FINAL Revised Remedial Investigation Work Plan

Location:

115 Broadway
Hamlet of Port Ewen, Town of Esopus
Ulster County, New York
BCP Site No. C356063

Prepared for:

Community Manufacturing Solutions, LLC
P.O. Box 903
Rifton, New York 12471

LaBella Project No. 2223878

Date: August 20, 2024
REVISED: December 17, 2024
FINAL REVISION: May 29, 2025

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CERTIFICATION

I Randolph H. Hoose certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and, modifications agreed-to by NYSDEC staff.

Randolph H. Hoose P.G.

1.0 INTRODUCTION

This Remedial Investigation (RI) Work Plan has been prepared by LaBella Associates, D.P.C. (LaBella) on behalf of Community Manufacturing Solutions, LLC (CMS), a volunteer under the New York State Brownfield Cleanup Program (BCP). This RI work plan identifies the investigative tasks to be implemented at the currently vacant commercial property located at 115 Broadway in the Hamlet of Port Ewen, Town of Esopus, Ulster County, New York (**Figure 1**).

This RI work plan includes a summary of the site background and history as well as a summary of prior environmental site assessments/investigations on the property. This includes a description of the geology and groundwater flow direction as well as limited soil, soil vapor and groundwater analytical data. A preliminary conceptual model is also included. The scope of work (SOW) proposed herein has been developed as a means of supplementing the existing site-specific geologic and analytical data in order to further characterize and evaluate soil, soil vapor and groundwater quality and to inform the Qualitative Human Health Exposure Assessment and significant threat determination.

1.1 Site Setting

The CMS property is located at the aforementioned address on the Town of Esopus tax parcel No. 56.52-1-14. This is a 3.53-acre irregularly shaped commercial parcel located on the eastern side of Broadway (a.k.a. U.S. Route 9W). The property is located in an urban/suburban setting in an area with nearby properties developed for residential and commercial uses. Adjacent properties include the Town of Esopus Public Library to the south, a condominium complex to the east, undeveloped land to the north, and residential properties to the west. As shown on Figure 1, the topographic relief in proximity to the property is that of a generally level upland plateau, with an overall slope to the east toward the Hudson River.

Improvements currently on the property include a main building, of wood frame and concrete block construction, that includes a three-story office area and a one-story former storage and processing area. A detached one-story garage (of concrete block construction) is also present on the property off the southwest corner of the main building. The CMS property is accessible via asphalt driveways that extend east and south from Broadway and North Broadway, respectively. A paved parking lot is located east of the main building. The remainder of the property consists of maintained grass/landscaped areas and a small overgrown wooded area along the southern property boundary. A site map is provided in **Figure 2**. The property is serviced via municipal water and sewer.

1.2 Site Background

CMS purchased the property from Preservation Ridge, LLC. in May 2022. The property was first developed for commercial use in the 1960s when the present structures were constructed. During that time, various manufacturing businesses (including Dana Manufacturing – a manufacturer of portable stoves and heaters and JC Metal Spinning - believed to have been a machine shop using metal lathes) operated on the property until

the early 1980's. In approximately 1983, a microfilm services facility (with on-site film development activities through approximately 2002) began operating on the property. Potential releases of lubricants, solvents, and/or photographic chemicals (during these previous commercial operations between the early 1980's and early 2000's) had been previously noted as a recognized environmental concern (REC) in a Phase I Environmental Site Assessment (ESA) by Gallagher Bassett in April, 2022. Additionally, a 550-gallon fuel-oil aboveground storage tank (AST) was removed from the property in February 2022. This 550-gallon AST had replaced a previous 1,000-gallon fuel-oil underground storage tank (UST) that was removed from the northeastern exterior corner of the main building in 2010.

1.3 Previous Investigations

CMS has undertaken two (2) previous phases of investigation on the property since the Volunteer purchased it in May, 2022. These include a limited Phase II ESA (conducted in June, 2022) that included soil, groundwater and soil vapor intrusion sampling in June, 2022 followed by a more detailed property characterization study conducted in 2023. The findings of both of those investigative efforts have qualified CMS to be eligible as a volunteer into the New York State BCP.

1.3.1 June 2022 Phase II Environmental Site Assessment

CMS, after their purchase of the property, became aware that a previous owner and/or occupant of the property appeared to have failed to disclose that it was likely that paints and other chemicals had once been stored or used in the detached one-story garage building. Apparently, there had been a past release that resulted in impacts to soil and groundwater on the property. Subsequent sampling of soil and groundwater during the June, 2022 Phase II ESA (by DT Consulting Services, Inc.) identified tetrachloroethene (PCE), trichloroethene (TCE) and related degradation by-products in groundwater on the property at concentrations above the ambient water quality standards established by the New York State Department of Environmental Conservation (NYSDEC) Division of Water in their Technical and Operational Guidance Series (TOGS) Memorandum 1.1.1 of June, 1998 (as amended) and/or the Soil Cleanup Objectives (SCOs) for unrestricted use as defined by 6NYCRR Part 375-6.8(a). PCE and TCE were also identified in indoor air samples at concentrations elevated above background ambient outdoor air concentrations.

1.3.2 Summer/Fall, 2023 Property Characterization

In May, 2023, CMS collaborated with the NYSDEC to develop a Property Characterization (PC) Work Plan. The PC Work Plan was prepared in accordance with NYSDEC document DER-10 and modifications agreed-to by NYSDEC staff. The tasks identified in the PC Work Plan were accomplished via:

* Pilot testing for design and installation of an SSD system;
* Geophysical Investigation;
* Soil boring and sampling at selected locations;
* Monitoring well installation;
* Groundwater contour mapping;

* Soil vapor sampling, and:
* Groundwater sampling.

The findings of these PC investigations were presented to the NYSDEC in a January 2, 2024 correspondence entitled "Preliminary Property Characterization & Recommendation for Supplemental Investigation". The information presented in that document (which is summarized in the paragraphs below) led CMS to revise their re-development plans for the property and petition New York State for entry into the BCP. The January 2, 2024 document is attached hereto in its entirety (**Attachment A**).

Pilot Testing for Sub-Slab Depressurization System

The SSD pilot testing was conducted in January, 2023 via three (3) sub-slab extraction points installed through the concrete slab at various locations within the site building. Testing was conducted by applying various wellhead vacuums to each extraction point and monitoring the observed vacuum beneath the concrete slab along two (2) perpendicular lines of observed vacuum monitoring points. These monitoring points were installed at distances of 5.0-feet, 10-feet and 15-feet from each extraction point. Each extraction point was tested individually.

Although the SSD system pilot testing did indicate that SSD is appropriate and feasible for this site, the fact that CMS may potentially raze the structures currently on the site renders further discussion of SSD to be of no practical benefit at this time. As such, further discussion of SSD will be re-visited during a later phase of the project if appropriate.

Geophysical Investigation

The geophysical investigation sought to identify anomalous areas via the use of conductive and non-conductive anomalies via ground penetrating radar (GPR) and electro-magnetic induction. The geophysical investigation focused on the southern portion of the property including the southern half of the site building. Accessible paved and unpaved areas in the southern portion of the property to the eastern, western and southern property boundaries were also included.

The findings of the geophysical investigation identified two notable areas. The first was a non-conductive anomaly in the lawn area west of the site building. A second anomalous area was noted in the southeastern quadrant of the property and appeared as a series of six (6) parallel and elongated features that suggested the presence of a leach field. The locations for monitoring wells MW-1 and MW-4 were adjusted during implementation of the PC Work Plan based on their proximity to these features (see Figure 2).

Soil Borings

Soil borings were advanced into and terminated within a stiff clay unit at all drilled locations. The soil encountered during this phase of drilling did not suggest any visual or olfactory evidence of impact and headspace screening of soil for total volatile organic compound (VOC) concentrations (via a photoionization detector (PID)) did not suggest elevated total

VOC concentrations. However, at SB-11/MW-6, located off the west side of the garage building, elevated total VOC concentrations up to 37.4 parts per million (PPM) were noted in the interval between 5.0-feet and 7.5-feet below grade. There was no visual or olfactory evidence of impact in this depth interval.

Soil Analytical Results

In general, multiple soil samples were collected from each borehole installed in the southern portion of the property. Specifically, those borings installed in proximity to the garage and in the area anticipated to be hydraulically downgradient of the garage. Single soil samples were collected from soil borings advanced outside of that portion of the site. All soil samples were analyzed for VOCs, semi-VOCs and RCRA 8 metals. Additionally, one soil boring location was sampled for all analytes, including VOCs, semi-VOCs, metals, PCBs, pesticides and herbicides at NYSDECs discretion. Likewise, NYSDEC was also given the opportunity to select which soil boring location would be sampled for polyfluorinated alkyl substances (PFAS). NYSDEC selected SB-8 for both the PFAS and comprehensive analysis. A total of 31 soil samples (plus additional laboratory blanks) were analyzed as part of the soil sampling effort during the PC phase of investigation.

The soil analytical results indicated that all of the soil samples collected during the August, 2023 soil boring program were within the NYSDEC's soil cleanup objectives (SCOs), as defined in 6NYCRR Part 375-6.8(a) for unrestricted use with respect to metals and 27 of the 31 samples analyzed were within the SCO for unrestricted use with respect to VOCs. Four (4) soil samples (SB-8 (2); SB-11 (1); SB-11 (2) & SB-13 (4)) indicated concentrations of PCE, TCE, cis-1,2-dichloroethene (DCE) and/or vinyl chloride (VC) in excess of the SCO for unrestricted use but, below the SCO for restricted residential use (6NYCRR Part 375-6.8(b). It should also be noted that the comprehensive analysis of the samples collected from SB-8 (which were also analyzed for PCBs, pesticides, herbicides and PFAS) did not identify any of those additional analytes. The soil analytical results are summarized on **Figure 3**.

Monitoring Well Installation and Site Stratigraphy

The soil boring program revealed a subsurface that included a surficial layer that was composed of a mixture of fine sand to silt with a varying amount of clay depending on location within the site. This surficial layer, which appears to be of low to moderate permeability, is present to a depth range of approximately 6.6 feet below grade at SB-13 (MW-4) to 22.5 feet below grade at MW-22. Each of the monitoring wells installed during the soil boring program were screened at the base of the saturated zone. Depth to groundwater within this surficial layer is typically less than 5.0 feet below grade but, appears to deepen toward the east (MW-3) and north (MW-2) where depth to groundwater increases to approximately 8.0 feet below grade and 12 feet below grade, respectively. This upper saturated zone appears to be perched on top of an underlying stiff clay unit that was confirmed in all of the soil borings advanced at the site. The average depth to this stiff clay unit is approximately 14 feet below grade. Specifications for the monitoring wells installed during the PC phase of investigation at the site are presented below in **Table 1**.

Table 1
Monitoring Well Specifications

Well	Boring ID	Total Depth	Screen	Sand Pack	Bentonite Seal
MW-1	SB-1	13	5.0 - 13	3..0 - 13	1.0 – 3.0
MW-2	SB-3	23	5.0 - 23	3.0 - 23	1.0 – 3.0
MW-3	SB-5	15	5.0 - 15	3..0 - 15	1.0 – 3.0
MW-4	SB-13	10	5.0 - 10	3.0 - 10	1.0 – 3.0
MW-5	SB-7	10	5.0 - 10	3.0 - 10	1.0 – 3.0
MW-6	SB-11	15	4.0 - 15	3.0 - 15	1.0 – 3.0
All depths given in feet below grade					

Groundwater Sampling and Flow Direction

Groundwater sampling was conducted on October 30, 2023. Prior to commencing with low flow sampling, each well was opened and a complete round of depth to water (DTW) measurements were collected. The DTW measurements were used in conjunction with the top of well casing elevations (which were based on a site datum assigned an elevation of 100.00 feet) in order to prepare the groundwater contour map (included as **Figure 4**). As indicated thereon, the direction of groundwater movement is toward the east and northeast depending on location at the site.

Groundwater Analytical Results

Groundwater samples were collected from each monitoring well and analyzed for VOCs, semi-VOCs and RCRA 8 metals. Additionally, PCBs, pesticides, herbicides and PFAS were also analyzed from one (1) monitoring well (MW-5) at NYSDECs discretion.

The groundwater analytical results establish that none of the groundwater samples identified metals concentrations in excess of the NYSDEC standards for Class GA groundwater as defined by TOGS 1.1.1 of October, 1993 (as amended). Four (4) of the monitoring wells (MW-2, MW-3, MW-5 and MW-6) indicated concentrations of PCE, TCE, DCE and/or vinyl chloride (VC) in excess of their respective standard for class GA groundwater. Semi-VOC analysis also identified PAH (polycyclic aromatic hydrocarbon) compounds, a suite of compounds that are formed as a by-product of the combustion of organic material, in all groundwater samples in excess of the NYSDEC standard for these compounds in groundwater. LaBella does not believe these PAH compounds to be site related. Additionally, the groundwater sample from well MW-5, which was also analyzed for PCBs, pesticides and herbicides, did not identify any of those additional analytes. PFAS analysis identified perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) in well MW-5 at trace concentrations of 2.73 nanograms per Liter (ng/L) and 0.851 ng/L, respectively. Final Ambient Water Quality Guidance Values (AWQGVs) as established by the NYSDEC (2023) are 2.7 ng/L for PFOS and 6.7 for PFOA, indicating a marginal exceedance for PFOS. The groundwater analytical results are summarized on **Figure 5**.

Soil Vapor Sampling

Five (5) soil vapor sampling points were installed at the locations indicated on Figure 2;

construction specifications are summarized in **Table 2**.

Table 2
Soil Vapor Sampling Point Specifications

Well	Boring ID	Total Depth	Screen Centerpoint	Glass Beads	Bentonite Seal
SV-1	SB-2	7.0	4.75	3.0 – 7.0	1.0 – 3.0
SV-2	SB-4	7.0	4.75	3.0 – 7.0	1.0 – 3.0
SV-3	SB-6	6.0	3.75	2.0 – 6.0	1.0 – 2.0
SV-4	SB-14	6.0	3.75	2.0 – 6.0	1.0 – 2.0
SV-5	SB-9	6.0	3.75	2.0 – 6.0	1.0 – 2.0
All depths given in feet below grade					

Two (2) soil vapor samples (SV-2 and SV-4) were collected on October 30, 2023 (along with the outdoor air sample) during the PC activities. Additional attempts to collect samples from each of the soil vapor sampling points were made but, infiltrating rainfall prevented three (3) of the five (5) soil vapor points from yielding sufficient soil vapor for sampling. The samples were collected via 6.0-liter SUMMA canisters that collected the samples over a 24-hour duration. The soil vapor analytical results are summarized on **Figure 6.**

1.4 Compounds of Concern

Based on the analytical results of soil and groundwater samples collected during the limited Phase II ESA (in 2022) and preliminary property characterization conducted in 2023, chlorinated solvents, including PCE, TCE and related degradation by-products, have been identified in soil, soil vapor, groundwater and indoor air on the property. Historically, PCE and TCE are common degreasers that have been associated with dry cleaning, wood processing and in metal fabrication. They can also be components of paint, paint removers, spot removers, adhesives, water repellents and wood cleaners.

Based on the past use of the property for the manufacture of portable stoves and heaters, as well as a machine shop and film processing facility, LaBella is recommending that the following compounds be considered the compounds of concern (COCs) that should be targeted for the investigations proposed herein:

- VOCs: chlorinated solvents including PCE; TCE; cis-1,2-DCE; trans-1,2-DCE, VC and petroleum hydrocarbons;
- Semi-VOCs, and
- Metals

Additionally, a comprehensive list of analytes will be requested for all samples collected as part of this RI Work Plan. The comprehensive list of analytes will include;

- Pesticides;
- Herbicides;
- Poly-chlorinated bi-phenyls (PCBs), and;
- Emerging contaminants (polyfluoroalkyl substances – PFAs)

The analytical results associated with the comprehensive analysis may suggest that reducing the list of COCs for future sampling events is warranted.

1.5 Sensitive Receptors

Media that may be impacted by site related COCs, and as such could be a potential exposure pathway, include soil, soil vapor and groundwater. Potential receptors at the Site could include construction/utility workers that may become exposed via impacted soil and/or future building occupants that may become exposed via soil vapor and/or soil vapor intrusion. Additionally, possible seeps of potentially impacted perched groundwater may be present along the steep sloping embankment present at the eastern property boundary. If present, these seeps could present a possible human or ecological exposure pathway.

2.0 REMEDIAL INVESTIGATION SCOPE OF WORK

This RI Work Plan was prepared in accordance with NYSDEC document DER-10 and modifications agreed-to by NYSDEC staff. The objectives for the Remedial Investigation proposed herein will be accomplished using a variety of investigative methods. These include:

* Soil boring and sampling at selected locations;
* Monitoring well installation;
* Groundwater contour mapping;
* Soil vapor sampling, and:
* Groundwater sampling.

The findings of these investigations will be evaluated and be used to guide remedial options and/or additional investigation if warranted.

The goal of the investigation proposed herein is to further establish the nature and extent of site related COCs. Specifically, the tasks identified as part of this RI Work Plan are scoped to further evaluate the horizontal and vertical distribution of COCs in soil, soil vapor and groundwater at specific locations on the property. Additionally, the currently available information collected as part of this RI, along with the information and data set forth in Attachment A, will be used in support of an exposure assessment that will evaluate the following exposure pathway elements:

1. Source location, concentration and media impacted (soil, soil vapor, groundwater);
2. Release and transport mechanism from the source area;
3. Identify potential exposure points for human contact;
4. Routes of exposure (ingestion, inhalation, dermal contact), and;
5. Receptor populations at a point of exposure.

An exposure pathway is deemed to be complete if all five elements can be documented; if any one of the five elements is unknown, then an exposure pathway is not known. An exposure pathway is eliminated from further evaluation if any one of the five elements has not existed in the past, does not exist in the present, and can reasonably be anticipated to never exist in the future.

2.1 Preliminary Site Conceptual Model and Investigations

Our current understanding of the site suggests a conceptual model that is depicted in the cross-sections presented herein as **Figure 7A** and **Figure 7B.** The conceptual model includes a shallow water bearing zone (of limited depth) perched over a stiff clay layer that appears to be continuous across the site. The depth of this apparently perched zone extends to approximately 14 feet below grade but ranges in depth from 6.5 feet below grade (MW-4) to 22.5 feet below grade (MW-2). At this time, the presence of a “regional” water bearing zone beneath this presumably perched upper zone has not been confirmed. Additionally, the direction of flow within the presumably perched upper zone appears to be toward the east and northeast depending on location at the site.

Groundwater analytical results (Figure 5) indicate concentrations of PCE, and related degradation by-products, in proximity to the garage (south of the property building), in excess of Class GA groundwater standards via wells MW-6 and MW-5. Additionally, well MW-2 also indicates concentrations of PCE and degradation by-products in excess of Class GA groundwater standards. These investigation measures are proposed to address data gaps and clarify the conceptual model of the site. This will include a surveyed base map by a professional land surveyor; a geophysical investigation as well as soil borings and soil sampling; monitoring well installation and groundwater sampling, and; completing a round of soil vapor sampling.

