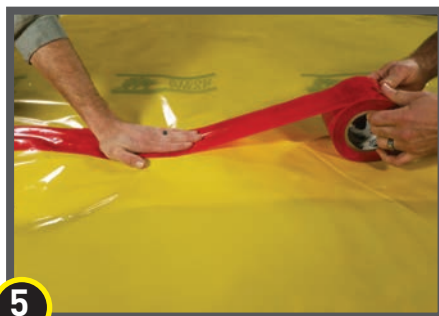
All joints/seams should be overlapped a minimum of 6 inches.



4

Ensure Stego Wrap is clean and dry when applying Stego Tape.

Tip: Use a cloth or other means to remove dust, debris, and excess moisture from Stego Wrap prior to applying Stego Tape.



5

Seal the seams with Stego Tape.

Where to Terminate the Stego Wrap

Always consult the project design team for where to terminate the vapor barrier to strike the balance between the location of the vapor barrier on or around foundation constructions and any structural concerns before proceeding.

ASTM E1643 provides direction on where to terminate the vapor barrier as follows:

ASTM E1643, Section 6.4 - *Extend vapor retarder over footings and seal to foundation wall, grade beam, or slab at an elevation consistent with the top of the slab or terminate at impediments such as waterstops or dowels...*

ASTM E1643, Section 6.6 - *Extend vapor retarder over the tops of pile caps and grade beams to a distance acceptable to the structural engineer.*

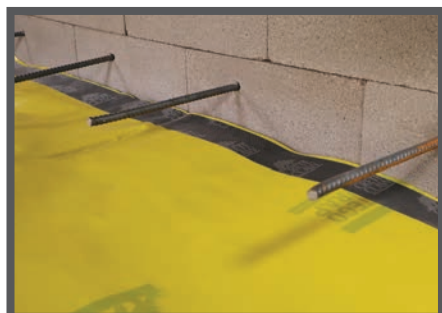
In accordance with ASTM E1643, terminate the Stego Wrap as follows:

At an elevation (height) consistent with the top of the slab;



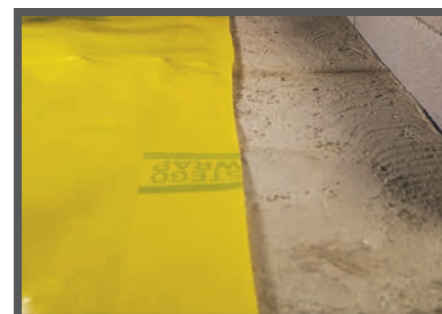
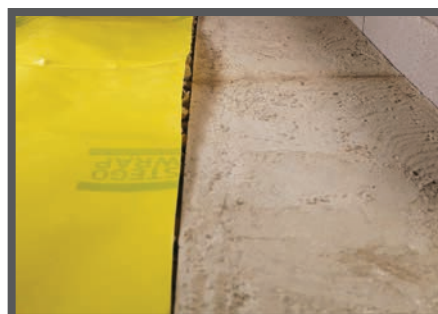
Note: Turn Stego Wrap up foundation walls or forms.

At Impediments; OR



Note: Impediments may include rebar, dowels, water stops, etc.

At a location of termination designated by the project design team.



Note: The distance to which the vapor barrier is extended adjacent to, onto, or completely over a footing or grade beam should be determined by the project design team.

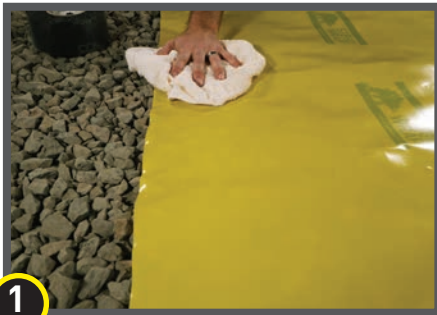
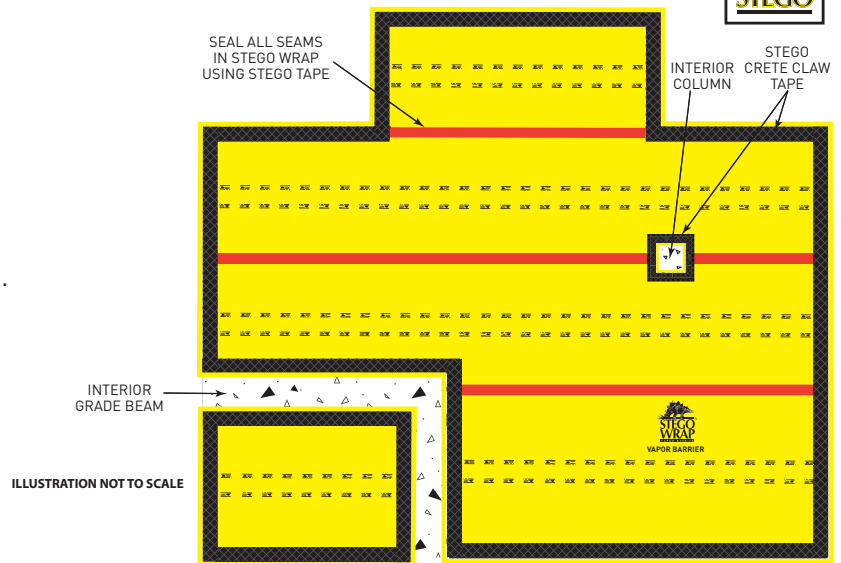
If the location of vapor barrier termination has not been clearly addressed in the construction documents, then clarification should be requested from the project design team. Should no direction be given, Stego recommends the project team follow the guidelines of ASTM E1643.

Regardless of where the vapor barrier is determined to be terminated, ASTM E1643 requires the terminating edges to be sealed. See Sealing Stego Wrap at Terminating Edges, next page.

Sealing Stego Wrap at Terminating Edges

Always consult the project design team for where to terminate the vapor barrier to strike the balance between the location of the vapor barrier on or around foundation constructions and any structural concerns before proceeding.

Seal Stego Wrap along all terminating edges as indicated by the project team. Stego provides several innovative options for creating a seal as required by ASTM E1643.



1 Ensure Stego Wrap is clean and dry when applying Stego Crete Claw Tape.
Tip: Use a cloth or other means to remove dust, debris, and excess moisture from the vapor barrier prior to applying Stego Crete Claw Tape.



2 Apply Stego Crete Claw Tape as close as possible to the terminating edge of Stego Wrap.
Tip: Applying Stego Crete Claw Tape within 2" of the terminating edge is almost always possible, even when the terminating edges are not cut perfectly straight.



3 Install Stego Crete Claw Tape last for a successful installation.
Tip: Install Stego Crete Claw Tape before rebar but after Stego Wrap has been overlapped and sealed at the seams with Stego Tape, sealed at penetrations, and terminated at the project's perimeter and/or other specified terminating location.

Stego Crete Claw Tape - Installation Tips



IMPORTANT:
Do not overlap Stego Crete Claw Tape over itself.
Tip: If placing multiple sections of Stego Crete Claw Tape, minimize gaps by abutting each adjacent section against one another.



Do not leave any open gaps between Stego Crete Claw Tape.
Tip: If a small gap exists between two pieces of Stego Crete Claw Tape, a supplementary piece of Stego Crete Claw Tape should be applied to run along the inside edges of the two original pieces and span the gap between them. The supplementary piece should run parallel and flush to the original pieces without overlap.



If protrusions or penetrations are determined to be impediments to applying Stego Crete Claw Tape along the perimeter terminating edges of Stego Wrap, route Stego Crete Claw Tape around the impediment, as close to the impediment as possible, and continue along the terminating edge of Stego Wrap on the opposite side of the impediment.

Stego Crete Claw Tape is often the preferred product because of its ease of application and versatility to accommodate most conditions. It has been engineered to create a seal between Stego Wrap and the concrete subsequently cast against it. See also StegoTack Tape and Stego Mastic options, detailed on the next few pages.

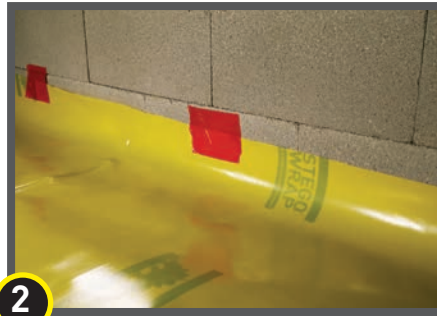
Sealing the Terminating Edges of Stego Wrap on Vertical Planes Using Stego Crete Claw Tape

IMPORTANT: Make sure the area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.

Vertical Plane: Foundation Wall



1 Extend Stego Wrap up the vertical surface, likely to the height of the slab.
Note: See Where to Terminate the Stego Wrap, page 5.

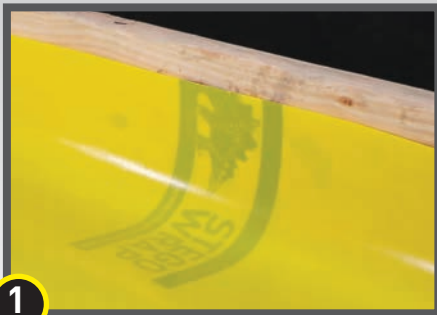


Optional: Temporarily secure Stego Wrap to the foundation wall with a small piece of Stego Tape.
Note: Trim excess Stego Tape after concrete has been placed and before removal of any adjacent forms.



3 Apply the entire 3" width of Stego Crete Claw Tape on the perimeter edge of Stego Wrap.
Note: Clean surface of Stego Wrap to ensure that it is free of moisture and debris prior to the installation of Stego Crete Claw Tape.

Vertical Plane: Concrete Form



1 Extend Stego Wrap up the vertical surface, likely to the height of the forms.
Note: See Where to Terminate the Stego Wrap, page 5.



Optional: Temporarily secure Stego Wrap to the concrete form with a small piece of Stego Tape.
Note: Trim excess Stego Tape after concrete has been placed and before removal of any adjacent forms.



3 Apply the entire 3" width of Stego Crete Claw Tape on the perimeter edge of Stego Wrap.
Note: Clean surface of Stego Wrap to ensure that it is free of moisture and debris prior to the installation of Stego Crete Claw Tape.

Sealing Stego Wrap Up Foundation Walls and Vertical Surfaces Using StegoTack Tape

StegoTack Tape can also be used to seal Stego Wrap to foundation walls, grade beams or other adjacent concrete constructions.

IMPORTANT: Make sure area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.



1 Remove the release liner on one side of StegoTack Tape and stick to foundation wall at the height of the slab or at impediments.



2 When ready to apply Stego Wrap, remove the exposed release liner from StegoTack Tape.



3 Press Stego Wrap firmly against StegoTack Tape to secure.
NOTE: If consistent, continuous pressure will not be applied (e.g. by a concrete slab), Stego Term Bar may be necessary.

Sealing Stego Wrap Up Foundation Walls and Vertical Surfaces Using Stego Mastic

Stego Mastic can also be used to seal Stego Wrap to foundation walls, grade beams or other adjacent concrete constructions.

IMPORTANT: Make sure area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.



1 Apply Stego Mastic to the foundation wall at the anticipated edge of the subsequently applied Stego Wrap at the height of the slab or impediments.



2 Press Stego Wrap firmly against the applied Stego Mastic on the foundation wall.



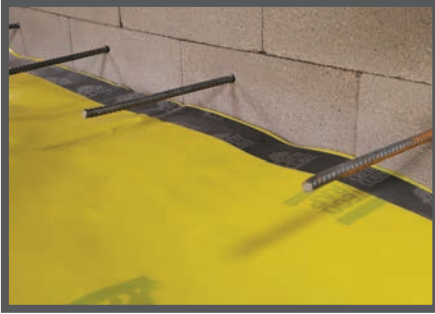
3 If consistent, continuous pressure will not be applied (e.g. by a concrete slab), Stego Term Bar may be necessary.

Sealing the Terminating Edges of Stego Wrap on a Horizontal Plane

Always consult the project design team for where to terminate the vapor barrier to strike the balance between the location of the vapor barrier on or around foundation constructions and any structural concerns before proceeding.

After the location of where to terminate the vapor barrier has been determined, seal Stego Wrap along all terminating edges as indicated by the project team.

With Stego Crete Claw Tape



At a Foundation Wall: Install Stego Crete Claw onto the terminating edge of Stego Wrap.

Tip: Install Stego Crete Claw onto Stego Wrap before sliding Stego Wrap into final termination location.



At Interior Grade Beam Impediments: Install Stego Crete Claw onto the terminating edge of Stego Wrap.



At a Location Designated by the Design Team: Install Stego Crete Claw onto the terminating edge of Stego Wrap.

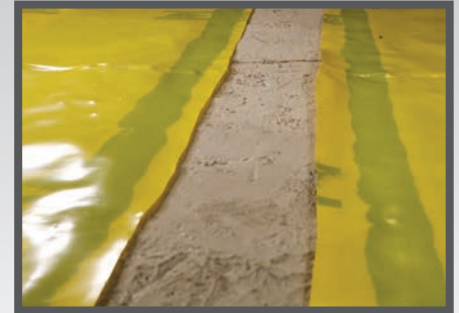
With Stego Mastic



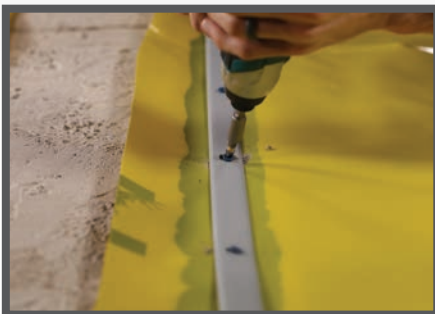
Onto a Perimeter Footing at Impediments: Seal Stego Wrap to concrete with Stego Mastic.



Onto Interior Grade Beams at Impediments: Seal Stego Wrap to concrete with Stego Mastic.



At a Location Designated by the Design Team: Seal Stego Wrap to concrete with Stego Mastic.