2.1.1 Current Geophysical Investigation

A Geophysical Investigation is proposed for completion in portions of the property that were not included in the geophysical investigation conducted during the preliminary characterization of the property. The geophysical investigation will include the lawn areas to the west and north of the site building as well as the paved/parking area east of the site building. Expanding the geophysical investigation into these areas will help to identify metallic or non-metallic anomalies that may be a possible source of site-related compounds identified in site soil and/or groundwater.

2.1.2 Soil Boring and Monitoring Well Installation

The goal of the current soil boring and monitoring well installations proposed herein is to better define the nature of the subsurface with respect to the suspected perched shallow water bearing zone and, to evaluate whether an underlying "regional" water bearing zone is present beneath the presumably perched water bearing zone. In order to accomplish this, five (5) "shallow" soil borings are proposed at selected locations on the property and four (4) "deep" borings are proposed at existing shallow monitoring well locations. **Figure 8** presents the locations for the nine (9) soil borings and eight (8) monitoring wells proposed herein; Table 4 presents the rationale for each.

Table 3
Soil Borings/Monitoring Wells Proposed for Remedial Investigation

Shallow (perched) Borings/Monitoring Wells	
Location	**Rationale**
PMW-7	Verify soil and groundwater quality hydraulically upgradient of well MW-6 and in proximity to the southwestern property boundary.
PMW-8	Verify soil and groundwater quality in the area south of the garage and suspected leach field area and, in proximity to the southeastern property boundary.
PMW-9	Verify soil and groundwater quality in the area hydraulically upgradient of well MW-2
PMW-10	Verify soil and groundwater quality in the area north of well MW-2 and in proximity to the northeastern property boundary.
PMW-11	Verify soil and groundwater quality hydraulically upgradient of well MW-1 and in proximity to the western property boundary.
PSB-15	Soil boring only - Verify soil quality in proximity to the northwestern property boundary.

Table 3
Soil Borings/Monitoring Wells Proposed for Remedial Investigation
(continued)

Deep Borings/Monitoring Wells

Location	Rationale
PMW-1D	Verify site stratigraphy and presence of "regional" water bearing zone in the anticipated hydraulically upgradient portion of the property.
PMW-2D	Verify site stratigraphy and presence of "regional" water bearing zone adjacent to eastern property boundary.
PMW-3D	Verify site stratigraphy and presence of "regional" water bearing zone adjacent to eastern property boundary.
PMW-4D	Verify site stratigraphy and presence of "regional" water bearing zone adjacent to eastern property boundary.

The soil borings proposed for the shallow (perched) zone will be advanced to a depth sufficient to confirm the presence of the stiff clay that underlies and supports the perched zone. The borings proposed for completion in the regional water bearing zone (if present) will be advanced to a maximum terminal depth of 75 feet below grade (or drill tooling refusal, whichever comes first). In the event that a regional water bearing zone is encountered, the borehole depth may also be limited by a second underlying clay layer (if present) that could potentially define the vertical limit of the regional water bearing zone at that soil boring location.

Soil Boring Advancement

Soil borings will be advanced into the underlying soil materials using direct push soil exploration methodology at each proposed location. This will include advancing direct push macro-core tooling, lined with a disposable acetate sleeve, so that a continuous soil core can be retrieved from the borehole. Soil borings proposed for completion as monitoring wells within the perched zone (PMW-7, PMW-8, PMW-9, PMW-10 and PMW-11) are anticipated for termination at depth ranging from approximately 10 feet below grade to 25 feet below grade. Soil borings for the "perched zone" monitoring wells will be terminated within the clay unit on which the shallow groundwater is perched. Soil borings proposed for completion as monitoring wells within the "regional" water bearing zone will be advanced to a depth sufficient to verify a regional water bearing zone without perforating any underlying clay layers. A maximum borehole depth of 75 feet below grade is anticipated.

It should be noted that if impacts are noted in any borehole, LaBellas approach will be to advance that borehole to a depth sufficient to "drill-out" of the impacted interval and document soil quality. Although a maximum terminal depth has been established as a guideline for borehole advancement, the actual terminal depth at each borehole location will be dependent upon borehole-specific observations (visual/olfactory/stratigraphic).

The soil cores retrieved from each soil boring will be evaluated by a qualified environmental professional for characteristics such as color, composition, grain size and moisture content as well as visual and/or olfactory evidence of impact. Additionally, the soil core will be subdivided (based on observations made in the field) and the soil headspace will be screened for concentrations of total VOCs. Soil headspace screening will be accomplished

by placing an aliquot of soil into a re-sealable plastic bag and monitoring the headspace over the sample using a photoionization detector (PID) calibrated to an isobutylene calibrant gas.

Soil cores that do not demonstrate evidence of impact via either visual, olfactory or headspace screening will be returned to the soil boring location from which they came or, be mixed-in to blend with surface grade at each location. Soil exhibiting visual, olfactory, or elevated total VOC concentrations via headspace screening will be containerized in a properly labeled, steel 55-gallon drum and be temporarily stored on the property pending analytical results.

Monitoring Well Installation

Monitoring well installation will commence after completing the acquisition of continuous soil cores and borehole-specific observations made at each location. The monitoring wells will be installed by advancing 4.25-inch inside diameter (ID) hollow stem augers to a pre-determined depth (based on the stratigraphy encountered at each borehole location). Specifically, the screened interval for the monitoring wells completed within the perched zone will extend to top of the stiff clay unit that supports the perched zone. Monitoring wells completed within the "regional water bearing zone" will be constructed such that the well screen is sealed within that zone. Specifically, a bentonite seal will be placed within the annular space between the well casing and borehole walls where the borehole perforates the upper clay confining layer. To the extent practical, the well screen will be placed at the base of the regional water bearing zone.

Once the augers are advanced to their termination depth, the center plug will be removed and the 2.0-inch ID well materials will be installed. The annular space between the well screen and borehole walls will be backfilled with graded well sand as the augers are incrementally withdrawn from the borehole. For the wells completed within the perched zone, the well sand will extend approximately 2.0-feet above the top of the well screen and then be sealed with approximately 2.0 feet of bentonite chips; for the wells completed within the regional water bearing zone, the graded well sand placed in the annular space between the well screen and borehole walls will extend to within one (1.0) foot of the bottom of the upper confining clay unit. The interval of the borehole extending through the upper confining unit will be backfilled with bentonite chips. The bentonite chips will be hydrated as necessary. The remaining annular space above the bentonite seal will be backfilled with soil cuttings that do not exhibit any visual or olfactory evidence of impact (or, elevated concentrations of VOCs based on headspace screening with a calibrated PID), graded well sand or, a combination of the two. Each monitoring well will be finished with a steel bolt-down road box set in a concrete pad.

Monitoring Well Development

After completing installation, each well will be developed via either a peristaltic or inertial pump that will be connected (via well-dedicated polyethylene tubing) to a flow-thru cell (or equivalent) and associated water quality meter to record the parameters of temperature, pH, specific conductance, oxidation-reduction potential, dissolved oxygen and turbidity.

These water quality parameters will be monitored until stabilization occurs or, a maximum of 10 well volumes are removed, whichever occurs first. If the well goes dry prior to stabilization and/or removal of 10 well volumes, the well will be allowed sufficient time for recovery so that additional well development activities can be undertaken at a later time.

All purge water generated during well development activities will be temporarily stored in 55-gallon drums at the site pending disposal at an approved facility.

2.1.3 Soil Vapor Monitoring

Soil vapor monitoring points were previously installed at five (5) locations during the property characterization activities conducted in 2023 (Figure 8). However, soil vapor samples were not able to be collected from three (3) of the five (5) soil vapor monitoring points during sampling events conducted in October and November, 2023.

The soil vapor monitoring points are constructed of a 6.0-inch length of stainless steel implant (attached to polyethylene tubing) set at approximately 5.0-feet below grade and centered within an approximate 4.0-foot interval of glass beads. The glass beads are sealed with bentonite and the stainless- steel implant is attached to polyethylene tubing that extends to the surface and is finished within a steel bolt-down road box set in a concrete pad.

Five (5) additional soil vapor monitoring points are proposed for inclusion into the current network of soil vapor monitoring points. These locations, identified as PSV-6 through PSV-10 on Figure 8, are positioned on the periphery of the Site and their construction will be similar to that described above.

2.1.4 Vapor Intrusion Monitoring

Because it is likely that the property owner may determine that it is most cost-effective to demolish the existing buildings on the property (in order to remediate impacted media beneath one or both buildings), a decision will likely be made as to whether to carry-out vapor intrusion monitoring once conditions in the field are better understood. As such, sub-slab vapor and concurrent indoor air sampling is not envisioned for the site at this time. This is because there may not be any standing structures from which vapor intrusion sampling could be conducted. However, if it is determined that the buildings should remain in place, Figure 8 includes three (3) locations from which vapor intrusion monitoring (which will include concurrent sub-slab and indoor air samples) may be performed. These include two (2) spatially distributed locations within the main site building and one (1) centrally located within the garage building.

2.2 Sampling Methodology and Laboratory Analysis

Three (3) media are proposed for sampling as part of this RI work plan. These include soil, groundwater, and soil vapor. Soil and groundwater samples will be analyzed for a comprehensive list of analytes. This will include the analytical methodologies of SW-846-8260 for the target compound list (TCL) of VOCs (+ 30 tentatively identified compounds (TICs)); SW-846-8270 for the TCL of semi-VOCs and, SW-846-6010D/SW-846-7471B for the

target analyte list (TAL) of 22 metals (in addition to mercury and cyanide). Additionally, soil and groundwater samples will also be analyzed via analytical method SW-846-8151A for TAL herbicides, SW-846-8081A for TAL pesticides; SW-846-8082A for TAL polychlorinated biphenyls (PCBs), and: EPA method 1633 for polyfluorinated alkyl substances (PFAs). Soil vapor samples will be analyzed for VOCs via method TO-15.

Phoenix Environmental Laboratories, Inc. of Manchester, Connecticut (Phoenix) is the analytical laboratory proposed for the sample analysis described herein. Phoenix is certified by the National Environmental Laboratory Accreditation Conference (NELAC) and holds certification in all northeastern states including New York. Phoenix conducted the analysis of samples previously collected as part of the Property Characterization that was completed in 2023.

2.2.1 Soil Sampling

Up to four (4) soil samples will be collected from each soil boring location and be submitted for laboratory analysis. At each proposed soil boring location, a surficial soil sample will be collected from the interval extending up to 2.0-inches below the root mat (in unpaved areas). In paved areas, the surficial sample will be collected from native soil and within 24-inches of surface grade. The other sampled intervals will be based on observations made during the soil evaluation and headspace screening. Sampled intervals will be biased toward a "worst case" scenario.

Soil samples will preferentially be obtained where nuisance characteristics (such as odors, discoloration or elevated headspace concentrations of VOCs) suggest impact. This will include one (1) sample from within the vadose zone (i.e. soil above the water table as observed during borehole advancement); one (1) sample from below the water table, and; one (1) sample from the bottom of the borehole. The intent of the soil borings will be to evaluate the vertical distribution of impacts within each borehole. If no evidence of impact is noted, then the three (3) samples will be collected from the interval just above the water table; the interval just below the water table, and the interval at the bottom of the borehole.

The sampled soil will be transferred to the appropriate laboratory-supplied sample glassware using a sampling trowel that will be washed via a non-phosphate soap and potable water solution and triple-rinsed with potable water at the start of sampling activities and between sample locations. The soil destined for VOC analysis will be collected in laboratory supplied glassware (or, Encore samplers) appropriate for EPA-approved soil sampling method 5035. All samples will be placed on ice after collection and will be transferred to the laboratory/courier following chain of custody protocols. **Table 4A** presents a summary of the soil samples anticipated for collection/analysis during the RI.

Table 4A
Summary of Anticipated Soil Samples/Analysis

Sample Location	Number of Soil Samples by Analysis						
	VOCs	Semi-VOCs	Pesticides	Herbicides	PCBs	TAL Metals	PFAs
Surface*	10	10	10	10	10	10	2
Vadose Zone	10	10	10	10	10	10	2

Table 4A
Summary of Anticipated Soil Samples/Analysis
(continued)

Sample Location	Number of Soil Samples by Analysis						
	VOCs	Semi-VOCs	Pesticides	Herbicides	PCBs	TAL Metals	PFAs
@ Water Table	10	10	10	10	10	10	2
@ Bottom	10	10	10	10	10	10	2
Blind Dup.	2	NA	NA	NA	NA	NA	1
MS/MSD	2	NA	NA	NA	NA	NA	1

Notes:
VOC: TCL VOCs via SW846-8260 + 30 TICS
Semi VOC: TCL Semi-VOCs via SW846-8270
Pesticides: TCL Pesticides via SW846-8081A
Herbicides: TCL Herbicides via SW846-8151A
PCBs: TCL PCBs via SW846-8082A
Metals: TAL metals (22) via SW-846-6010D/SW-846-7471B (+ Hg & CN)
PFAs: PFAs via EPA 1633
NA: Blind Duplicates & MS/MSD samples not applicable for these analytes
* Surface samples collected from 0-2" below root mat in un-paved areas; surface sample from paved areas will be collected from native soil and within 24-inches of surface grade.

2.2.2 Groundwater Sampling

Groundwater samples will be collected from each monitoring well a minimum of 24 hours after completing well development activities. Groundwater sampling activities will commence by opening each monitoring well followed by collection of depth to groundwater measurements using an optical interface probe calibrated in 0.01-foot increments. The depth to groundwater measurements will be measured from a point on the top of PVC well casing at each location that will have been surveyed to a common reference datum for the property. This reference datum will be based on the National Geodetic Survey. Once the depth to groundwater measurements are collected, groundwater samples will be obtained via an inertial (or, peristaltic) pump following low-flow sampling protocols.

In low flow sampling, an attempt will be made to minimize drawdown in the sampled well during purging. Minimal drawdown is achieved by maintaining the flow rate at or below 500 milliliters per minute (ml/min). Water quality parameters are also monitored during purging in 5.0-minute intervals until stabilization has occurred for three (3) consecutive measurements. Stabilization is defined as follows:

- Temperature (± 3%);
- pH (± 0.1 pH units)
- Specific Conductance (± 3%)
- Oxidation/Reduction Potential (± 10 millivolts (mV))
- Dissolved Oxygen (±10%)
- Turbidity (± 10%)

Groundwater samples can be obtained after stabilization is demonstrated by transferring the sample to appropriate laboratory-supplied glassware. This will include a combination of three (3) 40 ml glass vials preserved with hydrochloric acid and filled to zero headspace for VOC analysis (including 1,4-dioxane); two (2) 1,000 ml amber glass jars (unpreserved) for the analysis of semi-VOCs, pesticides, herbicides and PCBs; one (1) 250 ml polyethylene bottle preserved with nitric acid for metals analyses, and; various polyethylene bottle-ware for analysis of PFAs.

In the event that drawdown during purging cannot be maintained, then the well will be pumped down to the pump intake and the well will be allowed to recover. The sample will be collected after the well recovers and pumping is resumed. Groundwater purge logs, which will include all pertinent information specific to each sampled monitoring well, will be included in the Remedial Investigation Report.

The purge water generated during the groundwater sampling will be disposed in a manner consistent with that of the well development activities. **Table 4B** presents a summary of the groundwater samples anticipated for collection/analysis during the RI.

Table 4B
Summary of Anticipated Groundwater Samples/Analysis

Sample Location	Number of Groundwater Samples by Analysis						
	VOCs	Semi-VOCs	Pesticides	Herbicides	PCBs	TAL Metals	PFAs
Perched Zone	11	11	11	11	11	11	3
Regional Zone	4	4	4	4	4	4	1
Blind Dup.	1	NA	NA	NA	NA	NA	1
MS/MSD	1	NA	NA	NA	NA	NA	1

Notes:
VOC: TCL VOCs via SW846-8260 + 30 TICS
Semi VOC: TCL Semi-VOCs via SW846-8270
Pesticides: TCL Pesticides via SW846-8081A
Herbicides: TCL Herbicides via SW846-8151A
PCBs: TCL PCBs via SW846-8082A
Metals: TAL metals (22) via SW-846-6010D/SW-846-7471B (+ Hg & CN)
PFAs: PFAs via EPA 1633
NA: Blind Duplicates & MS/MSD samples not applicable for these analytes

2.2.3 Soil Vapor Sampling

As previously discussed herein, three (3) of the five (5) soil vapor monitoring points were not able to be sampled during the October 30, 2023 (and attempted follow-up) sampling event conducted as part of the preliminary site characterization. As such, a soil vapor sampling event is proposed to be conducted during the RI. This investigation will include all five (5) monitoring points (with the addition of an outdoor air sample).

The soil vapor samples are proposed for collection over a maximum 24-hour time period using SUMMA canisters with VOC analysis via analytical method TO-15. As recommended by the New York State Department of Health (NYSDOH), the flow rate for collection of the soil vapor samples will not exceed 0.2 liters per minute. The SUMMA canisters are 6.0-liter capacity and of stainless steel construction. The SUMMA cannisters and regulators are provided by the analytical laboratory.

Analysis will be for the full list of VOCs via analytical method TO-15; additional QA/QC samples (such as blanks and duplicates) will not be collected for the soil vapor sampling.

2.2.4 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) sampling will include aqueous trip blanks for soil and groundwater samples and collection of blind duplicate samples at a frequency of one (1) per 20 for each media. Additionally, one (1) matrix spike/matrix spike duplicate (MS/MSD) sample will be collected for each matrix (one (1) MS/MSD sample for soil and one (1) MS/MSD sample for groundwater). Analysis of QA/QC samples will be for VOCs (via

analytical method SW-846-8260) only. A blind duplicate sample is not proposed for soil vapor.

"Category B" deliverables will be requested from the analytical laboratory. Additionally, a data usability summary report (DUSR) will be prepared as part of the RI. The associated analytical data will be uploaded into the NYSDECs EQUIS database.

A Quality Assurance Project Plan (QAPP) is presented in Section 3.0 of this document.

2.3 Other Remedial Investigation Related Items

2.3.1 Utility Clearance

Prior to commencing with any intrusive investigation related activities, Dig Safely New York (DSNY) will be contacted to locate utilities entering the property from the public right of way (ROW). It should be noted that DSNY identifies the location of utilities within the ROW only and, only for those entities that subscribe to their service. Additionally, their service does not provide utility markout on private property. As such, each proposed drill location will be hand-excavated to a depth of 4.0 feet below grade to ensure that underground utilities associated with the property are not encountered.