If consistent, continuous pressure will not be applied (e.g. by a concrete slab), Stego Term Bar may be necessary.

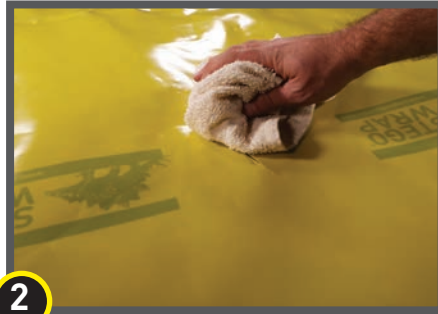
See “Where to Terminate the Vapor Barrier” on page 5 prior to choosing your terminating edge sealing accessory.

Sealing Damaged Areas: Small Hole or Slice

In the event that Stego Wrap is damaged during or after installation, repairs must be made. For smaller holes or slices in Stego Wrap, Stego Tape can be used as noted below.



1
Small hole or slice in Stego Wrap.



2
Clean area of adhesion.



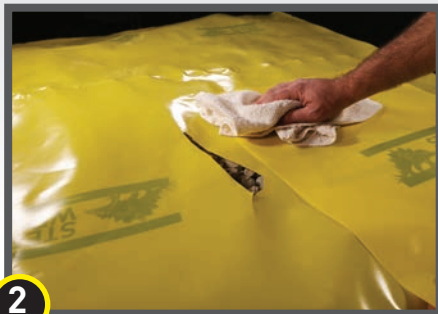
3
Center Stego Tape over small hole or slice in Stego Wrap.

Sealing Damaged Areas: Larger Hole

In the event that Stego Wrap is damaged during or after installation, repairs must be made. For larger holes, cut a piece of Stego Wrap to a size and shape that covers any damage by a minimum overlap of 6" in all directions. Clean all adhesion areas of dust, dirt, moisture, and frost. Tape down all edges using Stego Tape.



1
Occasionally there are larger holes in the vapor barrier that require a patch.



2
Clean area of adhesion.



3
Measure and cut a piece of Stego Wrap to cover damaged area 6" in all directions. Seal patch with Stego Tape.

Sealing Single Pipe Penetration: Minimal Void Space

All penetrations must be sealed. All pipe, ducting, rebar, wire penetrations and block outs should be sealed using Stego Wrap, Stego Tape and/or Stego Mastic. If penetrations are encased in other materials, such as expansive materials like foam, unless otherwise specified, Stego Wrap should be sealed to the underlying penetration directly.



1 Install Stego Wrap around pipe penetrations by slitting/cutting material as needed. Try to minimize the void space created.



2 Pull material over and flatten. Clean area of adhesion where Stego Tape will be applied.



3 If Stego Wrap is close to pipe and void space is minimized then seal around pipe penetration with Stego Tape and/or Stego Mastic.

Sealing Single Pipe Penetration: Larger Void Space Requires Detail Patch

To minimize void space around a larger penetration, a detail patch may be required. Stego Pre-Cut Pipe Boots are also available to speed up the installation.



1 Cut a detail patch to a size and shape that creates a 6" overlap on all edges around the void space at the base of the pipe.



2 Cut an "X" the size of the pipe diameter in the center of the pipe boot and slide tightly over pipe.



3 Seal all sides of the pipe boot with Stego Tape.



4a Seal around the base of the pipe using Stego Tape. **OR...**



4b Seal around the base of the pipe with Stego Mastic. Note: apply using disposable glove, paint brush, or similar.

Sealing Multiple Pipe Penetrations: Using Stego Tape

Multiple pipe penetrations in close proximity and very small pipes may be sealed using Stego Tape and/or Stego Mastic for ease of installation.



1

Cut a slit the size to accommodate the width of the multiple pipes. Try to minimize the void space created.



2

Seal any void space around each pipe using Stego Tape.

Note: Subbase should not be visible from above.

Sealing Multiple Pipe Penetrations: Using Stego Mastic



1

Seal any void space around each pipe penetration with Stego Mastic.



2

Dab Stego Mastic with disposable glove, paint brush, or similar, making sure entire void space is sealed.

Note: If pipe penetrations are abutted against one another, minimize any void space first with Stego Wrap, then seal any remaining void space with Stego Tape and/or Mastic in the same manner represented above.



Avoid Punctures with Beast® Concrete Accessories

To help eliminate the use of non-permanent penetrations in Stego Wrap installation, Stego Industries recommends the use of Beast vapor barrier-safe concrete accessories.

IMPORTANT: Avoid puncturing Stego Wrap with stakes while forming, bracing, and screeding.

Preventing punctures in the vapor barrier.



BEAST® FORM STAKE can be used with **BEAST® FOOT** as part of the Stego vapor barrier-safe forming system which meets ASTM E1643 requirements.



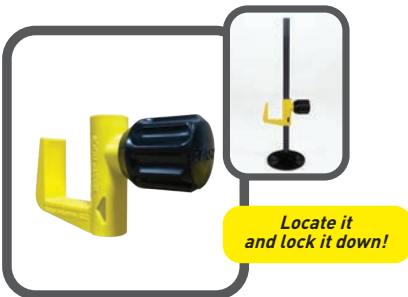
This concrete form stake takes the place of traditional nail stakes for interior forming applications, utilizing SpeedTrack™ Fastening Grooves for unlimited fastener placement.

Note: Refer to Beast Form Stake Installation Guide for detailed usage instructions.



Beast Form Stake is strong enough to withstand a beating during concrete placement while holding its shape. It is easy to remove and reusable for the next job.

Note: Beast Form Stake can be removed once concrete has set sufficiently to hold its shape. Fill and repair any voids in the concrete as necessary once the Beast Form Stake has been removed and strike Beast Form Stake against a hard surface to loosen the concrete buildup.



BEAST® HOOK is a **faster, easier** way to set 2x4 overhead screeds. Use Beast Foot and Beast Form Stake and make it a vapor barrier-safe screed system.

No tools are required, just grip the knob to loosen or tighten. Fast, easy, efficient.



BEAST® SCREED is a fixed-elevation, point-to-point guide screed system designed to replace common wet-screed methods.

Improve efficiency and maintain concrete floor levelness with the BEAST SCREED SYSTEM!



Set it and forget it. Beast Screed eliminates the need to frequently re-establish grade to ensure floor elevation has not changed during the screeding operation as is typical with traditional wet-screed methods.

Note: Refer to Beast Screed System Installation Instructions for detailed usage instructions.

NOTE: Stego Industries, LLC's ("Stego") installation instructions are based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*. These instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding. If you have any questions regarding the above mentioned installation instructions or Stego products, please call us at 877-464-7834 for technical assistance. While Stego employees and representatives may provide technical assistance regarding the utility of a specific installation practice or Stego product, they are not authorized to make final design decisions.

Contact Please contact us to get in touch with the nearest Stego representative. We look forward to working with you on your next project. **877-464-7834** | **stegoindustries.com**

GAME-CHANGING BARRIER SOLUTIONS

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APPENDIX D

Soil Management Plan



CREDERE ASSOCIATES, LLC

776 Main Street
Westbrook, Maine 04092
Phone: 207-828-1272
Fax: 207-887-1051

October 7, 2024

Mr. Jonathan Livadas
LWM Residential, LLC
212 W 11th Street #4
New York, New York 10014
Via email: jon.livadas@outlook.com

RE: **Soil and Groundwater Management Plan
Former Kleen Laundry Dry Cleaner
NHDES Site No. 198801003 and 201704036
1 Foundry Street and 25 Mechanic Street
Lebanon, New Hampshire 03766**

Dear Mr. Livadas:

This Soil and Groundwater Management Plan (SGMP) has been prepared for the above referenced property located at 1 Foundry Street and 25 Mechanic Street in the City of Lebanon, New Hampshire (Site). This SGMP is intended to properly address the known environmental conditions with an objective of preventing exposure of future construction workers, commercial workers, and residents to contamination and describes proper soil and groundwater handling practices to be used during future redevelopment of the Site. A Site Location Map is provided as **Figure 1**, and a Detailed Site Plan is included as **Figure 2** as part of the overarching Remedial Action Plan (RAP) under which this SGMP has been submitted.

The activities and practices described below are necessary to manage potential risk to human and environmental receptors associated with contaminated soil and groundwater. Included in this SGMP are:

- A description of the Site and its history
- A description of soil conditions and associated regulatory applicability
- A listing of proper health and safety work practices and protective equipment recommended for use during potential future Site work activities that encounter residual contaminated soil and/or groundwater
- A description of onsite soil management procedures including soil handling, stockpiling, and dust control should Site work activities result in potential exposure to contaminated soil
- A description of onsite soil reuse procedures including an engineered barrier system

- A summary of the methods to be used for the proper transport and disposal of excess impacted soil that may be generated during future Site work

1. INTRODUCTION AND APPLICABILITY

1.1 Site Description

The Site comprises three adjoining parcels totaling 5.137 acres including: 25 Mechanic Street (0.537 acres), 1 Foundry Street (3.5 acres), and an undeveloped parcel on Water Street (identified as the River Island; 1.1 acres). Site parcels are shown on the Detailed Site Map provided as **Figure 2**. The Site is improved with three vacant buildings, including one 13,527-sf office/storage building, and one 59,565-sf mill building most recently used for high-volume dry-cleaning operations (e.g., hospital linens) with an approximately 2,000-sf boiler house attached only by a subgrade corrugated tunnel accessed from the basement of the mill building. One 4,699-square foot (sf) retail building where small volume cleaning was performed onsite was recently demolished in February 2024. Only the concrete foundation remains.

Granite stairs lead from the office/storage building to the former retail building, which was located at an elevation approximately 30 feet above the office/storage and mill building. The remainder of the exterior portion of the Site is vegetated or grassy areas. Paved parking areas are located southwest of the retail building and along Foundry Street between the mill building and office/storage building. A former liquid propane storage area with gravel base is present within a chain-link fenced area south of the mill building. Vehicle access to the office/storage building, mill building, and boiler house is via Foundry Street and Blacksmith Street.

The River Island parcel is undeveloped and overgrown with vegetation. A distributary channel of the Mascoma River flows north to south between the River Island parcel and 1 Foundry Street parcel. There is no foot or vehicle access to the river island parcel and no known historical development or use; therefore, this parcel will not be further discussed in this SGMP.

Public water and sewer are available to the Site and vicinity through the City of Lebanon.

1.2 Site History

25 Mechanic Street

By 1894, the 25 Mechanic Street Site parcel was developed with two residential dwellings. This Site parcel would later become a livery and residential dwellings by 1899. The retail dry-cleaning building was constructed by 1987. This Site building was reportedly operated by Lebanon Laundromat (aka Kleen Laundry) from the late 1980s until September 2019. The Site retail building was vacant until February 2024, when it was demolished as part of redevelopment plans and in accordance with remedial action authorized by NHDES. The concrete basement slab remains and is covered with protective polyethylene sheeting.

1 Foundry Street

As early as 1884, the Site was developed as the Shoddy Mill, which likely burned in the 1880s and later operated as the Lebanon Woolen Mill and temporarily as Carter & Rogers Woolen Mill in



the current mill building. The southern portion of the mill building was reconstructed to include a dye house, which was removed circa 1965. The current office/storage building was constructed by 1949 attached to the previously constructed storage house. The storage house was removed by 1987, leaving the current office/storage building that remains today.

The Gosselin family (owners of Kleen Laundry and former owners of the Site) acquired the former Lebanon Woolen Mills buildings (the former mill building, office/storage building, and former boiler house) in 1965 and began operations as a commercial dry-cleaning business. Kleen Inc. operated the Site buildings at 1 Foundry Street until September 2019. The Site buildings have been vacant since.

1.3 Environmental Summary

Based on extensive prior investigations and monitoring since the early 1990s through the present, the following specific areas were identified that will require management under this SGMP:

- Sitewide soil impacted by polycyclic aromatic hydrocarbons (PAHs)
- Residual chlorinated volatile organic compounds (CVOCs) and petroleum impacted soil in the southern portion of the Site
- Southern CVOC groundwater plume in the vicinity of the former USTs that is managed under GMP GWP-198801003-L-006
- Northern CVOC groundwater plume extending from 2 Mechanic Street

Based on this information, Credere has prepared this SGMP to accompany the Remedial Action Plan (RAP) for the Site to properly manage PAH, petroleum, and CVOC-impacted Site soil and groundwater that do not warrant remediation based on concentrations below the AGQS and SRS, but still represent a condition that requires proper management to ensure compliance with the NH Solid Waste Program.

The following summaries pertain to previous investigation at the Site correlated with the contamination covered under this SGMP:

Sitewide PAHs

Based on the results of soil sampling performed during a 2021 Phase II ESA, PAH-impacted soil associated with historical industrial operations of the Site and surrounding area was identified. The parking area on the 1 Foundry Street Site parcel was paved circa 1977 and was formerly unpaved. Waste oil is documented to have been used as a dust suppression method every summer for “some years” at the Site, thereby acting as a release of waste oil directly to the surficial soil at the 1 Foundry Street Site parcel. Additionally, the long-term industrial use of the Site has likely resulted in ubiquitous PAHs throughout soil beneath the existing asphalt. Therefore, PAHs are assumed to be present in surface soil and be comingled to depths where reworking of soil had occurred during the frequent reconstruction of the Site by Lebanon Woolen Mills in the 1900s.



Residual CVOCs in soil and groundwater GMP in southern portion of Site

Approximately 1,300 cubic yards of petroleum and hazardous-contaminated soil were removed from the Tank #2 and #3 UST area (see **Figure 2**) and stockpiled onsite prior to biological composting treatment in September 1990. A total of six composite soil samples were collected from the excavation and submitted for laboratory analysis of VOCs: one from each sidewall, and one from each distinct tank grave bottom (identified as upper and lower). Results indicated no detection of contaminants above laboratory reporting limits with the exception of PCE, which was detected below the current SRSs. NHDES approved backfilling of the excavation with clean fill in a letter dated October 12, 1990.