2.3.2 Drill Tooling Decontamination/Investigation Derived Waste (IDW) DIsposal

All down-hole direct push tooling will be washed at a designated location on the property prior to commencing with the investigations described herein. This process will include washing all down hole tooling with a non-phosphate soap/potable water solution followed by triple rinsing with potable water. Wash water generated during this process will be containerized in a properly labeled steel 55-gallon drum for disposal as appropriate. Additionally, all investigation derived solid waste (such as used personal protective equipment, tubing, etc…) will be segregated and disposed as solid waste as appropriate.

2.3.3 Site Survey and Base Map

After completing the current soil boring/monitoring well installations proposed herein, a land surveyor licensed in the State of New York, will be dispatched to the site in order to develop a scaled base map of the property. The site base map will include all pertinent site features and infrastructure. It will be based on the New York State Planar Coordinate system. Additionally, all investigation related sampling locations (including previous and RI-related soil borings, monitoring wells and other sample locations) will be included thereon. Ground surface and top of well casing (TOC) elevations will be determined based on the National Geodetic Survey. Additionally, global positioning system (GPS) coordinates will also be collected. The TOC elevations will be used, in combination with depth to groundwater measurements obtained during the investigation, to verify the direction of groundwater flow beneath the property.

2.3.4 Health and Safety Plan/Community Air Monitoring Plan

Health and Safety Plan: The investigations proposed herein will be conducted in accordance with LaBella's health and safety program as outlined in LaBella's standard Health and Safety Plan (HASP). A copy of LaBella's standard HASP is included in **Attachment B**.

Attachments to this work plan are incorporated into the document as if fully set forth in the work plan.

Community Air Monitoring Plan: The investigations proposed herein will be conducted in accordance with the requirements established by the NYSDOH's June, 2000 Generic Community Air Monitoring Plan (CAMP), and NYSDEC's DER-10. The intent of the CAMP is to provide a measure of protection for the downwind community during the soil boring and monitoring well installation activities as described herein. The CAMP stations will include air monitoring instruments for recording concentrations of fugitive dust and organic vapors during ground intrusive activities. Two CAMP stations will be utilized: one upwind and one downwind of the work zone.

2.4 Remedial Investigation Report

Once the investigative activities associated with this RI work plan are completed, the information will be compiled into a Remedial Investigation Report (RI Report). The RI Report will include a description of the property background and history, the scope of activities completed as part of the RI, and a presentation of the results and an interpretation thereof. The RI Report will include the following elements:

- Narrative descriptions of the procedures employed to complete specific investigative tasks;
- Drilling and well completion logs;
- Analytical data summary tables (soil, groundwater and soil vapor);
- Property maps (including soil boring and monitoring well locations, soil gas sampling locations, groundwater contour, summary of notable analytical results map (and other maps as appropriate).

The RI Report will seek to:

- Define the nature and extent of contamination on the site;
- Identify if source areas are present on the site;
- Characterize the site and determine if remedial action(s) are needed to protect human health and the environment;
- Develop a remedial plan for the protection of human health and the environment (if warranted), and;
- To produce site data in sufficient quantity and quality to support site remediation, if warranted.

The RI Report will also provide recommendations for additional investigatory work, as necessary.

3.0 QUALITY ASSURANCE PROJECT PLAN

This quality assurance project plan (QAPP) presents the objectives, functional activities, methods, and quality assurance/quality control (QA/QC) requirements associated with sample collection and laboratory analysis for site investigation and characterization activities. This QAPP follows the requirements detailed in Section 2 of the NYSDEC's DER-10.

The overall objective of this QAPP is to develop and implement procedures for sample preparation and handling, sample chain of custody, laboratory analyses, and documentation that will result in the presentation of accurate and reliable data. Specific procedures to be followed for sampling, sample custody, equipment calibration, laboratory analyses and data validation, assessment and reporting are presented.

The purpose of the subsequent sections is to define the goals for data collection. Specifically, accuracy, precision and sensitivity of analyses; and completeness, representativeness and comparability of measurement data from the analytical laboratory. QA/QC objectives for field measurements are also discussed.

3.1 Project Organization

The investigative efforts defined in this RI work plan will be coordinated by LaBella on behalf of Community Manufacturing Solutions, LLC. The following identifies the responsibilities of various organizations supporting the RI:

- The NYSDEC Project Manager (Ms. Emily Barry, PE) will be responsible for reviewing and approving this work plan, coordinating approval of requested modifications, and providing guidance on regulatory requirements.
- The LaBella Professional Engineer (TO BE DETERMINED) will provide technical expertise for review of the project plans, reports, and ongoing field activities. The Program Manager will act as the project's Quality Assurance Manager.
- LaBella Project Manager (Michael Carr, P.G.) will be responsible for the day-to-day project management, task leadership, and project support for the planning and implementation of RI activities. The Project Manager is responsible for ensuring that the requirements of this RI work plan are implemented in accordance with this QAPP.
- LaBella Project Manager and Field Team Leader (TO BE DETERMINED) will be responsible for sample collection, oversight of subcontractor personnel, and coordination of daily field activities. The Field Team Leader will act as the Site Health and Safety Officer ensuring implementation of the Site Health and Safety Plan.
- A NYSDOH ELAP certified laboratory (Phoenix Environmental Laboratories, Inc. of Manchester, Connecticut) will be contracted to perform required analyses and reporting, including Category B Deliverables in accordance with the New York State Analytical Services Protocol (NYS-ASP).
- Various LaBella personnel and other subcontracted entities will perform surveying, drilling, sampling and/or data validation tasks at the direction of the Project Manager and/or Field Team Leader in accordance with this RI work plan.

3.2 Laboratory Analysis

The analytical requirements for soil and groundwater samples are specified in **Table 5** below. Following collection, labeled samples will be placed on ice in a cooler. Samples will be submitted to the NYSDOH ELAP certified laboratory for analysis with a standard turnaround request (7 to 10 business days).

Table 5
Analytical Methods for Soil and Groundwater

Analyses	EPA Method	Soil Samples			Groundwater Samples		
		Preservation	Holding Time	Container	Preservation	Holding Time	Container
VOCs (NYSDEC and CP-51 lists)	8260C/5035	(1) 5 ml MeOH (2) 5 ml Water Cool to 4°C	48 hours freeze 14 Days analysis	40 ml vials	5ml HCL Cool to 4°C	14 days	(3) 40 ml vials
SVOCs (NYSDEC list)	8270D	Cool to 4°C	14 days	4 oz. wide mouth glass	Cool to 4°C	7 days	(2) 1-L Amber
TAL Metals	6010	Cool to 4°C	6 months (28 days for Mercury)	4 oz. wide mouth glass	HNO3 (total); Unpreserved (dissolved) Cool to 4°C	6 months (28 days for Mercury)	250mL plastic
PCBs	8082A	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	Cool to 4°C	7 Days	(2) 1-L Amber
Pesticides	8081B	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	Cool to 4°C	7 Days	(2) 1-L Amber
1,4-Dixoane	8270D SIM	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	Cool to 4°C	7 Days (Extraction)	500 mL amber
PFAS	1633	Cool to 4°C	14 Days (Extraction)	250 mL bottles	Cool to 4°C	14 Days to Extraction; 28 days to analysis	(2) 500 mL HDPE filled halfway

Laboratory analytical reports will conform to Category B Deliverables in accordance with the NYS-ASP.

3.3 Quality Assurance/Quality Control Sampling

QA/QC sampling will include collection of blind duplicate samples, field blank samples, samples for laboratory matrix spike/matrix spike duplicate (MS/MSD) analyses, and trip blank samples. These additional samples will be collected (where appropriate) and submitted to the contract laboratory. Their purpose is to assess the quality of the laboratory analytical data resulting from the field sampling program.

For soil and groundwater samples collected, the blind duplicate and MS/MSD samples will be submitted at a frequency of one (1) per 20 samples by matrix. In the event that a sampling round includes fewer than 20 samples, one (1) blind duplicate sample and one (1) MS/MSD set will be collected. Blind duplicate samples for each matrix will be collected and

analyzed as a check on the aggregate analytical and sampling protocol precision. Analysis will be for the complete analyte list. Trip blank and equipment rinsate blank samples will be collected at a frequency of one (1) per day when VOCs or PFAS samples are collected. The trip blanks and equipment rinsate blank samples will be tested for VOCs and PFAS only. Equipment rinsate blanks will be collected as a check on the decontamination procedures implemented for re-usable equipment (such as drill tooling). **Table 6** below presents a summary of the anticipated QA/QC samples (by matrix) for the scope of work proposed herein. Note that QA/QC sampling is not intended with respect to soil vapor and outdoor air.

Table 6
Summary of Anticipated QA/QC Samples by Matrix

Sample Type	Number of Samples	QA/QC Sample Type			
		Blind Duplicate	MS/MSD	Rinsate Blank	Trip Blank
Soil	40	2	2	2	2*
Groundwater	15	1	1	1	1*

Notes:
Blind duplicates and MS/MSD samples will be analyzed for the full list of analytes (VOCs, Semi-VOCs; Pesticides; Herbicides; PCBs; metals (+ Hg & CN) and PFAs) via the specified analytical methods.
Trip blanks and rinsate blanks will be analyzed for VOCs and PFAS only.
* Trip blanks will be collected daily.

3.3.1 Accuracy, Precision and Sensitivity of Analysis

The primary objective with respect to the accuracy, precision and sensitivity of analytical data is to achieve acceptance of the analytical protocols. The precision of the method(s) (the relative percent difference of duplicate analysis) will be determined from the duplicate analyses of MS samples. A minimum of one (1) sample will be spiked and analyzed in duplicate. Analysis will compare with the criteria presented in the appropriate methods identified in Section 3.11.

The accuracy (percent recovery) of the method(s) for water and soil samples will be determined by spiking selected samples (matrix spikes) with test compounds. Accuracy will be reported as the percent recovery of the test compound and will be compared with the criteria given in the appropriate methods as identified in Section 3.11.

Project-specific accuracy and precision goals are identified in Section 3.11.

3.3.2 Completeness, Representativeness and Comparability

It is expected that all analyses conducted in accordance with the selected methods will provide data meeting QC acceptance criteria for 80 percent of samples tested. Any reasons for variances will be documented.

The sampling program has been designed to provide data representative of Site conditions. Consideration was given to location of historic activities, existing data from past studies and the physical Site setting. The extent to which existing and planned analytical data will be comparable depends on the similarity of sampling and analytical methods. The procedures to be used for obtaining the proposed samples are documented in this QAPP. Comparability

of laboratory analyses will be ensured by the use of consistent units. Following completion of data collection, the existing database will be evaluated for representativeness.

3.4 Sample Identification

Each sample will be identified with a set of information relating individual sample characteristics. Required information consists of sample designation, depth range for soil samples, and matrix (indicated by "SB" for soil samples and MW for groundwater samples). Soil vapor samples will be designated as "SV" and outdoor air samples will be designated as "OA". In addition, the sample labels and chain of custody (COC) documentation will note the sample date and time. Examples of sample IDs are shown below.

- SB/MW-8 (6'-7') – soil sample from SB/MW-8 at depth from 6.0 feet to 7.0 feet below grade;
- MW-4D – groundwater sample from monitoring well MW-4D;
- SV-1 – Soil vapor sample from soil vapor sampling point #1

Sample frequency, locations, depths, and nomenclature may change subject to field decisions and professional judgment.

3.5 Chain-of-Custody, Sample Packaging and Shipment

Each day that samples are collected, a chain-of-custody form will be completed and submitted to the laboratory along with samples to be analyzed. A copy of the chain-of-custody will be retained in the project file. The chain-of-custody will include the project name, sampler's signature, sample identification, sample date and time of collection, and analysis requested.

The samples will be packaged following chain-of-custody protocol and be transported to the analytical laboratory by a laboratory courier. Alternatively, they may be shipped via overnight courier (such as UPS or Federal Express) in a sealed cooler in manner that maintains sample preservation requirements and chain-of-custody during transport. In either case, the samples will be packaged in a cooler containing wet ice until they are received by the laboratory. Maintaining proper chain-of-custody protocol ensures that sample holding times can be achieved by the laboratory, and prevents samples from being tampered with.

If a commercial carrier ships samples, a bill of lading (waybill) will be used as documentation of sample custody. Receipts for bills of lading and other documentation of shipment shall be maintained as part of the permanent custody documentation. Commercial carriers are not required to sign the chain-of-custody as long as it is enclosed within the shipping container and evidence tape (custody seal) remains in place on the shipping container.

3.6 Data Usability and Validation

The main purpose for collecting analytical data is for use in evaluating the extent of site-related COCs in soil, soil vapor and/or groundwater and, to aid in evaluation of potential human health and ecological exposure assessments. The analytical data will also be used

in combination with other site data to support remedial action decisions (if warranted). Based upon the importance of the laboratory analytical data and the decisions based thereon, data usability and validation will be performed as described below. Complete Category B data packages will be archived in the project files and, if deemed necessary, additional data validation can be performed using procedures in the following sections.

3.6.1 Data Usability and Validation Requirements

Data usability and validation are performed on analytical data sets, primarily to confirm that sampling and COC documentation are complete, sample IDs can be tied to specific sampling locations, samples were analyzed within the required holding times, and analyses are reported in conformance with NYSDEC ASP. Category B data packages will be required as applicable to the analytical method utilized.

3.6.2 Data Usability and Validation Methods

A qualified third party will conduct an independent evaluation of the Category B data deliverables and reporting by the analytical laboratory. The data validation will be performed in accordance with the following documents: “NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, May 2010," "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review EPA 540/R-99-008, October 1999" and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review EPA 540/R-04-004, October 2004". Data analyzed using methods not covered in these documents will be validated using the general principles used in these documents, and the analytical requirements specified in the methods pertaining to USEPA Data Validation.

3.7 Field Equipment Inspection and Calibration

Field equipment will be inspected and approved by the Field Team Leader before being used. Field equipment will be calibrated to factory specifications and monitoring equipment will be calibrated following manufacturers recommended schedules. Daily field response checks and calibrations will be performed as necessary following manufacturers standard operating procedures. This includes “bump” testing or field calibration of instruments such as photoionization detectors (PIDs), water quality meters or other field instrumentation. Field equipment calibrations will be documented in a designated field logbook.

3.8 Field Equipment Decontamination

In order to minimize the potential for cross-contamination, non-dedicated drilling and sampling equipment shall be properly decontaminated prior to and between sampling/drilling locations.

3.8.1 General Procedures

Drilling equipment will be decontaminated in a designated area. Sampling and other equipment will be decontaminated in an area covered with plastic sheeting near the sampling location. Waste material generated during decontamination activities will be containerized, stored and disposed in accordance with the procedures detailed in Section 3.9. Whenever possible, dedicated sampling equipment will be used in order to keep

decontamination of re-usable sampling equipment to a minimum. Field personnel directly involved in equipment decontamination shall wear appropriate personal protective equipment (PPE).

3.8.2 Drilling Equipment

Drilling equipment will be decontaminated prior to performance of the first boring on the site and between subsequent borings. This will include all down hole equipment (augers, drill rods, casing) as well as hand tools and other related tools and equipment. Water used during drilling and/or decontamination operations will be from a potable source.

3.8.3 Sampling Equipment

Sampling equipment (i.e., trowels, knives, split-spoons, bowls, hand augers, etc…) will be decontaminated prior to each use as follows:

- Laboratory-grade glassware detergent and tap water scrub to remove visual contamination.
- Generous tap water rinse
- Distilled water rinse

3.8.4 Meters and Probes

All meters and probes that are used in the field, other than those used solely for air monitoring purposes (i.e. PIDs or particulate meters) will be decontaminated between uses as follows:

- Laboratory-grade detergent and tap water solution wash.
- Tap water rinse.
- Distilled water rinse (triple rinse).

3.9 Management of Investigation Derived Waste

Waste materials generated from the field operations may consist of soil cuttings, purge water, and other miscellaneous solid debris such as used personal protective equipment (PPE) and other consumable supplies. Investigation derived waste (IDW) generated during the field operations will be disposed in accordance with applicable regulations.

As outlined in DER-10, the soil cuttings generated from soil boring activities that do not appear to be grossly impacted with COCs can be placed back into the borehole after all samples destined for laboratory analysis are collected and secured. Soil cuttings will be placed within the borehole of their origin to within 2.0 feet of surface grade. In the event that a borehole has perforated a confining layer (or extended to bedrock), the interval within the bedrock (or extending through the confining layer) will be backfilled with bentonite chips. If soil cuttings are observed to be grossly impacted (or cannot be returned to the borehole of their origin) then they will be temporarily stored on-site in 55-gallon drums pending disposal as appropriate. Groundwater generated via well development and/or groundwater sampling activities will also be drummed and temporarily stored on-site until they are properly disposed. Drums containing soil cuttings and/or groundwater will be labeled as “Waste

Material" and will also indicate the source(s) of soil and/or groundwater that they contain. IDW will be managed in accordance with DER-10, Chapter 3, Section 3.3, Subdivision (e).

3.10 Field Documentation

Documentation of field activities will take place either on appropriate forms or in a dedicated site logbook. All field notes will be recorded using either permanent black or blue ink on the appropriate forms or, in the logbook. Errors in field documentation will be lined through with a single line, initialed, dated, and corrected. Forms will be maintained by the LaBella Field Team Leader during the field activities. Field activities will be documented in the field logbook and supported by field sheets as needed. For example, boring log sheets and well purge log sheets will be in use during those activities. This will limit the use of the waterproof logbook during PFAS sampling activities. The logbook will contain waterproof pages that are consecutively numbered and be permanently bound with a hard cover. Upon completion of daily activities, unused portions of pages will be lined-through, initialed and dated.

The primary purpose of the field logbook is to document the daily field activities and to provide descriptions of each activity. All entries in the field logbook will be recorded and dated by person making the entry.

At a minimum, entries in a logbook shall include:

- Date and time of starting work;
- Names of all personnel at site;
- Weather conditions;
- Purpose of proposed work effort;
- Sampling equipment to be used and calibration of equipment;
- Description of work area;
- Location of work area, including map reference;
- Details of work effort, particularly any deviation from the field operations plan or standard operating procedures;
- Field observations;
- Field measurements (e. g. , Photoionization Detector (PID) readings);
- Field laboratory analytical results;
- Daily health and safety entries, including levels of protection;
- Type, number, and location of samples;
- Sampling method, particularly deviations from the standard operating procedures;
- Sample location and number; and,
- Sample handling, packaging, labeling, and shipping information (including destination).

In addition to maintaining a field logbook and appropriate field forms for documenting field activities, photographs will be taken to provide an additional record of field activities and, to augment the written observations of field staff. For each photograph taken, several items will be recorded in the field logbooks:

- Date and time;
- Name of photographer; and,
- General direction faced and description of the subject.

Additional protocols specific to each sampling method are presented in the following sections. The general QA objective for measurement data is to obtain reproducible and comparable measurements to a degree of accuracy consistent with the use of standardized procedures.