The onsite stockpile was placed in a plastic-lined earthen berm containment area constructed in the paved parking area of the Site. The stockpile was also reportedly covered with plastic sheeting and maintained until remediation took place. In August and September 1995, the contaminated soil stockpile was removed from the Site. A total of 2,371.50 tons of soil was removed. After removal, the berm that the soil stockpile was resting on was discovered to be contaminated. An additional 156.40 tons of contaminated soil was removed on October 6, 1995. NHDES issued the File Closeout of the contamination associated with the leaking USTs at the Site, documenting that Site remediation was complete; however, groundwater monitoring was to continue.

As of the latest Periodic Summary Report dated January 2024, summarizing the November 2022 sampling event, results show relative stability of PCE concentrations in source area wells WQ-2 and WQ-3 since 2014; concentrations remain above today's AGQS. TCE, cis-1,2-DCE, 1,1-DCE, and 1,1,1-TCE were also detected in at least one of the two wells but were also below applicable AGQS. Based on this information, residual contamination in soil at concentrations below the SRS in the southern portion of the Site continues to contribute to groundwater concentrations above the AGQS. Groundwater is managed under a GMP, and soil with CVOC residuals will require proper management when disturbed during redevelopment.

Northern CVOC Plume

The most recent groundwater monitoring of the 25 Mechanic Street Site parcel occurred on April 2, 2024. The current voluntary program includes sampling of groundwater monitoring wells MW-1-25, MW-2-25, MW-3-25, MW-6-25, MW-4, and CA-MW-4. Analytical results from December 2017 to April 2024 show an overall stable or decreasing trend in chlorinated solvents concentrations in these wells, particularly along the inferred centerline of the plume in MW-2-25 and CA-MW-4. Benzene and sec-butylbenzene concentrations in several wells continue to be attributed to the offsite upgradient petroleum source (see NHDES Site No. 199107026).

1.4 Applicability

For purposes of this SGMP applicability, all soil at the Site is considered to be contaminated with PAHs, and soil in the southern vicinity of WQ-2 and WQ-3 is considered impacted by CVOCs and subject to this SGMP during redevelopment. Additionally, all groundwater or accumulated stormwater that is presumably comingled with groundwater that requires dewatering is subject to this SGMP.



This SGMP is not intended to be inclusive of all remedial actions required for the Site. This addresses only those conditions that do not require remedial action per Env-Or 600, but warrant special handling and management during construction due to planned disturbance during redevelopment. This SGMP supplements the Remedial Action Plan (RAP) prepared in parallel, which addresses additional remediation needs including CVOCs source removal, treatment, monitoring, and vapor intrusion mitigation; hazardous building material abatement; and other waste disposal needs.

2. GENERAL HEALTH AND SAFETY PLAN DURING SOIL EXCAVATION AND HANDLING

The following serves as guidelines for health and safety procedures to be employed during general construction and/or Site maintenance activities at the Site involving exposure to residual impacted soil and groundwater. It is the responsibility of each individual contractor to develop and implement their own health and safety plan specific to the work to be performed. Based on the environmental assessment completed at the Site, the expected contaminants of potential concern (COPC) in soil and groundwater are VOCs and PAHs.

The primary route for contact with COPCs in soil and groundwater at the Site is dermal absorption, incidental uptake, and active ingestion when working in contact with Site environmental media. Inhalation of VOCs may also be an exposure pathway during excavation in the southern portion of the Site at the Site. As such, the utilization of basic personal protective equipment (PPE) and field monitoring for volatiles will minimize the potential for human exposure while conducting any possible redevelopment activities at the Site.

Training

Personnel who will be directly handling or otherwise may be exposed to impacted soil are recommended to have 40-hour Occupational Safety & Health Administration (OSHA) CFR 1910.120 training, 3 days of supervised field experience, and current 8-hour OSHA refresher training. It is also recommended that personnel participate in a corporate annual medical monitoring program.

Personal Protective Equipment

Based on the hazard evaluation, Level D PPE has been initially recommended for personnel who will be directly handling or otherwise may be exposed to impacted soil at the Site. The contractor's Health and Safety Officer may upgrade PPE to Level C or higher if additional hazards are identified during Site work or downgraded as the individual contractors see fit.

Specific Level D PPE recommended for use at the Site includes the following:

- Steel toe work boots
- Safety glasses with side shields
- Work gloves
- Hard hat



- Coveralls (optional)

Work Zone Monitoring

Dust

The Site boundaries should be monitored for ambient dust levels to ensure fugitive dust is not migrating from the Site onto adjoining or nearby properties or affecting patrons of the Site. As a general rule of thumb, visible ambient dust should be controlled using wet suppressant methods and any stockpiles should be covered during down time.

VOCs

A restricted area should be established with access limited to applicable personnel during periods when impacted soil in the southern portion of the Site or groundwater in the two groundwater plume areas are exposed during excavation (see plume areas shown on **Figure 2**). Exposed soil or groundwater will be monitored by the Qualified Environmental Professional (QEP) using a properly calibrated PID to ensure proper management, reuse, or disposal of Site soil. An action level of 100 ppm, based on the conservative permission exposure level (PEL) for trichloroethylene and tetrachloroethylene, will be used. If concentrations above 100 ppm are sustained for a period of 15 minutes, the area will be evacuated to allow vapor to dissipate. Ambient background readings should be collected prior to excavation work to ensure 100 ppm is not an ambient condition due to humidity or local ambient air conditions. If vapors persist after a period of ventilation, corrective actions may include the following:

- Restricting access to the excavation area
- Monitoring in the ventilated cab to continue excavation work
- Avoiding personnel in the excavation until placement of subbase and a prolonged period of ventilation
- As a last resort, upgrading of PPE to include use of full-face respirators by properly fitted and medically cleared personnel with organic filter cartridges

PID clearance of the area should be completed prior to personnel entering the restricted area.

General Operating Procedures

In addition to the above basic health and safety guidelines, the following procedures should be followed during activities conducted at the Site that create the potential for exposure to impacted soil:

- Work conducted at the Site shall be directed by a qualified Environmental Professional and NHDES shall be notified prior to any soil disturbance or removal of soil from the Site.
- Contractors should be made aware of and familiarize themselves with this SGMP.
- The Site shall be surveyed and cleared by DigSafe and other non-member utilities.
- Equipment used during excavation activities shall be properly cleaned and decontaminated prior to leaving the Site.



- Any indication of conditions more hazardous than those anticipated, or the observation of circumstances that would render the above basic health and safety procedures inappropriate, shall result in the evacuation of the work area and a reassessment of health and safety procedures by a qualified environmental professional.

3. SOIL MANAGEMENT

The following are the procedures required during any work below the existing asphalt surface, or during future redevelopment, and when disturbing or altering any surface at the Site after redevelopment is complete. It is assumed for the purposes of this SGMP that impacted soil will be encountered over the entire Site and additionally CVOC residuals may be present in soil in the southern portion of the Site. If any previously unknown releases or other sources of contamination are identified during excavation or other redevelopment activities, the NHDES must be notified. This notification should include a description of the work to be completed and how the excavated material will be handled and managed to document compliance with this SGMP.

Onsite Reuse of Soil

Soil subject to this SGMP can be reused onsite; however, direct exposure to PAHs in soil will remain a concern; therefore, it is recommended that to reduce exposure concerns, the soil be covered as a best management practice in accordance with the following specifications:

- Soils reused onsite should be placed beneath a permanent engineered barrier system. The engineered barrier system will cover the entire Site and will consist of the following in each of the areas:
 - o Landscaped Areas: A permeable geotextile fabric or similar material, such as snow fence will be placed as a marker layer directly over the impacted soil to indicate the distinction between the clean fill cover and the underlying impacted soil to remain at the Site. A minimum of 12 inches of clean fill will be placed as cover material over the marker layer. The source of fill will be documented to be a local native source or will be documented to be clean (i.e., non-impacted) through analytical testing. The covered areas will be loamed, seeded, mulched, or otherwise permanently stabilized to prevent erosion and damage to the soil cover. If the marker layer must be compromised to facilitate landscape installation, a replacement marker layer shall be installed prior to the placement of any new non-impacted material.
 - o Building Foundation and Concrete/Asphalt Areas: Areas planned for impermeable construction (e.g., concrete walkways and the Site building foundation) can be installed directly over the impacted soil. A separate marker layer will not be necessary below impermeable surfaces since these materials serve as the marker layer. The geotextile marker layer will extend from landscaped areas to the exterior limit of these impermeable areas.
 - o Additional sub-base materials may be necessary beyond the minimum cover requirements discussed herein to maintain the structural integrity of any proposed Site features.



- o All features and subsurface infrastructure shall be installed with the grading of impacted materials in accordance with the design requirements for the Site.

Soil Stockpiling and Storage

Impacted soil excavated from the Site may be temporarily stored onsite. Stockpiles should be adequately contained to avoid runoff and contamination of surficial materials where the stockpile is placed. Soil stockpiled at the Site should be placed atop a minimum 6-mil polyethylene sheeting to prevent contamination of surrounding cover materials and securely covered with the same to withstand wind when the stockpile is not being actively worked. Berms shall be constructed around the edges of the stockpiles, the base shall be sloped to create leachate collection points, and stormwater runoff shall be diverted away from any soil stockpile or storage area when feasible.

The stockpile should be covered during periods of precipitation. If the stockpile is being actively worked during precipitation, runoff generated while the polyethylene sheeting is removed from the stockpile should be directed to a collection area to contain the runoff. This collected stormwater should be managed similar to groundwater best management practices discussed in **Section 4** of this SGMP.

Soil to be removed from the Site may be more conveniently live loaded into trucks for offsite disposal at an appropriate facility or temporarily stored within secure, water resistant, DOT-approved bulk containers. All stockpiled or containerized soil shall be stored within a secure area of the Site and properly labeled to minimize potential contact. In addition, all soil stockpiled or otherwise stored at the Site shall be inspected daily for tears, holes, or other failures in the polyethylene sheeting or storage container.

Dust Control

Dust control requirements shall be documented by the contractor during construction and maintenance activities. Dust control measures shall be employed by the contractor during excavation and grading and around stockpiles, haul roads, and any other exposed soils.

- At a minimum, wet suppression shall be used to provide temporary control of dust. Wet suppression shall be applied on a routine basis and/or as directed by the QEP to adequately control dust. Depending upon weather conditions and work activity, several wet suppression applications per day, and/or the use of granular calcium chloride or similar commercially manufactured dust control agents, may be necessary to adequately control dust. Aside from routine wet suppression, alternate dust control measures are subject to approval by the QEP.
- Water runoff generated by dust control shall be retained and disposed in accordance with the requirements of the appropriate regulatory agencies.
- Vehicles leaving the Site shall have no mud or dirt on the vehicle body or wheels. Any foreign matter on the vehicle body or wheels shall be physically removed prior to vehicles entering a public roadway or adjoining parking lots. Vehicles shall not be permitted to leave the Site with exterior mud or dirt that has the potential to be deposited on public roadways.



- Any materials exported to the roadway shall be removed and placed onsite or in trucks for disposal.

Offsite Soil Disposal

Excess impacted soil that cannot be reused onsite shall be transported and disposed offsite in accordance with applicable federal and state regulations. The following subsections provide appropriate procedures for the characterization and offsite disposal of excess waste soil.

Waste Characterization Sampling

Soil for offsite landfill disposal or recycling requires waste characterization sampling to meet the disposal facility's acceptance requirements. As such, representative samples from the impacted soil will be collected for analysis by an independent, New Hampshire-certified laboratory. At a minimum, and in accordance with disposal facility's requirements, laboratory criteria will include, but may not be limited to, the following analyses:

- TPH
- VOCs
- Semi-volatile organic compounds (SVOCs)
- Polychlorinated biphenyls (PCBs)
- Resource Conservation and Recovery Act (RCRA) 8 Metals
- Pesticides
- Herbicides
- pH
- Ignitibility, conductivity, and reactivity (sulfide and cyanide)
- Additional toxicity characteristics leaching procedure (TCLP) analysis, where necessary

Following receipt of the results of the above analyses, an appropriate disposal or recycling method can be selected, and a waste profile shall be prepared and submitted to the facility for acceptance/approval prior to shipping soil. Although not anticipated based on historical confirmatory sampling results, soil impacted with CVOC residuals in the southern portion of the Site should be specifically reviewed to confirm proper handling according to NH Solid Waste Regulations (i.e., may be a F listed hazardous waste, or require contained-out determination).

Soil Transport and Recycling/Disposal

Following facility acceptance, impacted soil shall be removed from the Site for proper recycling or disposal. Impacted soil loading and transport activities shall be conducted in accordance with this SGMP and shall be overseen by the QEP, who shall be present during all soil management activities. No material shall leave the Site without authorization of the QEP. Equipment used for the transport of impacted soil shall be properly licensed in accordance with applicable state and



federal regulations. Haul truck cargo areas shall be securely and completely covered during material transport on public roadways.

Each shipment of impacted soil will be accompanied by appropriate transport documentation, such as a non-hazardous waste manifest or bill of lading. An official record of each shipment of impacted soil from the Site, including tonnage, shall be presented to the owner's QEP following delivery to the receiving facility.

4. GROUNDWATER MANAGEMENT

As part of construction or maintenance activities at the Site, it may become necessary to manage excess groundwater, especially during excavation activities for utilities, foundations, and other subsurface structures. Although contaminated groundwater is generally delineated to the two plume areas, any groundwater encountered or dewatered shall be managed in accordance with this section.