3.11 Procedures Used to Assess Performance

3.11.1 Precision

Precision will be assessed by comparing the analytical results between duplicate spike analyses. Precision (as relative percent difference (RPD)) will be calculated as follows:

$$\text{Precision} = \frac{(D_2 - D_1)}{(D_1 + D_2)/2} \times 100$$

Where:
D_1 = matrix spike recovery
D_2 = matrix spike duplicate spike recovery

Acceptance criteria for duplicate soil samples will be ≤30 RPD. Acceptance criteria for duplicate water samples will be ≤20 RPD between field and laboratory data.

The RPD between matrix spike analyses will be used to assess laboratory analytical precision. Acceptable criteria and compounds that will be used are identified in the appropriate USEPA methods.

3.11.2 Accuracy

Accuracy will be assessed by comparing a set of analytical results to the accepted or "true" values that would be expected. In general, MS/MSD and surrogate spike recoveries will be used to assess accuracy. Accuracy as percent recovery will be calculated as follows:

$$\text{Accuracy} = \frac{A - B}{C} \times 100$$

Where:
A = The analyte determined experimentally from the spike sample.
B = The background concentration determined by a separate analysis of the unspiked sample.
C = The amount of spike added.

Percent spike recoveries in MS/MSD and surrogate spike recoveries will be used to evaluate analytical accuracy. Acceptable criteria and compounds that will be used for matrix spikes are identified in the appropriate EPA methods.
The evaluation of accuracy of field measurements will be limited to checking the reproducibility of the measurement in the field by obtaining multiple readings and by calibrating the instruments (where appropriate).

3.11.3 Representativeness, Completeness and Comparability

Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under normal conditions.

To be considered complete, the data set must contain all QC check analyses verifying precision and accuracy for the analytical protocol. In addition, all data are reviewed in terms of stated goals in order to determine if the database is sufficient.

When possible, the percent completeness for each set of samples will be calculated as follows:

$$\text{Completeness} = \frac{\text{Valid Data Obtained}}{\text{Total Data Planned}} \times 100 \text{ percent}$$

A completeness goal of 100 percent has been established for this project. However, if the completeness goal is not met, Site decisions may be based on any, or all of, the remaining, validated data. Representativeness will be addressed by collecting the samples as described in this document. Comparability will be addressed by collecting, analyzing, and reporting the data as described in this document.

3.11.4 Outliers

Procedures discussed previously will be followed for documenting deviations. In the event that a result deviates significantly from method established control limits, this deviation will be noted and its effect on the quality of the remaining data will be assessed and documented.

4.0 PROJECT SCHEDULE

The RI tasks identified herein are anticipated to commence in 2024 following completion of the public comment period and NYSDECs approval of this RI work plan. The table below presents an estimated schedule for the proposed RI and reporting. If the schedule changes, NYSDEC will be advised and an updated schedule will be provided.

Table 7
Anticipated Remedial Investigation Schedule

RIWP Activity	Weeks After NYSDEC Approval of RI Work Plan																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Coordinate Geophysical Survey, Drilling services and Laboratory																		
Perform Geophysical Survey																		
Advance Soil Borings and Collect Soil Samples																		
Install Monitoring Wells and Collect Groundwater Samples																		
Receipt of Category B Laboratory Results																		
Data Validation*																		
EQuIS™ Electronic Data Deliverable																		
Preparation and Submission of RIR																		

Notes:
* Data Validation may take up to 12 weeks depending on availability of data validation contractor

5.0 REFERENCES

NYSDEC, DER, December 2006, 6 NYCRR Part 375 Subpart 6, Remedial Program Soil Cleanup Objectives.

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

NYSDEC. DER. April 2023. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS).

NYSDOH, October 2006 Soil Vapor Guidance Document (and all updates)

USEPA, June 2015 Soil Vapor Guidance Document

FIGURES

USGS Topographic Quadrangle Map – Kingston East, New York

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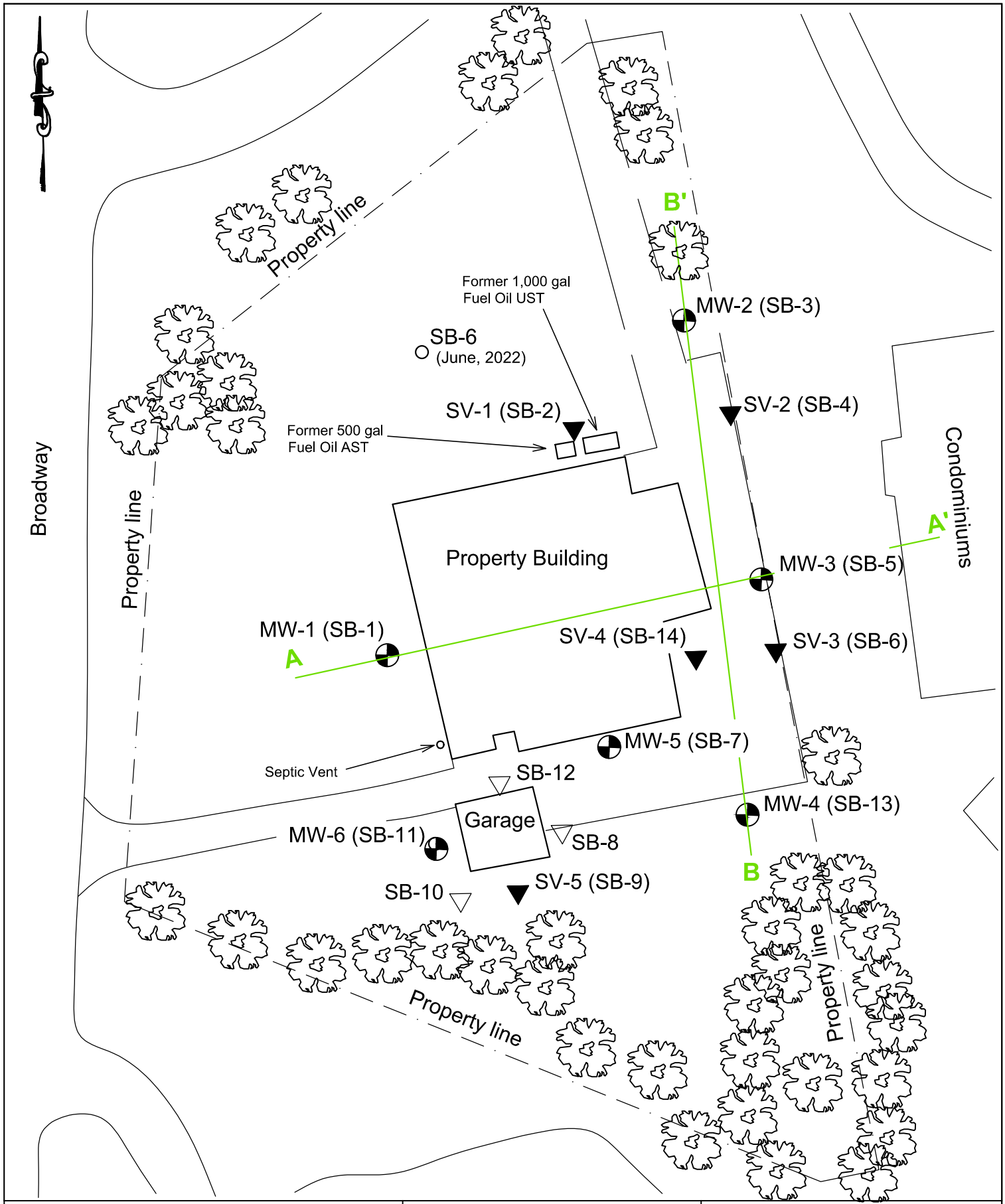
SITE: 115 Broadway
Hamlet of Port Ewen
Town of Esopus
Ulster County, New York
BCP Site No. C356063

FIGURE 1

Site Location Map



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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

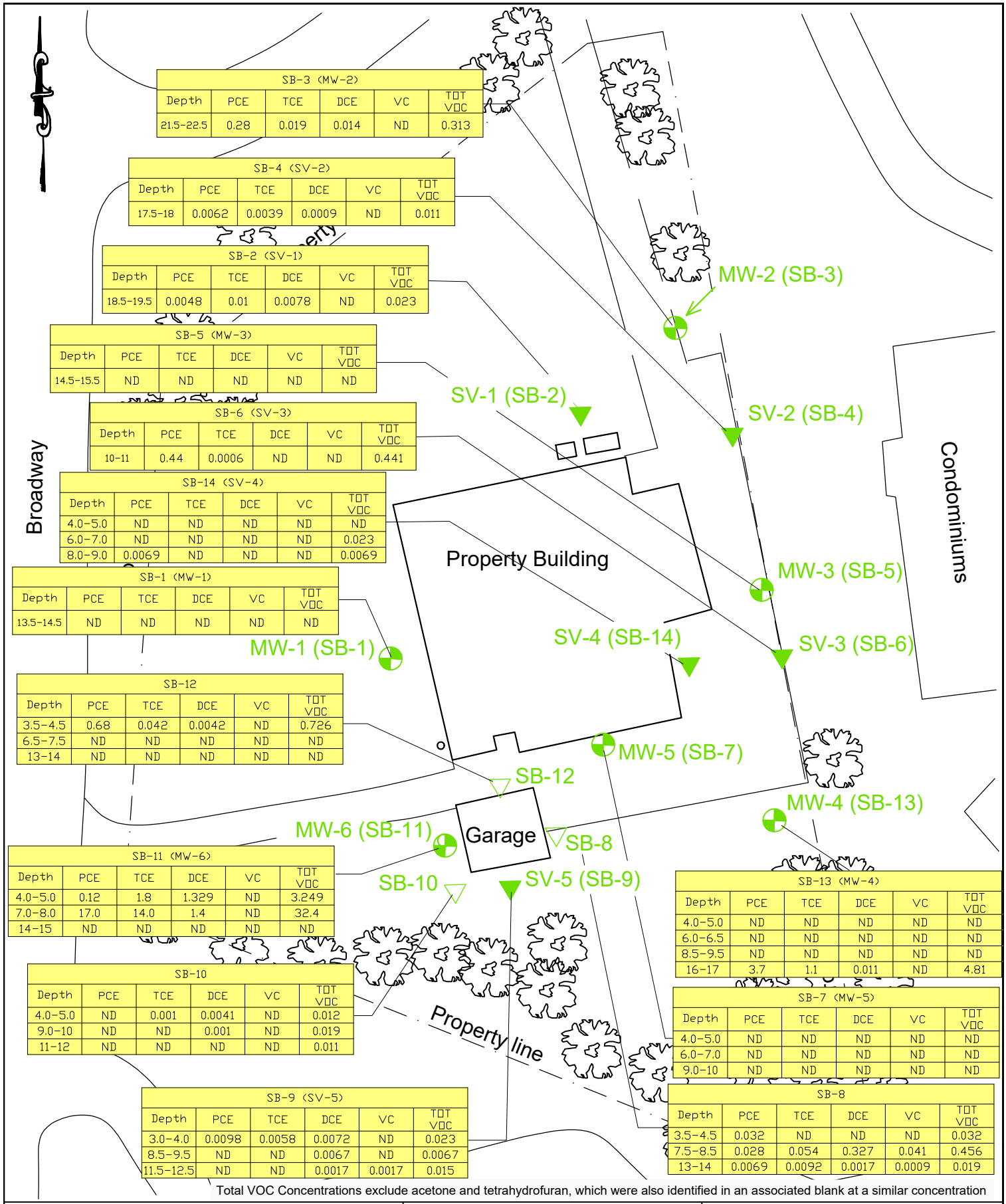
Figure 2

Date: 5-21-2025

0 (approx scale) 70
feet

Site Map with Conceptual Cross-Section Locations
BCP Site No. C356063

▽ Soil Boring Only
◓ Soil Boring/Monitoring Well
▼ Soil Boring/Soil Vapor Sampling Point



Total VOC Concentrations exclude acetone and tetrahydrofuran, which were also identified in an associated blank at a similar concentration

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Ulster County, New York

Figure 3

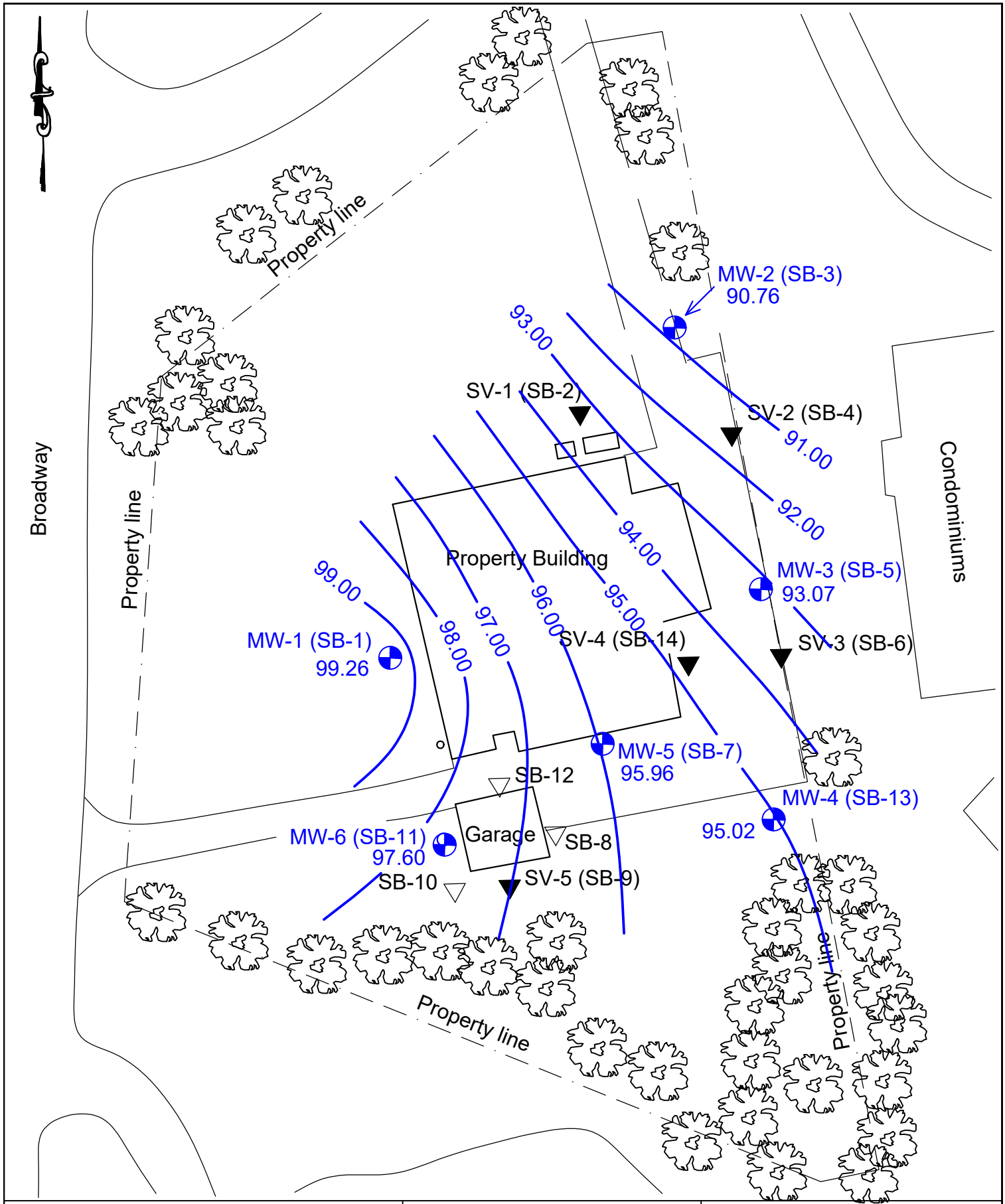
Date: 10-24-2023

0 (approx scale) 70
feet

Soil Analytical Results
August, 2023 Property Characterization
BCP Site No. C356063

Concentrations in mg/kg

▽ Soil Boring
◔ Monitoring Well
▼ Soil Vapor Sampling Location



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Ulster County, New York

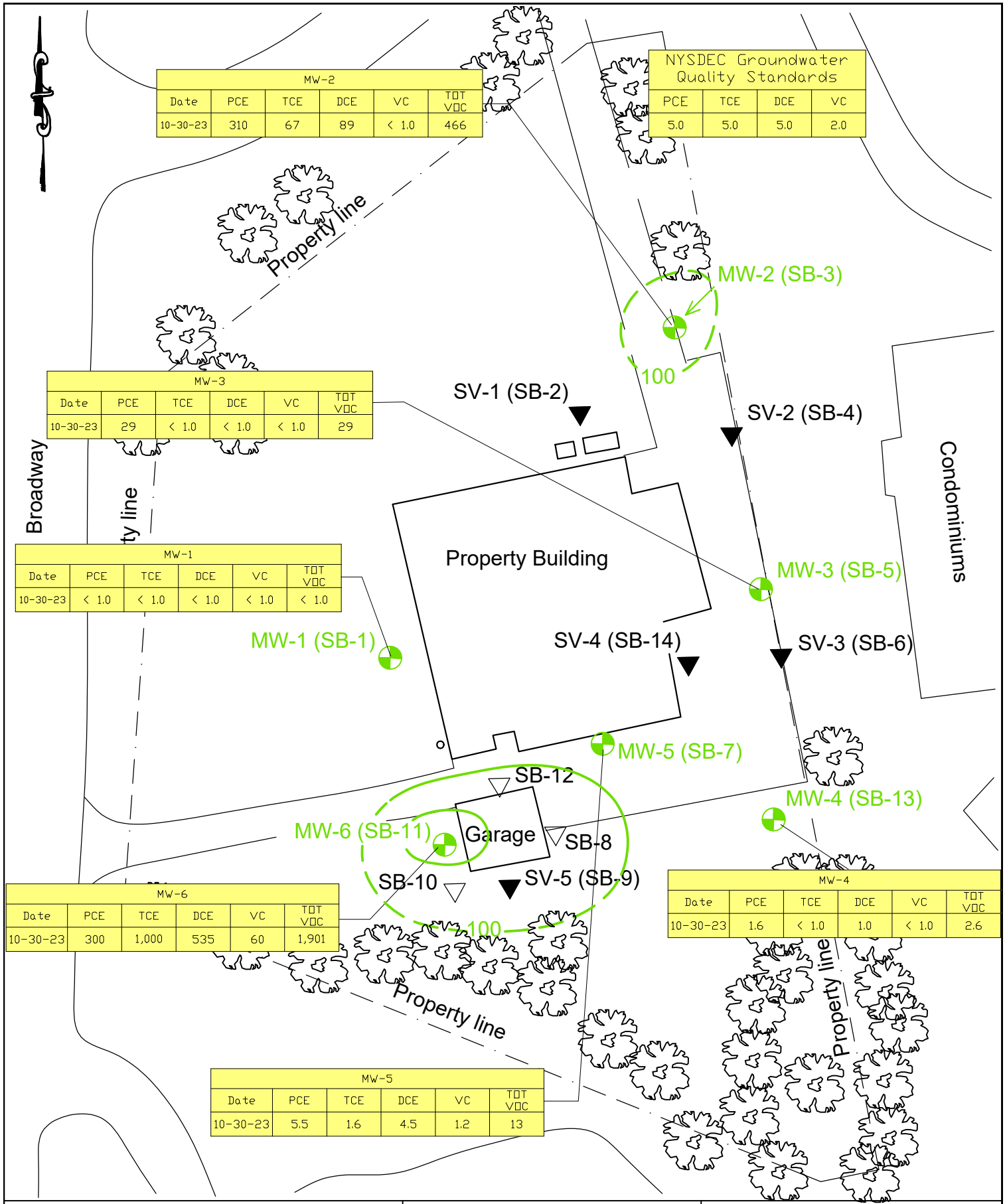
Figure 4

Date: 10-30-2023

0 (approx scale) 70
feet

October 30, 2023
Groundwater Contour Map
Property Characterization
BCP Site No. C356063