Dewatering for Excavations

The following procedures for dewatering onsite excavations shall be implemented:

- Surface water shall be prevented from flowing into excavations at the Site and trench excavations will not be used as temporary drainage ditches.
- If stormwater runoff enters the excavation area, it shall be dewatered and handled as groundwater in accordance with this Section.
- Pumps, well points, sumps, hoses, filters, and all other dewatering system components shall be provided and maintained as necessary to remove water from excavations.
- The suspended solids content in the water shall be minimized during dewatering activities by lining the excavation collection area with crushed stone and placing the pump intake in a perforated bucket.
- Silt laden or untreated water shall not be discharged directly to the storm, sanitary, or combined sewer without first receiving appropriate approvals and meeting appropriate state and local pretreatment requirements.
- Solids generated through collection of groundwater should be managed according to **Section 3** above.

Storage of Water Removed from Excavations

Water removed from excavations shall be stored onsite according to the following:

- Water removed from excavations shall be stored in a fractionation (frac) tank to allow settling of solids and testing prior to discharge. The frac tank inlet shall be placed at the opposite end from the tank outlet.
- If needed for additional detention or storage volume, additional tanks shall be placed in series for secondary settlement.



- Once sampled, no water or other materials shall be added to the frac tank.
- If stored water has been tested and analytical results are below the New Hampshire AGQS, water may be reinfiltrated to the ground surface.

Disposal at an Offsite Treatment Facility

Water removed from excavations that require offsite disposal shall be tested and disposed of at an offsite treatment facility in accordance with the following:

- The contractor shall obtain all local, state, and federal approvals necessary for the discharge of the water to the offsite treatment facility.
- Prior to discharge of the initial tank load, the contractor shall collect water samples for laboratory analysis in accordance with the applicable requirements of the offsite treatment facility. Test results shall be provided to the QEP (if not collected by the QEP) and to the offsite treatment facility.
- Once sampled, no water or other materials shall be added to the frac tank.
- All additional frac tank loads shall be tested in accordance with the offsite treatment facility's requirements prior to discharge.
- Groundwater determined to have contaminant levels exceeding the offsite facility's limits shall be treated prior to discharge. Depending on the contaminants, this may include granulated activated carbon (GAC) filtration.
- Water shall be transferred from each tank by suspending the intake line immediately below the water level to minimize disturbance of sediment at the bottom of the tank and a bag filter shall be installed on the discharge piping for both treated and untreated water.
- The contractor shall cease discharge immediately upon discovery through testing or other means that discharge is not in compliance with the requirements of local, state, or federal regulations or permits.
- Following the discharge of water from the frac tank(s), accumulated sediment or other solid materials shall be managed in accordance with **Section 3** of this SGMP.

Incidental Groundwater

Groundwater may percolate up to the ground surface during the compaction of soils. This groundwater may be allowed to infiltrate back into the subsurface environment; however, it must be prevented from entering the stormwater system.

5. INSPECTION AND MAINTENANCE PLAN

If engineered barrier systems are installed to prevent exposure to contaminants, it is further recommended that an Inspection and Maintenance Plan be employed as an additional best management practice. If employed, the current asphalt surface and building and any future permanent engineered barrier systems at the Site should be inspected annually, and repairs made



on an as-needed basis. A copy of the recommended inspection checklist is provided as **Attachment A**.

A copy of the SGMP should be maintained by the Owner and should be provided to all applicable Owner representatives for ease of access when work in contact with Site soils (i.e., beneath the engineered barrier) is required.

Annual Inspection

Use of the Site and exposure to the elements may degrade the future engineered barrier systems. Periodic and annual inspections and maintenance will ensure the continued effectiveness of the systems and continued risk reduction at the Site. Annual inspection work should at a minimum include the following activities:

- **Permanent Engineered Barrier System**
 - Check all landscaped permanent cover system areas for exposure of the marker layer, bare spots, deep-rooted weeds, and evidence of erosion.
 - Check all asphalt and hardscape permanent cover system areas for evidence of excessive wear and/or missing asphalt.
 - Check the building foundation for evidence of damage, cracks, and water penetration.
 - Check for road cuts or evidence of emergency utility work.

Maintenance

The following maintenance practices are recommended for issues noted during the inspection:

- **Permanent Engineered Barrier System**
 - Remove any deep-rooted weeds.
 - Bare spots shall be repaired with a grass seed mix and a straw covering or sod/turf in landscaped areas.
 - Repair any minor eroded areas (i.e., no erosion below the geotextile marker layer) with more granular fill and new loam or mulch.
 - Repair any major eroded areas (i.e., erosion below geotextile marker layer) by replacing the geotextile as needed and replacing the fill in accordance with the design specifications depending on the location at the Site (i.e., landscaped area vs asphalt area). A minimum of 1 foot of natively sourced fill shall be present at the surface above the marker layer.
 - Repair/replace any broken asphalt or concrete and replace as needed the sub-base materials.

An inspection checklist shall be filled out following each inspection. A copy of an Inspection Form is included as **Attachment A**.



Record Keeping

Should inspections be employed, an annual inspection report documenting the general condition of the Site and any maintenance required or performed by the property Owner should be prepared and kept on file and be made available for review by the NHDES and/or future Site users upon request.

6. ANTICIPATED QUESTIONS

The following are examples of anticipated questions and answers and are provided as guidance to the grounds and maintenance staff and other potential users of the Site.

Why are there certain requirements on excavating at the Site?

The Site is located in the area of historical operations that resulted in soil and groundwater that is contaminated. To minimize potential human exposure to contamination and to facilitate proper management/disposal, there are requirements on excavating and handling soil and groundwater.

Will a subcontractor hired to work at the Site need to comply with this Plan?

Yes. Most contractors will be unaware that there are requirements on digging on the Site. Anyone who is planning on digging at the Site will need to comply with this SGMP and NHDES requirements for soil and/or groundwater disposal.

The property Owner or its assigns is responsible for notifying subcontractors of this SGMP and its requirements.



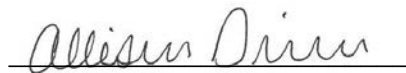
If I have a question, who should I call?

Depending on the complexity of the issue, the following people will be able to answer your questions or refer you to the right person.

Contact Information		
Organization/Role	Person	Phone Number
Owner – LWM Residential, LLC	Jon Livadas	(302) 598-3492
Credere Associates, LLC/Qualified Environmental Professionals	Allison Drouin – Project Manager Lauren Kaija – Engineer	(207) 749-1141 (802) 952-3669