▽ Soil Boring
◓ Monitoring Well
▼ Soil Vapor



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Port Ewen, Town of Esopus
Ulster County, New York

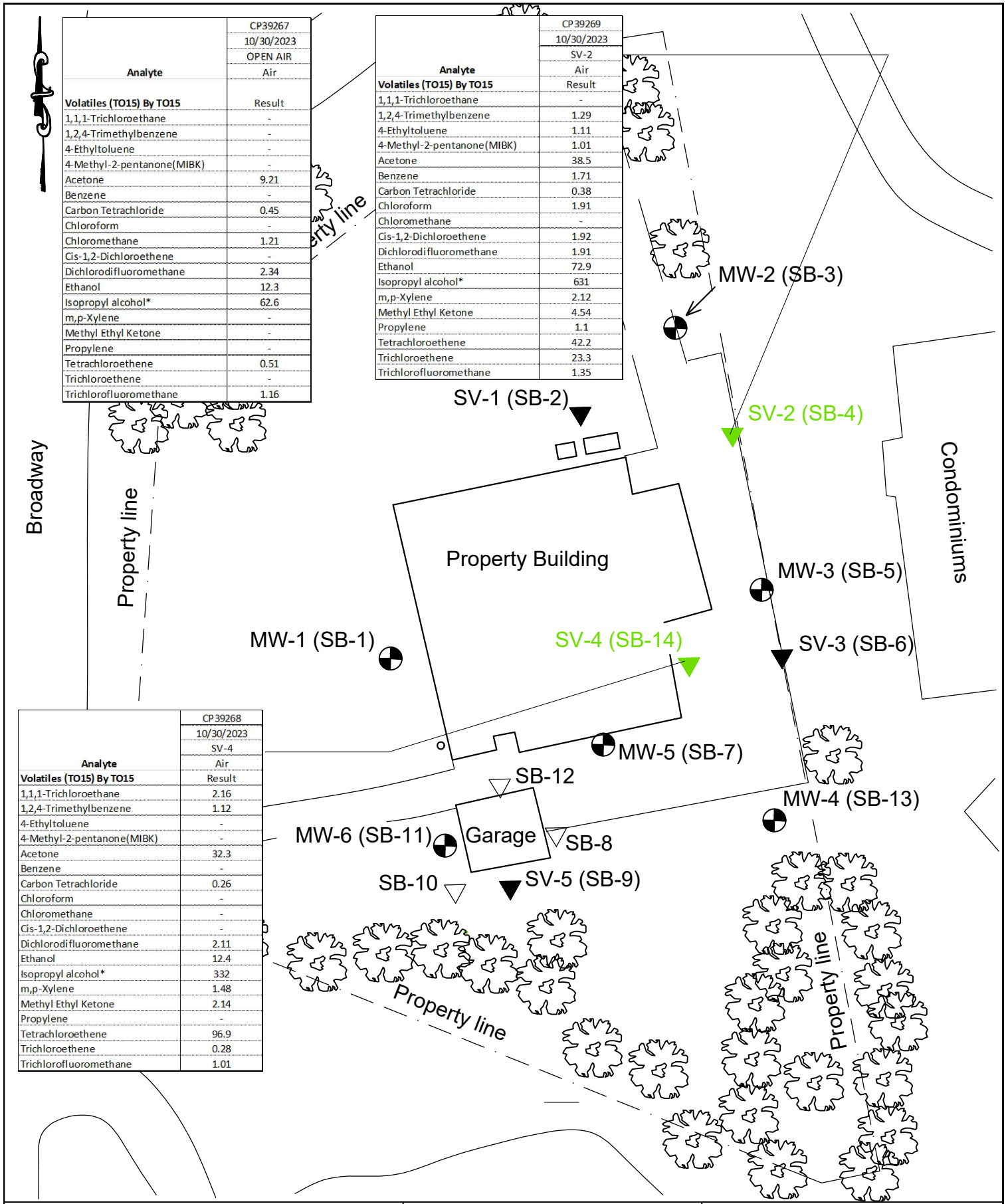
Figure 5

Date: 10-30-2023

0 (approx scale) 70
feet

Groundwater Analytical Results
PCE and Related Degradation By-Products
October 30, 2023
Property Characterization
BCP Site No. C356063

Concentrations in ug/L
▽ Soil Boring
◔ Monitoring Well
▼ Soil Vapor Sampling Location



Analyte	CP39267 10/30/2023 OPEN AIR Air
Volatiles (TO15) By TO15	Result
1,1,1-Trichloroethane	-
1,2,4-Trimethylbenzene	-
4-Ethyltoluene	-
4-Methyl-2-pentanone(MIBK)	-
Acetone	9.21
Benzene	-
Carbon Tetrachloride	0.45
Chloroform	-
Chloromethane	1.21
Cis-1,2-Dichloroethene	-
Dichlorodifluoromethane	2.34
Ethanol	12.3
Isopropyl alcohol*	62.6
m,p-Xylene	-
Methyl Ethyl Ketone	-
Propylene	-
Tetrachloroethene	0.51
Trichloroethene	-
Trichlorofluoromethane	1.16

Analyte	CP39269 10/30/2023 SV-2 Air
Volatiles (TO15) By TO15	Result
1,1,1-Trichloroethane	-
1,2,4-Trimethylbenzene	1.29
4-Ethyltoluene	1.11
4-Methyl-2-pentanone(MIBK)	1.01
Acetone	38.5
Benzene	1.71
Carbon Tetrachloride	0.38
Chloroform	1.91
Chloromethane	-
Cis-1,2-Dichloroethene	1.92
Dichlorodifluoromethane	1.91
Ethanol	72.9
Isopropyl alcohol*	631
m,p-Xylene	2.12
Methyl Ethyl Ketone	4.54
Propylene	1.1
Tetrachloroethene	42.2
Trichloroethene	23.3
Trichlorofluoromethane	1.35

Analyte	CP39268 10/30/2023 SV-4 Air
Volatiles (TO15) By TO15	Result
1,1,1-Trichloroethane	2.16
1,2,4-Trimethylbenzene	1.12
4-Ethyltoluene	-
4-Methyl-2-pentanone(MIBK)	-
Acetone	32.3
Benzene	-
Carbon Tetrachloride	0.26
Chloroform	-
Chloromethane	-
Cis-1,2-Dichloroethene	-
Dichlorodifluoromethane	2.11
Ethanol	12.4
Isopropyl alcohol*	332
m,p-Xylene	1.48
Methyl Ethyl Ketone	2.14
Propylene	-
Tetrachloroethene	96.9
Trichloroethene	0.28
Trichlorofluoromethane	1.01

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Ulster County, New York

Figure 6

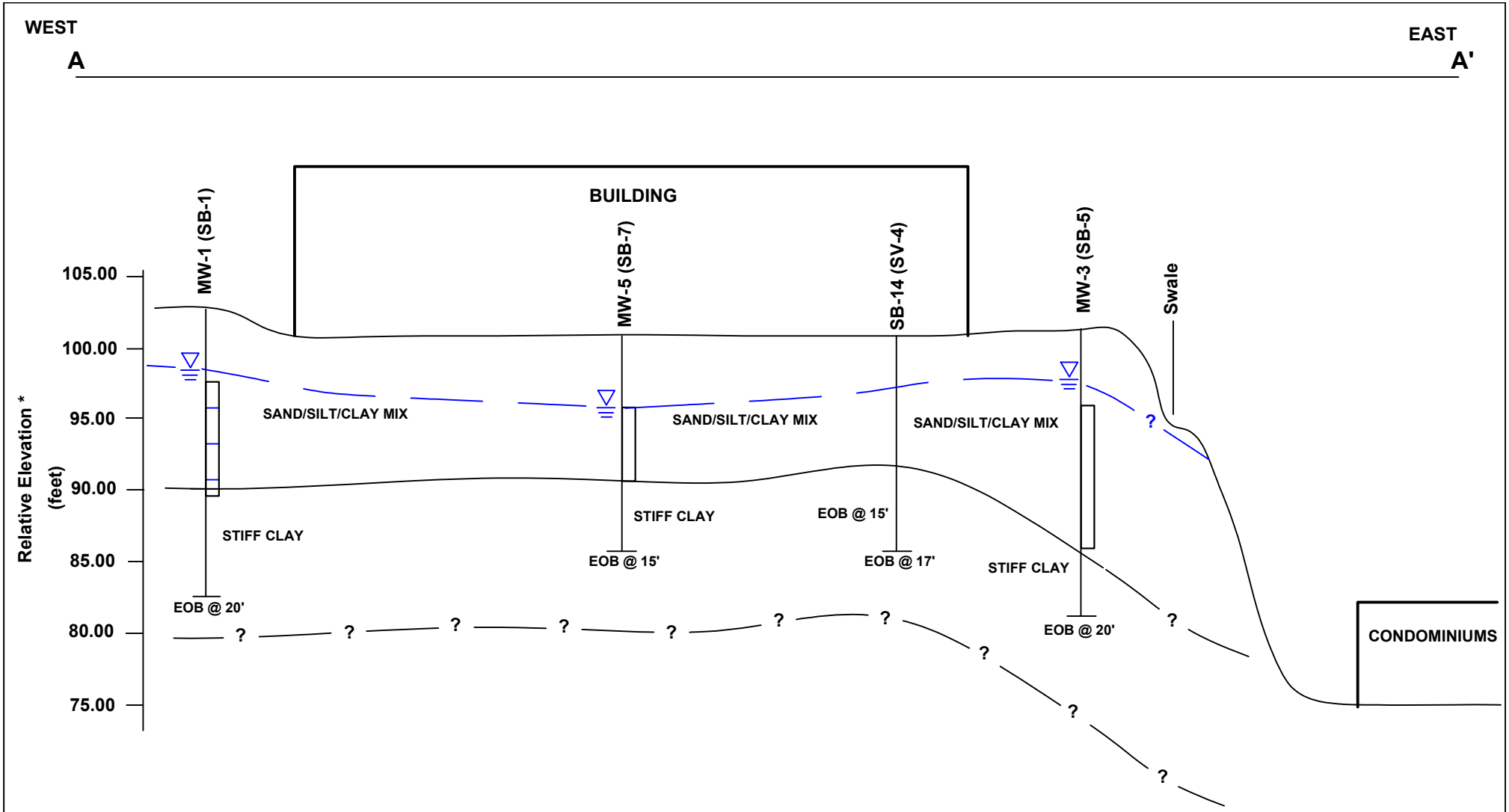
Date: 10-30-2023

0 (approx scale) 70
feet

October 30, 2023
Soil Vapor Analytical Results
Property Characterization
BCP Site No. C356063

Concentrations in ug/m3

▽ Soil Boring
◓ Monitoring Well
▼ Soil Vapor Sampling Location



* Elevations relative to site datum assigned an elevation of 100.00 feet

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Ulster County, New York

FIGURE 7A

DATE: 12-13-2023

0 (approx scale) 35
feet

East-West Conceptual Cross-Section
BCP Site No. C356063

Water Table (10-30-2023)

= Screened Interval

Vertical scale as shown

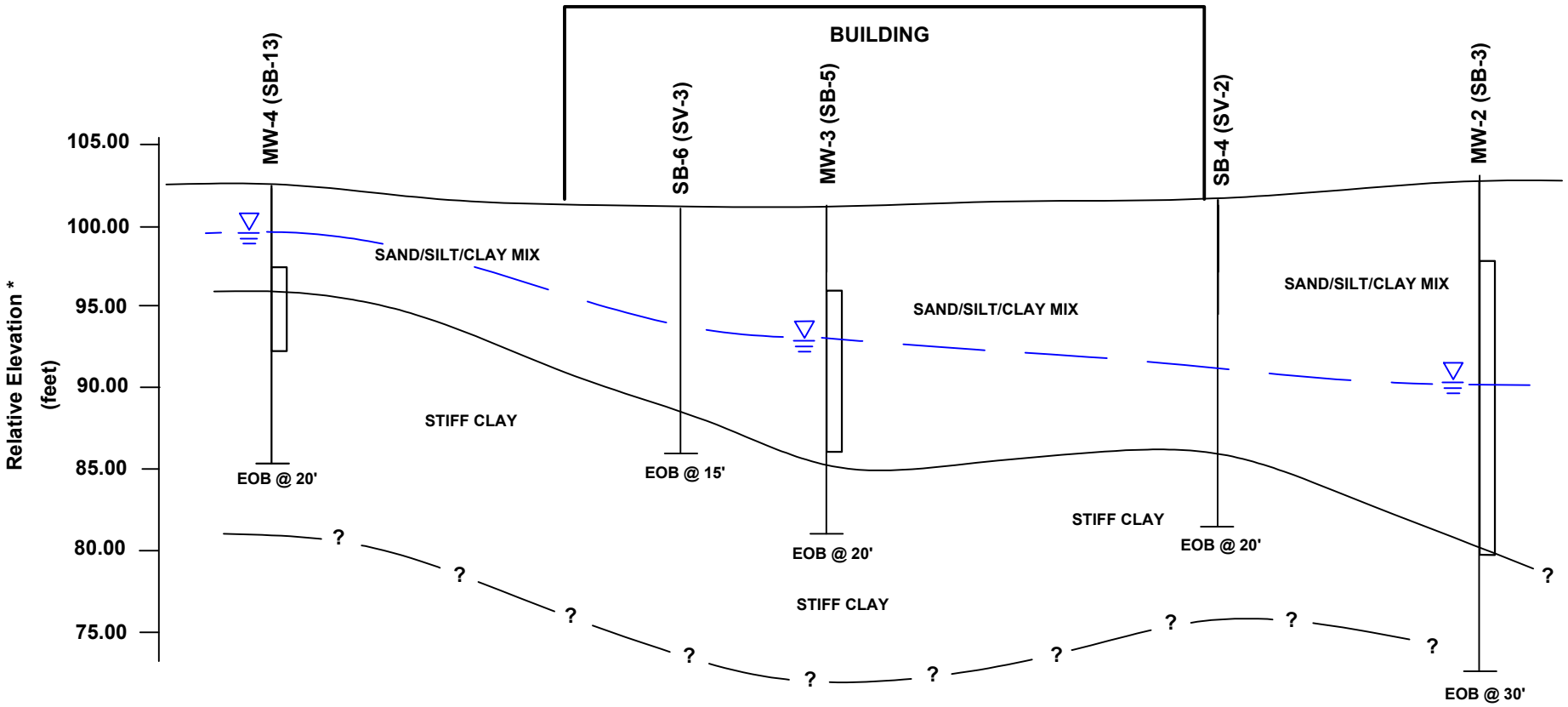
EOB indicates End of Boring (Total Depth)

SOUTH

NORTH

B

B'



* Elevations relative to site datum assigned an elevation of 100.00 feet

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115 Broaqdway
Port Ewen, Town of Espopus
Ulster County, New York

FIGURE 7B

DATE: 12-13-2023

0 (approx scale) 35
feet

North-South Conceptual Cross-Section

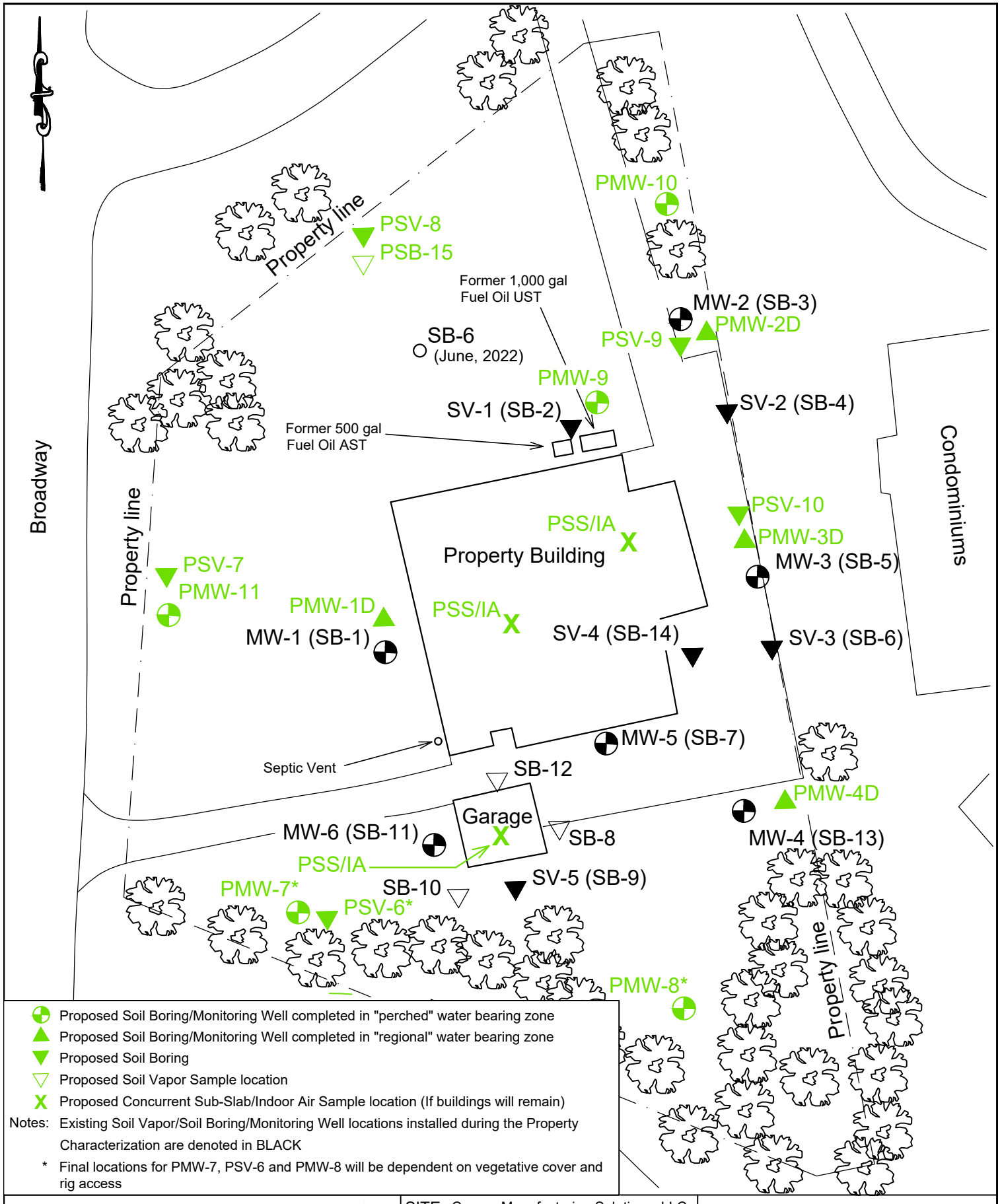
BCP Site No. C356063

Water Table (10-30-2023)

Vertical scale as shown

= Screened Interval

EOB indicates End of Boring (Total Depth)



- Proposed Soil Boring/Monitoring Well completed in "perched" water bearing zone
- Proposed Soil Boring/Monitoring Well completed in "regional" water bearing zone
- Proposed Soil Boring
- Proposed Soil Vapor Sample location
- X Proposed Concurrent Sub-Slab/Indoor Air Sample location (If buildings will remain)

Notes: Existing Soil Vapor/Soil Boring/Monitoring Well locations installed during the Property Characterization are denoted in BLACK

* Final locations for PMW-7, PSV-6 and PMW-8 will be dependent on vegetative cover and rig access

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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Figure 8

Date: 5-21-2025

0 (approx scale) 70
feet

Proposed Soil Boring/Monitoring Well Locations
Remedial Investigation
BCP Site No. C356063

ATTACHMENT A

PRELIMINARY PROPERTY CHARACTERIZATION & RECOMMENDATION FOR SUPPLEMENTAL INVESTIGATION

(January 2, 2024)

January 2, 2024

Ms. Emily Barry
NYSDEC Region 3
21 S. Putt Corners Road
New Paltz, New York 12561

RE: Preliminary Property Characterization & Recommendation
for Supplemental Investigation
115 Broadway
Hamlet of Port Ewen, Town of Espous, Ulster County
NYSDEC Site # 3-56063

Dear Ms. Barry,

LaBella Associates, DPC has prepared this correspondence on behalf of Community Manufacturing Solutions, LLC in order to provide you with preliminary site data collected in accordance with the May, 2023 REVISED Property Characterization Work Plan (RPCWP) for the above referenced site (**Figure 1**). The information provided herein includes information relating to:

- Soil boring and sampling at selected locations;
- Monitoring well installation;
- Groundwater flow;
- Groundwater sampling, and:
- Soil Vapor sampling.