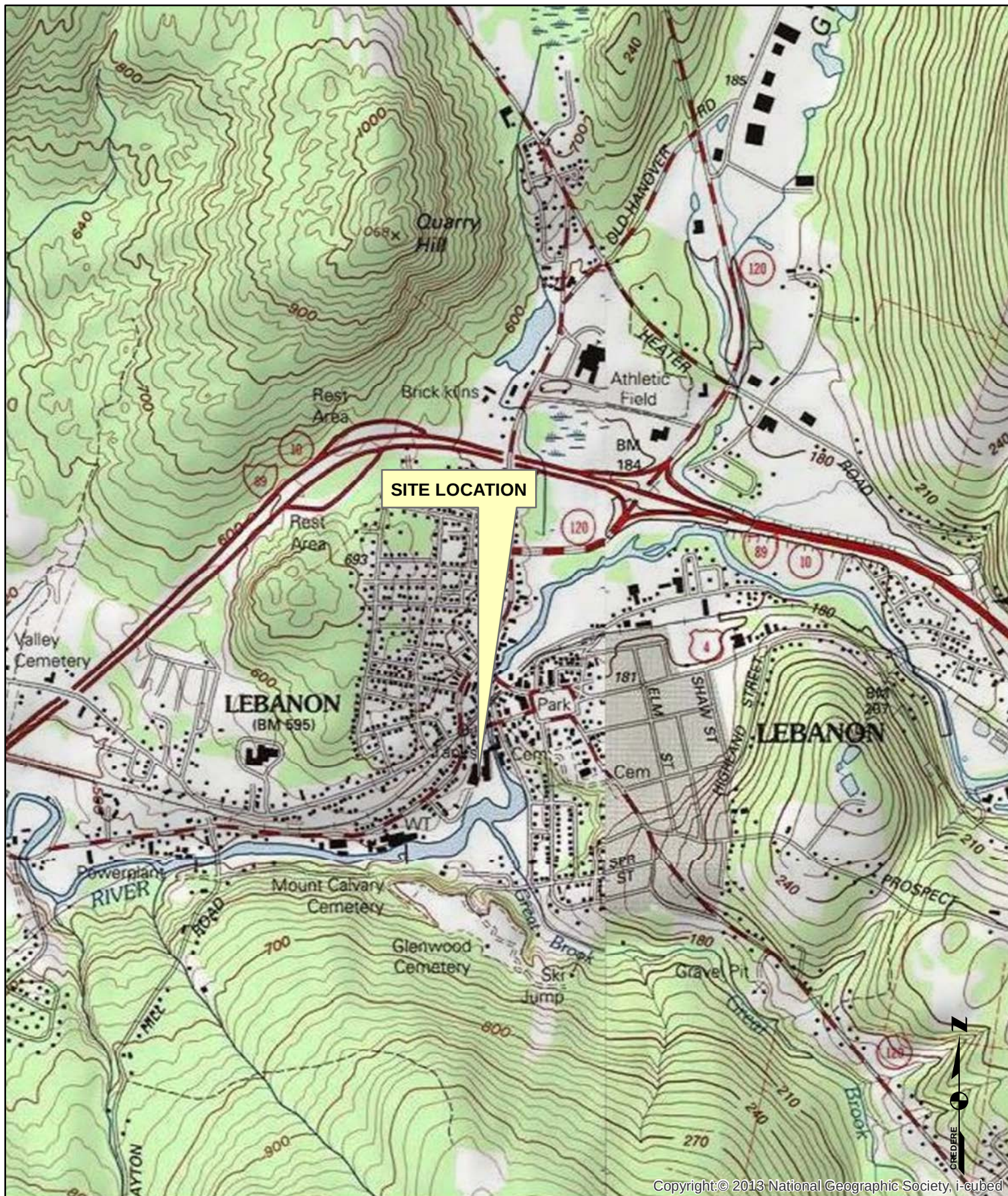
At the completion of any development activities, this SGMP should be reviewed to ensure accuracy with Site conditions. If there are any questions, please contact the undersigned.

Sincerely,
Credere Associates, LLC



Allison Drouin, PG, LG
Senior Geologist/Project Manager

Attachments: Figure 1 – Site Location Plan
 Figure 2 – Detailed Site Plan
 Attachment A – Annual Inspection Checklist



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DRAWN BY: SAF

DATE: 01/12/2021

CHECKED BY: RSV

PROJECT: 17001384



Credere Associates, LLC

776 MAIN STREET
WESTBROOK, MAINE
Tel. 207.828.1272
Fax 207.887.1051
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FIGURE 1 SITE LOCATION PLAN

FORMER KLEEN LAUNDRY & DRYCLEANING
25 MECHANIC STREET & 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE

1,000 0 2,000
Feet
1 INCH = 2,000 FEET





NOTES:
1. EXISTING CONDITIONS AND FEATURES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE BASED ON INFORMATION OBTAINED FROM THE TOWN OF LEBANON, ESRI ORTHO IMAGES, NEW HAMPSHIRE OFFICE OF GIS, AND FIELD WORK PERFORMED FROM MAY 2021 TO APRIL 2023.
2. IT IS UNCLEAR FROM HISTORICAL DOCUMENTATION WHERE TANK #4 (1,000-GALLON GASOLINE) WAS FORMERLY LOCATED. LOCATION OF TANK #1 IS PRESUMED FROM FILE.

DRN BY: LAK/NWW | DATE: 09/20/2024
CHKD BY: ASD | PROJECT: 21001623



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**FIGURE 2
DETAILED SITE PLAN**

FORMER KLEEN LAUNDRY & DRYCLEANING
25 MECHANIC STREET & 1 FOUNDRY STREET
LEBANON, NEW HAMPSHIRE

- | | |
|---|--|
| <ul style="list-style-type: none">SITE BUILDING OUTLINEFORMER SITE BUILDING (DEMOED 2024)CRAWL SPACEFORMER 750-GALLON NO. 2 FUEL OIL USTFORMER 20,000-GALLON NO. 6 FUEL OIL USTABANDONED-IN-PLACE 20,000-GAL NO. 6 FUEL OIL UST (APPROX.) PCE/TCE IN SOIL >SRSPCE GW PLUME >AGQSCATCH BASINDECOMMISSIONED MONITORING WELLSOIL BORING/PIEZOMETER (2023)POLE-MOUNTED TRANSFORMERBRICK MANHOLE W/ FREE PRODUCTEXISTING MONITORING WELL | <ul style="list-style-type: none">INDOOR AIR SAMPLE LOCATIONSUBSLAB VAPOR SAMPLE LOCATIONINDOOR AIR/SUBSLAB VAPOR SAMPLE LOCATION2021 SOIL BORING2021 SOIL BORING/MONITORING WELL2021 SURFACE SOIL SAMPLE LOCATION2021 SOIL BORING LOCATIONSTORM SEWER DRAINAGE PIPEAPPROX. PETROLEUM PLUMEPCE >RESIDENTIAL SGSL OR IASL(APPROX.) PCE/TCE IN SOIL >SRSCROSS SECTION TRANSECT2-FOOT CONTOURPARCEL BOUNDARYSITE BOUNDARY |
|---|--|

**Former Kleen Laundry, 1 Foundry and 25 Mechanic Street
Lebanon, New Hampshire
ANNUAL INSPECTION CHECKLIST**

Date: _____

By: _____

Weather: _____

Impermeable surfaces damaged (asphalt sidewalks)?	Y / N	Observations:
Erosion of soil cover observed?	Y / N	Observations:
Marker layer exposed in any area?	Y / N	Observations:
Significant settling observed?	Y / N	Observations:
Unusual seeps or breakouts of liquids observed?	Y / N	Observations:
Emergency utility work needed?	Y / N	Observations:
Asphalt/sidewalk cuts?	Y / N	Observations:
Comments:		
Maintenance Required:		
Maintenance Completed:		
Date Maintenance Completed:		