The scope of work associated with each task was outlined in the aforementioned RPCWP. This letter report seeks to provide you with updated information with regard to the findings to date for the property characterization. It also seeks your consideration and feedback regarding our recommendation for additional investigations to address data gaps with respect to site stratigraphy as well as the distribution of site-related compounds of concern in soil, groundwater and/or soil vapor.

Soil Boring and Sampling

The scope of work proposed advancement of soil borings at a total of 14 locations on the property based on property features, spatial distribution and/or previously documented impacts. Six (6) locations were proposed to be converted into 2.0-inch inside diameter (ID) monitoring wells and five (5) locations were proposed to be converted into soil vapor sampling points. The soil boring and sampling program commenced in August, 2023 after a geophysical investigation was completed on the Property in July, 2023 by Glean Globe Environmental, LLC of New City, New York.

Geophysical Investigation

The geophysical investigation sought to identify anomalous areas via the use of conductive and non-conductive anomalies via ground penetrating radar (GPR) and a metal detector and focused on the southern portion of the property. This included the southern half of the site building as well as the accessible paved and unpaved areas in the southern portion of the property to the eastern, western and southern property boundaries.

The findings of the geophysical investigation (**Attachment A**) identified two notable areas. The first was a non-conductive anomaly in the lawn area west of the site building. The presence of this anomalous area resulted in the placement of well MW-1 closer to the west side of the site building than indicated in the RPCWP. A second anomalous area was noted in the southeastern quadrant of the property and appeared as a series of six (6) parallel and elongated features that suggested the presence of a leach field. As such, the location of well MW-4 was adjusted so that it could be placed adjacent to (and hydraulically downgradient of) this suspected leach field area. The locations of the 14 soil borings advanced at the site in August, 2023 are included on **Figure 2**.

Soil Borings

The soil borings were advanced during the investigation in accordance with the RPCWP. The soil borings were advanced into and terminated within a stiff clay unit that was present at all soil boring locations beneath the site. Evaluation of the soil encountered during the soil boring advancement did not suggest any visual or olfactory evidence of impact and headspace screening of soil for total volatile organic compound (VOC) concentrations with a photoionization detector (PID) did not suggest elevated total VOC concentrations. However, at SB-11/MW-6, located off the west side of the garage building, elevated total VOC concentrations up to 37.4 parts per million (PPM) were noted in the interval between 5.0-feet and 7.5-feet below grade. There was no visual or olfactory evidence of impact in this depth interval. Headspace screening results are provided on the soil boring logs included in **Attachment B**.

Soil Analytical Results

Soil samples were collected from each borehole in accordance with the RPCWP. In general, multiple soil samples were collected from each borehole installed in the southern portion of the property. Specifically, those borings installed in proximity to the garage and in the area anticipated to be hydraulically downgradient of garage. Single soil samples were collected from soil borings advanced outside of that portion of the site. All soil samples were analyzed for VOCs, semi-VOCs and RCRA 8 metals. Additionally, one soil boring location was to be sampled for all analytes, including VOCs, semi-VOCs, metals, PCBs, pesticides and herbicides. NYSDEC was given the opportunity to select which soil boring location would be sampled for the comprehensive analysis. Likewise, NYSDEC was also given the opportunity to select which soil boring location would be sampled for polyfluorinated alkyl substances (PFAS). NYSDEC selected SB-8 for both the PFAS and comprehensive analysis. A total of 31 soil

samples (plus additional laboratory blanks) were analyzed as part of the soil sampling effort at the site.

The soil analytical results, which are summarized on the attached Summary of Compounds Identified in Soil Samples (**Attachment C**), indicate that all soil samples collected during the August, 2023 soil boring program were within the NYSDEC's soil cleanup objectives (SCOs), as defined in 6BYCRR Part 375-6.8(a) for unrestricted use with respect to metals and 27 of the 31 samples analyzed were within the SCO for unrestricted use with respect to VOCs. Four (4) soil samples (SB-8 (2); SB-11 (1); SB-11 (2) & SB-13 (4)) indicated concentrations of tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE) and/or vinyl chloride (VC) in excess of the SCO for unrestricted use but, below the SCO for restricted residential use (6NYCRR Part 375-6.8(b). It should also be noted that the comprehensive analysis of the samples collected from SB-8 (which were also analyzed for PCBs, pesticides, herbicides and PFAS) did not identify any of those additional analytes. The soil analytical results are also summarized on **Figure 3**.

Monitoring Well Installation and Site Stratigraphy

The soil boring program revealed a subsurface that included a surficial layer that was composed of a mixture of fine sand to silt with a varying amount of clay depending on location within the site. This surficial layer, which appears to be of low to moderate permeability, is present to a depth range of approximately 6.6 feet below grade at SB-13 (MW-4) to 22.5 feet below grade at MW-22. Each of the monitoring wells installed during the soil boring program were screened at the base of the saturated zone. Depth to groundwater within this surficial layer is typically less than 5.0 feet below grade but, appears to deepen toward the east (MW-3) and north (MW-2) where depth to groundwater increases to approximately 8.0 feet below grade and 12 feet below grade, respectively. This upper saturated zone appears to be perched on top of an underlying stiff clay unit that was confirmed in all of the soil borings advanced at the site. The average depth to this stiff clay unit is approximately 14 feet below grade. Monitoring well specifications are presented below in Table 1.

Table 1
Monitoring Well Specifications

Well	Boring ID	Total Depth	Screen	Sand Pack	Bentonite Seal
MW-1	SB-1	13	5.0 - 13	3..0 - 13	1.0 – 3.0
MW-2	SB-3	23	5.0 - 23	3.0 - 23	1.0 – 3.0
MW-3	SB-5	15	5.0 - 15	3..0 - 15	1.0 – 3.0
MW-4	SB-13	10	5.0 - 10	3.0 - 10	1.0 – 3.0
MW-5	SB-7	10	5.0 - 10	3.0 - 10	1.0 – 3.0
MW-6	SB-11	15	4.0 - 15	3.0 - 15	1.0 – 3.0
All depths given in feet below grade					

The information gathered during the drilling program was compiled into the conceptual cross sections presented as **Figure 4A** (east-west cross section) and **Figure 4B** (north-south cross section).

Groundwater Sampling and Flow Direction

Groundwater sampling was conducted in accordance with the RPCWP on October 30, 2023. Prior to commencing with low flow sampling, each well was opened and a complete round of depth to water (DTW) measurements were collected. The DTW measurements were used in conjunction with the top of well casing elevations (which were based on a site datum assigned an elevation of 100.00 feet) in order to prepare the groundwater contour map included as **Figure 5**. As indicated thereon, the direction of groundwater movement is toward the east and northeast depending on location at the site. Depth to groundwater/groundwater elevations are included below in **Table 2**.

Table 2
Groundwater Elevations
October 30, 2023

Well	TOC Elevation	Depth to Water	Groundwater Elevation
MW-1	102.76	3.50	99.26
MW-2	103.08	12.32	90.76
MW-3	101.38	8.31	93.07
MW-4	98.00	2.98	95.02
MW-5	100.82	4.86	95.96
MW-6	101.54	3.94	97.60
All depths/elevations relative to Top of Casing (TOC)			

Groundwater Analytical Results

Groundwater samples were collected from each monitoring well in accordance with the RPCWP. Each of the groundwater samples were analyzed for VOCs, semi-VOCs and RCRA 8 metals. Additionally, One (1) monitoring well (MW-5) was also analyzed for the additional analytes including PCBs, pesticides, herbicides and PFAS. NYSDEC was given the opportunity to select which monitoring well would be sampled for the comprehensive analysis.

The groundwater analytical results, which are summarized on the attached Summary of Compounds Identified in Groundwater Samples (included in **Attachment C**), establish that none of the groundwater samples identified metals concentrations in excess of the NYSDEC standards for Class GA groundwater, as defined by the Technical and Operational Guidance Series (TOGS) Memorandum 1.1.1 of October, 1993 (as amended). Four (4) of the monitoring wells (MW-2, MW-3, MW-5 and MW-6) indicated concentrations of PCE, TCE, DCE and/or vinyl chloride (VC) in excess of their respective standard for class GA groundwater. Semi-VOC analysis also identified polycyclic aromatic hydrocarbons (a suite of compounds that are formed as a by-product of the combustion of organic material) in all groundwater samples in excess of the NYSDEC standard for these compounds in groundwater. LaBella does not

believe these compounds to be site related. It should also be noted that the comprehensive analysis of the groundwater sample collected from well MW-5 (which was also analyzed for PCBs, pesticides and herbicides) did not identify any of those additional analytes. PFAS analysis of the groundwater sample from well MW-5 identified perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), at concentrations of 2.73 nanograms per Liter (ng/L) and 0.851 ng/L, respectively. Both of these concentrations are well below the 10 ng/L maximum contaminant level (MCL) adopted by NYSDEC for drinking water. The groundwater analytical results are also summarized on **Figure 6**.

Soil Vapor Sampling

Five (5) soil vapor sampling points were installed at the locations indicated on Figure 2; construction specifications are summarized below in Table 3.

Table 3
Soil Vapor Sampling Point Specifications

Well	Boring ID	Total Depth	Screen Centerpoint	Glass Beads	Bentonite Seal
SV-1	SB-2	7.0	4.75	3.0 – 7.0	1.0 – 3.0
SV-2	SB-4	7.0	4.75	3.0 – 7.0	1.0 – 3.0
SV-3	SB-6	6.0	3.75	2.0 – 6.0	1.0 – 2.0
SV-4	SB-14	6.0	3.75	2.0 – 6.0	1.0 – 2.0
SV-5	SB-9	6.0	3.75	2.0 – 6.0	1.0 – 2.0
All depths given in feet below grade					

Two attempts to collect complete sets of soil vapor samples were made on October 30, 2023 and, also, the following week. On October 30, a significant rainfall event occurred which resulted in an abundance of precipitation to infiltrate the sub-surface. Consequently, three (3) of the five (5) soil vapor sampling points did not yield soil vapor during the preliminary purging of the vapor sampling point. During that sampling event, only SV-2 and SV-4 (were able to be successfully sampled. The outdoor air sample was also collected at that time. A follow-up visit was made to the site in an attempt to purge the unsampled locations (SV-1, SV-3 and SV-5) at that time. However, these soil vapor sampling points continued to be inundated with infiltrating precipitation/shallow groundwater. As such, the complete array of soil vapor sampling points has not been able to be sampled as of the date of this correspondence.

The two (2) soil vapor samples that were sampled (SV-2 and SV-4) on October 30 (along with the outdoor air sample) were obtained in accordance with the RPCWP via 6.0-liter SUMMA canisters that collected the samples over a 24-hour duration. The analytical results are summarized in the attached Summary of Compounds Identified in Soil Vapor Samples. The soil vapor analytical results are also summarized on **Figure 7.**

Recommendations for Supplemental Site Characterization

Our current understanding of the site suggests a conceptual model depicted in the cross sections presented herein as Figure 4A and Figure 4B. That is, a shallow water bearing zone

of limited depth is perched over a stiff clay layer that appears to be continuous across the site. The depth of this apparently perched zone is approximately 14 feet below grade but ranges in depth from 6.5 feet below grade (MW-4) to 22.5 feet below grade (MW-2). At this time, the presence of a "regional" water bearing zone beneath this presumably perched upper zone has not been confirmed. Additionally, the direction of flow within the presumably perched upper zone appears to be toward the east and northeast depending on location at the site.

Groundwater analytical results (Figure 6) indicate concentrations of PCE, and related degradation by-products, in proximity to the garage (south of the property building), in excess of Class GA groundwater standards via wells MW-6 and MW-5. Additionally, well MW-2 also indicates concentrations of PCE and degradation by-products in excess of Class GA groundwater standards.

Based on the findings presented herein and our preliminary conceptual understanding of the subsurface beneath the property, we are proposing supplemental investigations to address data gaps and, to clarify our conceptual model of the site. This will include a surveyed base map by a professional land surveyor; a supplemental geophysical investigation as well as supplemental soil borings and sampling, monitoring well installation and sampling and, completing a supplemental round of soil vapor sampling. Each supplemental investigatory task will be conducted in accordance with the May, 2023 RPCWP for the property. This includes soil and groundwater sampling protocols, data deliverables and community air monitoring.

Supplemental Geophysical Investigation

Supplemental Geophysical Investigation is proposed to complete portions of the property that were not included in the original geophysical investigation, which encompassed the southern portion of the property. This will include the lawn areas to the west and north of the property building as well as the paved/parking area east of the property building. Expanding the geophysical investigation into these areas of the site will help to identify metallic or non-metallic anomalies that may be a possible source of site-related compounds identified in site soil and/or groundwater.

Supplemental Soil Boring and Monitoring Well Installation

The goal of the supplemental soil boring and monitoring wells proposed herein is to better define the nature of the subsurface with respect to the suspected perched shallow water bearing zone and, to evaluate whether an underlying "regional" water bearing zone is present beneath the presumably perched water bearing zone. In order to accomplish this, four (4) "shallow" soil borings are proposed at selected locations on the property and four (4) "deep" borings are proposed at existing shallow monitoring well locations. Figure 8 presents the locations for eight (8) supplemental soil borings/monitoring wells proposed herein. Table 4 presents the rationale for each proposed soil boring/monitoring well location.

Table 4
Soil Borings/Monitoring Wells Recommended for Supplemental Property Characterization

Shallow (perched) Borings/Monitoring Wells

Location	Rationale
MW-7	Verify soil and groundwater quality hydraulically upgradient of well MW-6
MW-8	Verify soil and groundwater quality in the area south of the garage and suspected leach field area
MW-9	Verify soil and groundwater quality in the area hydraulically upgradient of well MW-2
MW-10	Verify soil and groundwater quality in the area north of well MW-2

Deep Borings/Monitoring Wells

Location	Rationale
MW-1D	Verify site stratigraphy and presence of "regional" water bearing zone in the anticipated hydraulically upgradient portion of the property.
MW-2D	Verify site stratigraphy and presence of "regional" water bearing zone adjacent to eastern property boundary.
MW-3D	Verify site stratigraphy and presence of "regional" water bearing zone adjacent to eastern property boundary.
MW-4D	Verify site stratigraphy and presence of "regional" water bearing zone adjacent to eastern property boundary.

The borings proposed for completion in the shallow (perched) zone will be advanced to a depth sufficient to confirm the presence of the stiff clay that underlies the perched zone. The borings proposed for completion in the regional water bearing zone (if present) will be advanced to a maximum terminal depth of 75 feet below grade (or drill tooling refusal, whichever comes first). In the event that a regional water bearing zone is encountered, the borehole depth may also be limited by a second underlying clay layer (if present) that may define the vertical limit of the regional water bearing zone at that soil boring location.

Monitoring wells will be constructed so that the well screens intersect the bottom of the saturated zone in which they are completed. Screened intervals will be established to encompass the vertical extent of the saturated zone as practical. Monitoring wells will be advanced via 4.25-inch inside diameter (ID) hollow stem augers and be constructed of 2.0-inch ID schedule 40 PVC screen and casing.

Supplemental Soil and Groundwater Sampling/Analysis

Three (3) soil samples are proposed from each borehole in accordance with the May, 2023 RPCWP. In general, the sampling approach at each shallow/perched soil boring location will be to collect one sample from above the water table (as noted during borehole advancement) and one sample from below the water table. Sampling will be biased toward the depth interval that suggests possible impact via visual and/or olfactory evidence or, via elevated headspace concentrations of volatile organic compounds (VOCs) by screening with a photoionization detector (PID). A third sample will be collected from the terminal depth of the borehole.

The sampling approach for each "deep" borehole will be based on the intervals sampled in its perched zone counterpart. In borings MW-1D, MW-2D and MW-3D, one soil sample will be obtained from above the water table (as noted during borehole advancement) and one sample

from below the water table. Sampling will be biased toward the depth interval that suggests possible impact via visual and/or olfactory evidence or, via elevated headspace concentrations of VOCs by screening with a PID. The third soil sample will be obtained from the terminal depth of the borehole. In boring MW-4D, a soil sample will be collected from the 20-foot to 22-foot depth interval and, a second sample will be obtained from the terminal depth of the borehole.

Once the monitoring wells are installed and developed, groundwater samples will be obtained from the entire monitoring well network via low flow sampling methods.

Soil and groundwater samples will be submitted to Phoenix Environmental Laboratories, Inc. of Manchester, Connecticut (Phoenix) is the analytical laboratory that analyzed all of the sampled media for the preliminary property characterization. Phoenix is certified by the National Environmental Laboratory Accreditation Conference (NELAC) and holds certification in all northeastern states including New York. Analytical methodologies proposed for soil and groundwater are SW-846-8260 for VOCs, SW-846-8270 for semi-VOCs and, SW-846-6010D/SW-846-7471B for the eight (8) Resource Conservation and Recovery Act metals (RCRA 8 metals). These include arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), selenium (Se) and silver (Ag).

Additional samples, for quality assurance/quality control (QA/QC) purposes, will include aqueous trip blanks for soil and groundwater and collection of blind duplicate samples at a frequency of one (1) per 20 for each media. As such, a total of three (3) blind duplicate samples are anticipated (two (2) for soil and one (1) for groundwater). Additionally, one (1) matrix spike/matrix spike duplicate (MS/MSD) sample will be collected for each matrix (one (1) MS/MSD sample for soil and one (1) MS/MSD sample for groundwater). Analysis of QA/QC samples will be for VOCs (via analytical method SW-846-8260) only.

“Category B” deliverables will be requested from the analytical laboratory. However, a data usability summary report (DUSR) will not be prepared as part of the Property Characterization. The associated analytical data will be uploaded into the NYSDECs EQUIS database.

<u>Supplemental Soil Vapor Sampling</u>

As previously reported herein, three (3) of the five (5) soil vapor sampling soil vapor monitoring points were not able to be sampled during the October 30, 2023 (and attempted follow-up) sampling event. As such, we are proposing that a supplemental soil vapor sampling event be conducted that will include all five (5) monitoring points (with the addition of an outdoor air sample). The soil vapor samples will be collected over a maximum 24-hour duration using 6.0-liter SUMMA cannisters provided by the analytical laboratory. Analysis will be for the full list of VOCs via analytical method TO-15; additional QA/QC samples (such as blanks and duplicates) will not be collected for the soil vapor sampling.

We appreciate your consideration of the information presented herein and look forward to your input with regard to the supplemental investigations proposed herein.

If you have any questions or comments, please contact either of us at (518) 885-5383.

LABELLA ASSOCIATES, DPC

Randolph H. Hoose, P.G
Sr. Hydrogeologist

Michael B. Carr, PG, CPG
Managing Geologist

Attachments: Figures
A Geophysical Investigation Results
B Soil Boring and Well Construction Logs
C Summary Tables

cc. Kiera Thompson (NYSDEC)
Brian Button (Community Manufacturing)

FIGURES

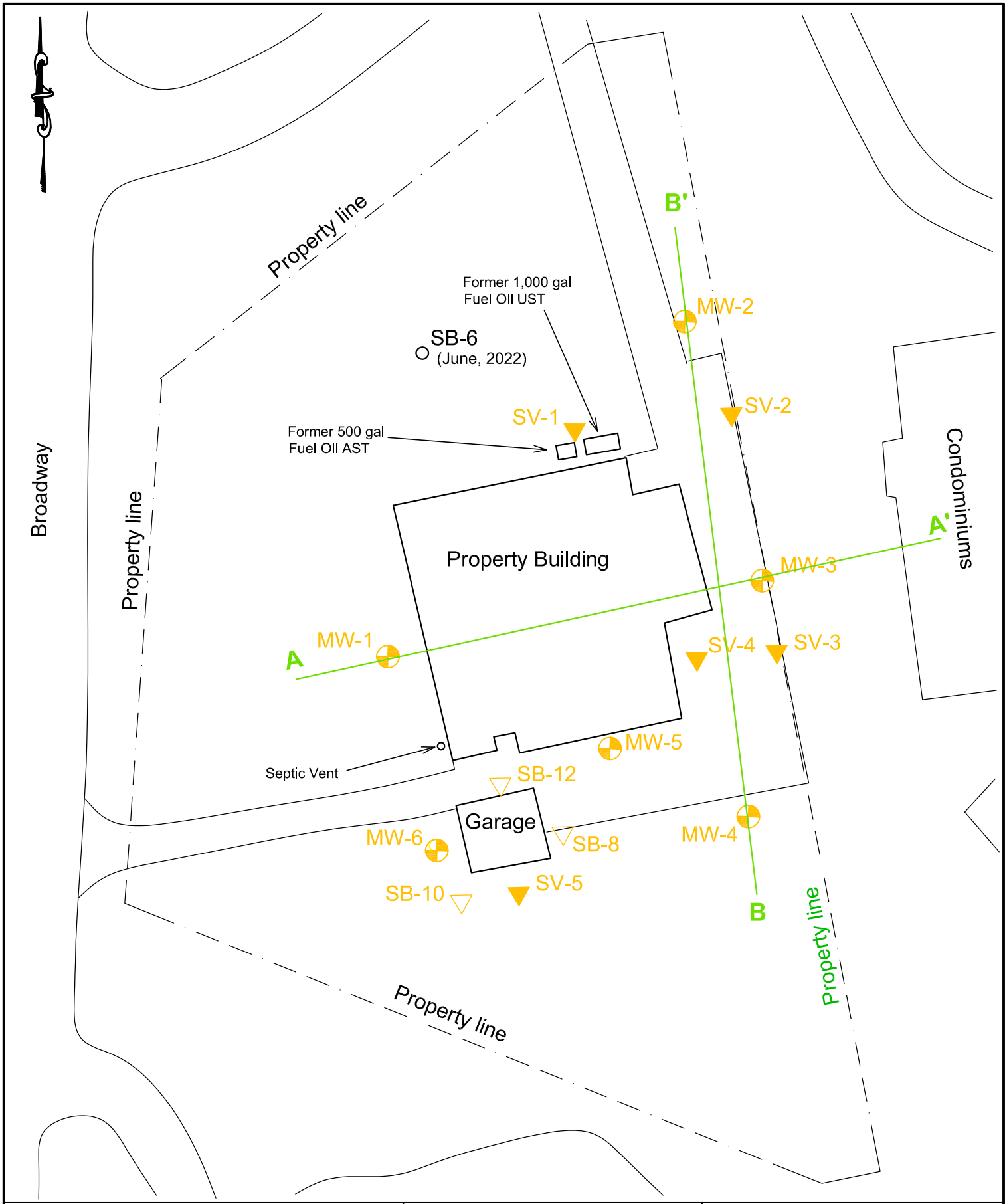
USGS Topographic Quadrangle Map – Kingston East, New York

LaBella
Powered by partnership.

SITE: 115 Broadway
Hamlet of Port Ewen
Town of Esopus
Ulster County, New York

FIGURE 1

Property Location Map



LaBella
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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

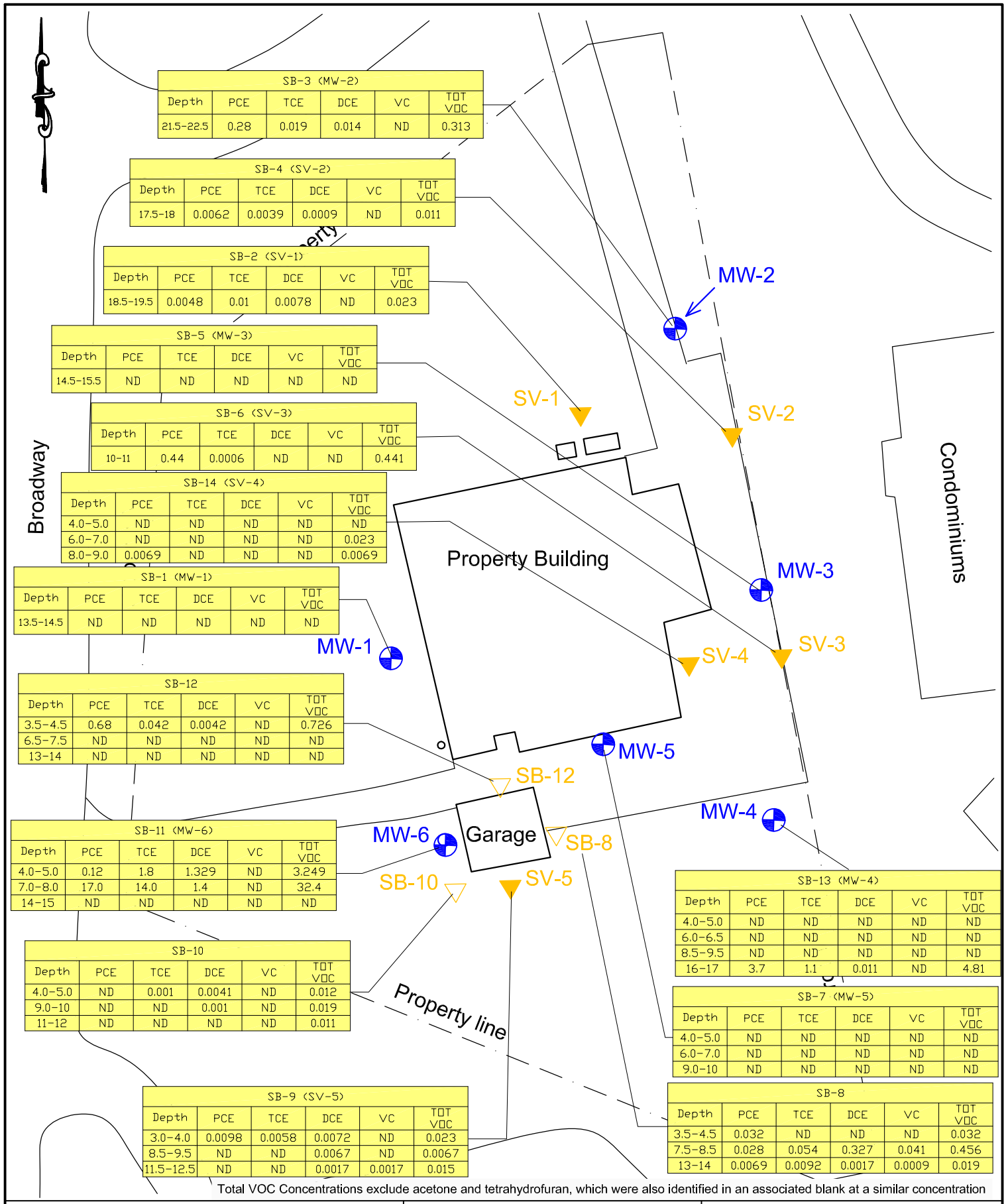
Figure 2

Date: 9-12-2023

0 (approx scale) 70
feet

Site Map with Conceptual Cross-Section Locations

- Soil Boring Only
- Soil Boring/Monitoring Well
- Soil Boring/Soil Vapor Sampling Point



Total VOC Concentrations exclude acetone and tetrahydrofuran, which were also identified in an associated blank at a similar concentration

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115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Figure 3

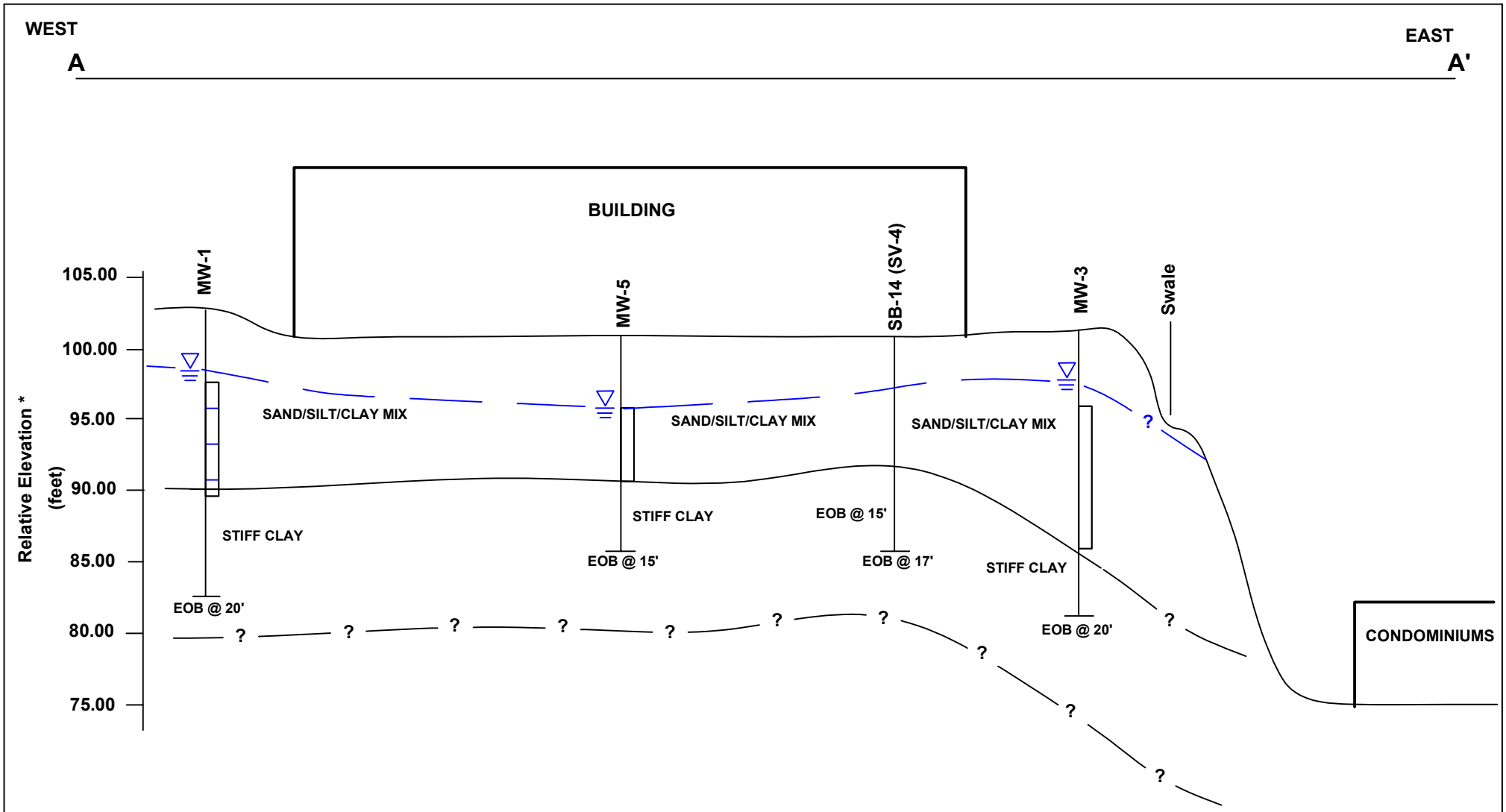
Date: 10-24-2023

0 (approx scale) 70
feet

Preliminary Soil Analytical Results August, 2023

Concentrations in mg/kg

Soil Boring
Monitoring Well
Soil Vapor Sampling Location



* Elevations relative to site datum assigned an elevation of 100.00 feet

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SITE: Community Manufacturing Solutions, LLC
115 Broaqdway
Port Ewen, Town of Espopus
Ulster County, New York

FIGURE 4A

DATE: 12-13-2023

0 (approx scale) 35
feet

East-West Conceptual Cross-Section

Water Table (10-30-2023)

= Screened Interval

Vertical scale as shown

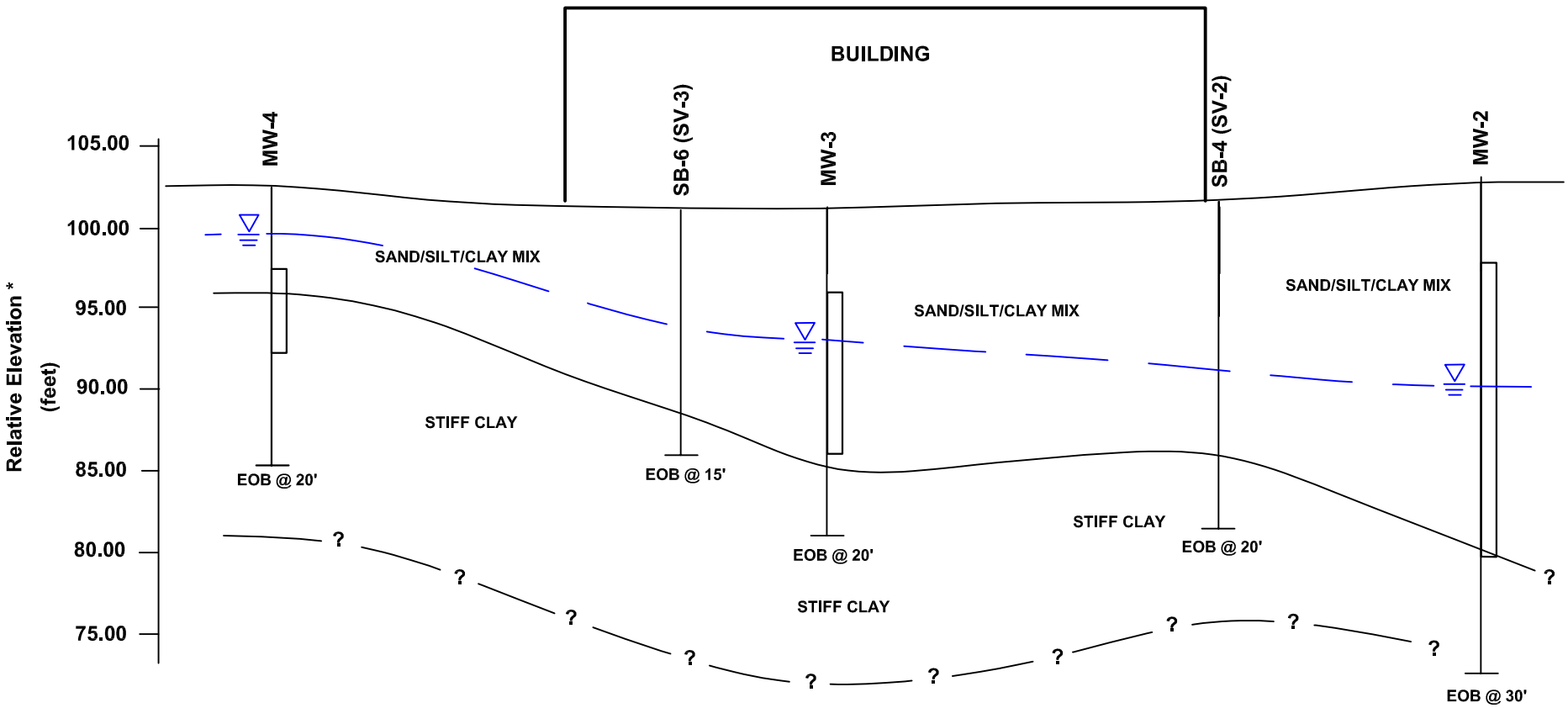
EOB indicates End of Boring (Total Depth)

SOUTH

B

NORTH

B'



* Elevations relative to site datum assigned an elevation of 100.00 feet

LaBella
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SITE: Community Manufacturing Solutions, LLC
115 Broaqdway
Port Ewen, Town of Espopus
Ulster County, New York

FIGURE 4B

DATE: 12-13-2023

0 (approx scale) 35
feet

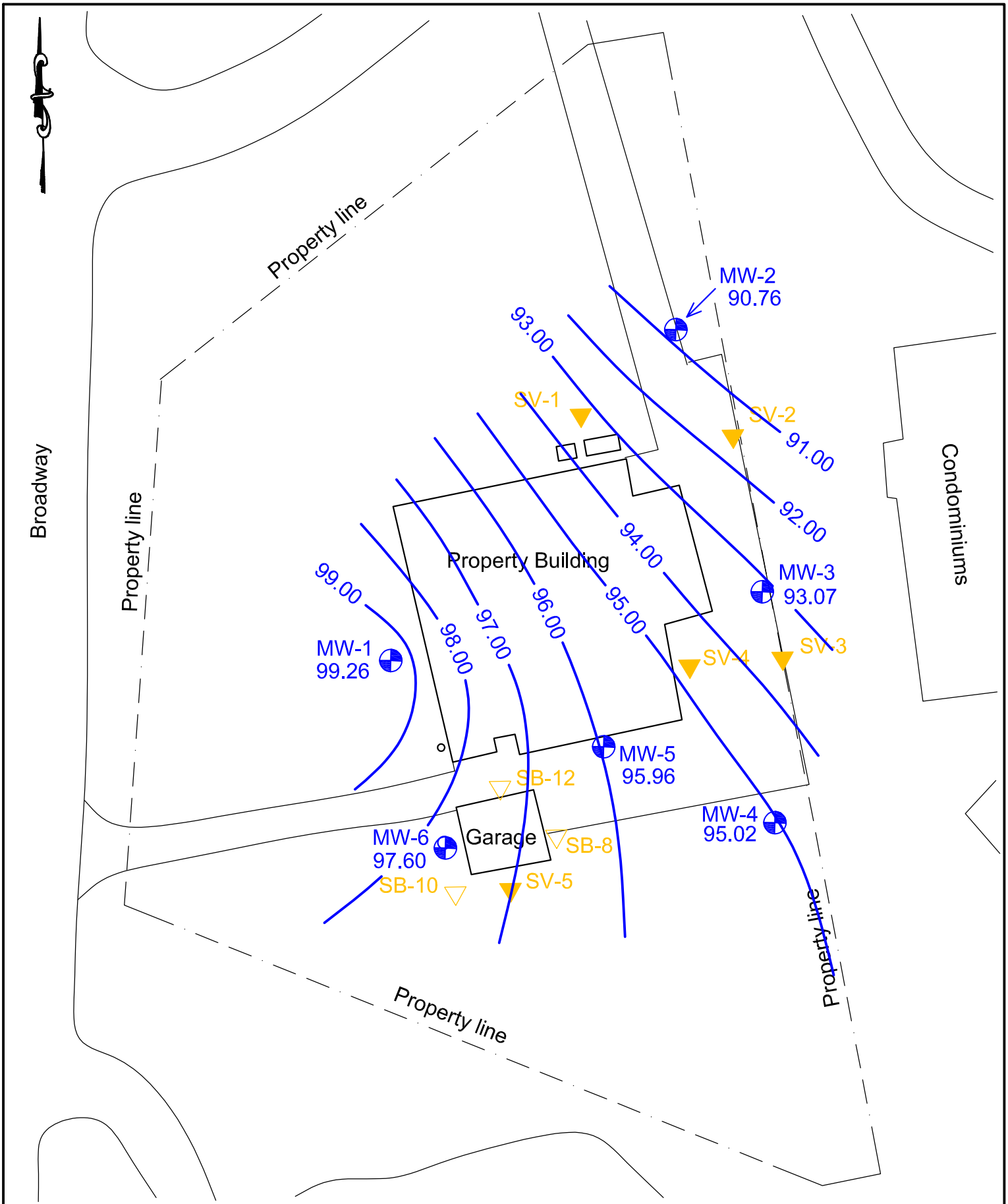
North-South Conceptual Cross-Section

Water Table (10-30-2023)

Vertical scale as shown

= Screened Interval

EOB indicates End of Boring (Total Depth)



LaBella
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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

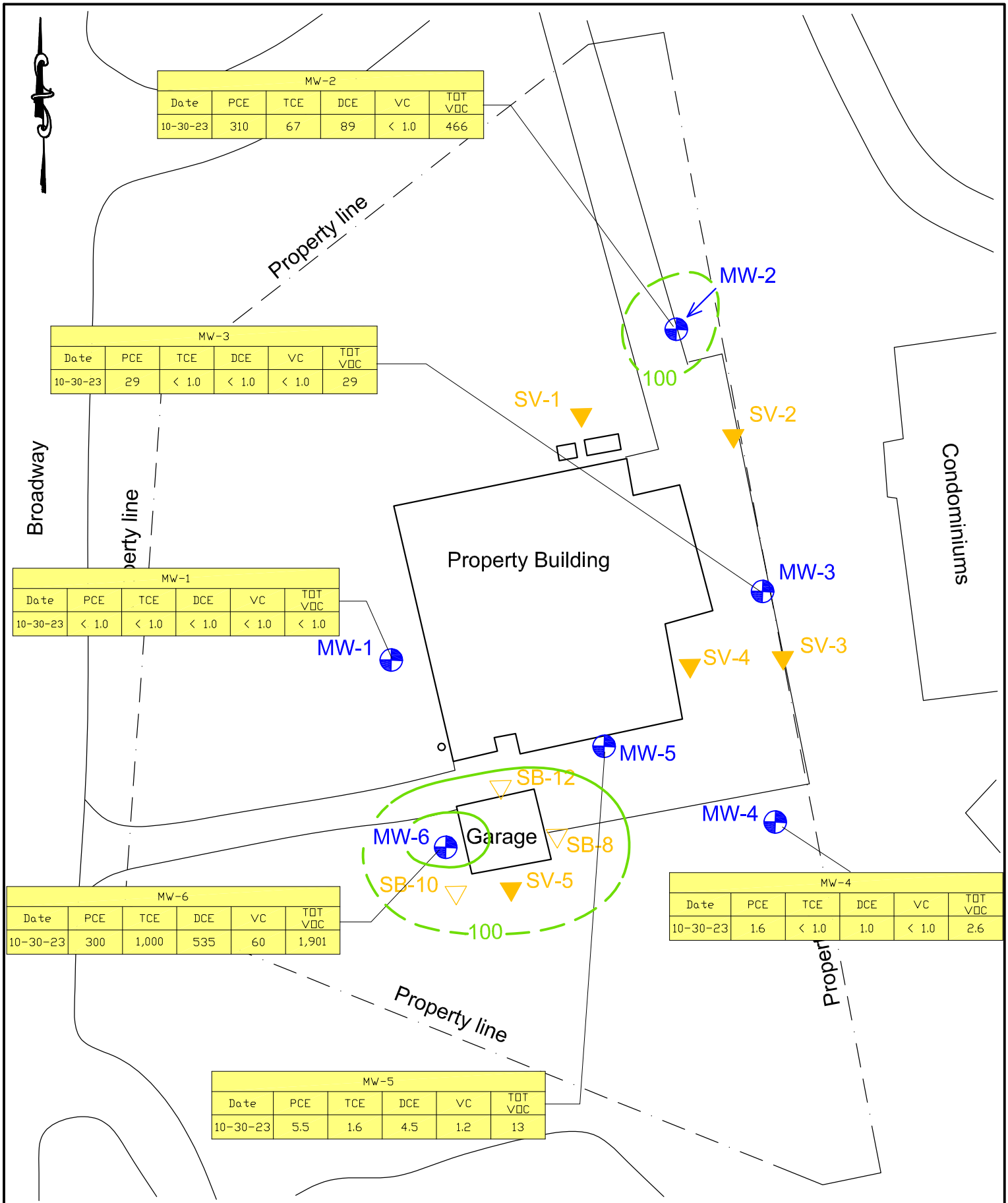
Figure 5

Date: 10-30-2023

0 (approx scale) 70
feet

Groundwater Contour Map
October 30, 2023

- Soil Boring
- Monitoring Well
- Soil Vapor



LaBella
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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Figure 6

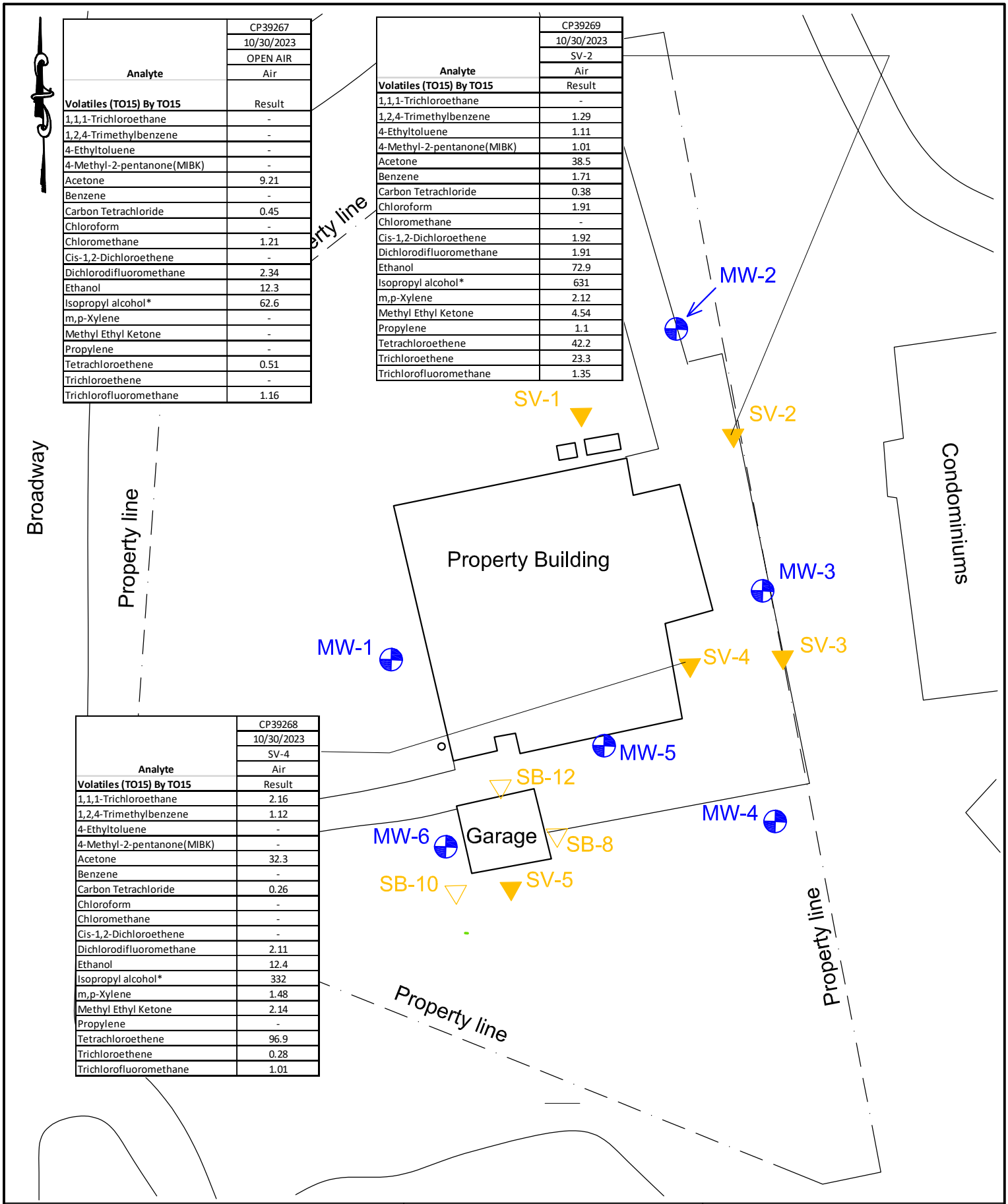
Date: 10-30-2023

0 (approx scale) 70
feet

Groundwater Analytical Results
PCE and Related Degradation By-Products
October 30, 2023

Concentrations in ug/L

Soil Boring
Monitoring Well
Soil Vapor Sampling Location



Analyte	CP39267 10/30/2023 OPEN AIR Air
Volatiles (TO15) By TO15	Result
1,1,1-Trichloroethane	-
1,2,4-Trimethylbenzene	-
4-Ethyltoluene	-
4-Methyl-2-pentanone(MIBK)	-
Acetone	9.21
Benzene	-
Carbon Tetrachloride	0.45
Chloroform	-
Chloromethane	1.21
Cis-1,2-Dichloroethene	-
Dichlorodifluoromethane	2.34
Ethanol	12.3
Isopropyl alcohol*	62.6
m,p-Xylene	-
Methyl Ethyl Ketone	-
Propylene	-
Tetrachloroethene	0.51
Trichloroethene	-
Trichlorofluoromethane	1.16

Analyte	CP39269 10/30/2023 SV-2 Air
Volatiles (TO15) By TO15	Result
1,1,1-Trichloroethane	-
1,2,4-Trimethylbenzene	1.29
4-Ethyltoluene	1.11
4-Methyl-2-pentanone(MIBK)	1.01
Acetone	38.5
Benzene	1.71
Carbon Tetrachloride	0.38
Chloroform	1.91
Chloromethane	-
Cis-1,2-Dichloroethene	1.92
Dichlorodifluoromethane	1.91
Ethanol	72.9
Isopropyl alcohol*	631
m,p-Xylene	2.12
Methyl Ethyl Ketone	4.54
Propylene	1.1
Tetrachloroethene	42.2
Trichloroethene	23.3
Trichlorofluoromethane	1.35

Analyte	CP39268 10/30/2023 SV-4 Air
Volatiles (TO15) By TO15	Result
1,1,1-Trichloroethane	2.16
1,2,4-Trimethylbenzene	1.12
4-Ethyltoluene	-
4-Methyl-2-pentanone(MIBK)	-
Acetone	32.3
Benzene	-
Carbon Tetrachloride	0.26
Chloroform	-
Chloromethane	-
Cis-1,2-Dichloroethene	-
Dichlorodifluoromethane	2.11
Ethanol	12.4
Isopropyl alcohol*	332
m,p-Xylene	1.48
Methyl Ethyl Ketone	2.14
Propylene	-
Tetrachloroethene	96.9
Trichloroethene	0.28
Trichlorofluoromethane	1.01

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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Figure 7

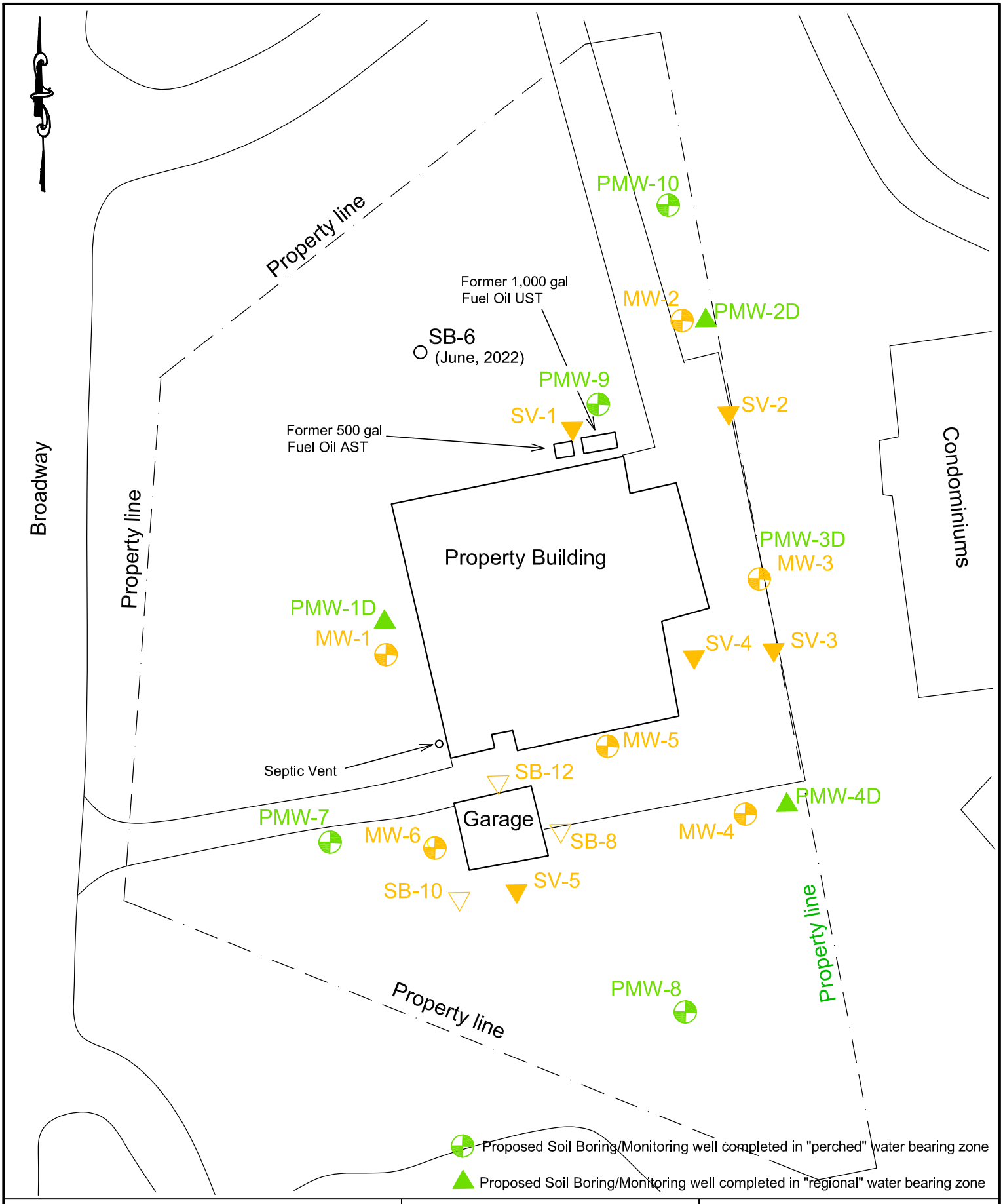
Date: 10-30-2023

0 (approx scale) 70
feet

Soil Vapor Analytical Results
October 30, 2023

Concentrations in ug/m3

Soil Boring
Monitoring Well
Soil Vapor Sampling Location



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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Figure 8

Date: 12-19-2023

0 (approx scale) 70
feet

Proposed Supplemental Soil Boring/Monitoring Well Locations

- Soil Boring Only
- Soil Boring/Monitoring Well
- Soil Boring/Soil Vapor Sampling Point

ATTACHMENT A

GEOPHYSICAL INVESTIGATION RESULTS

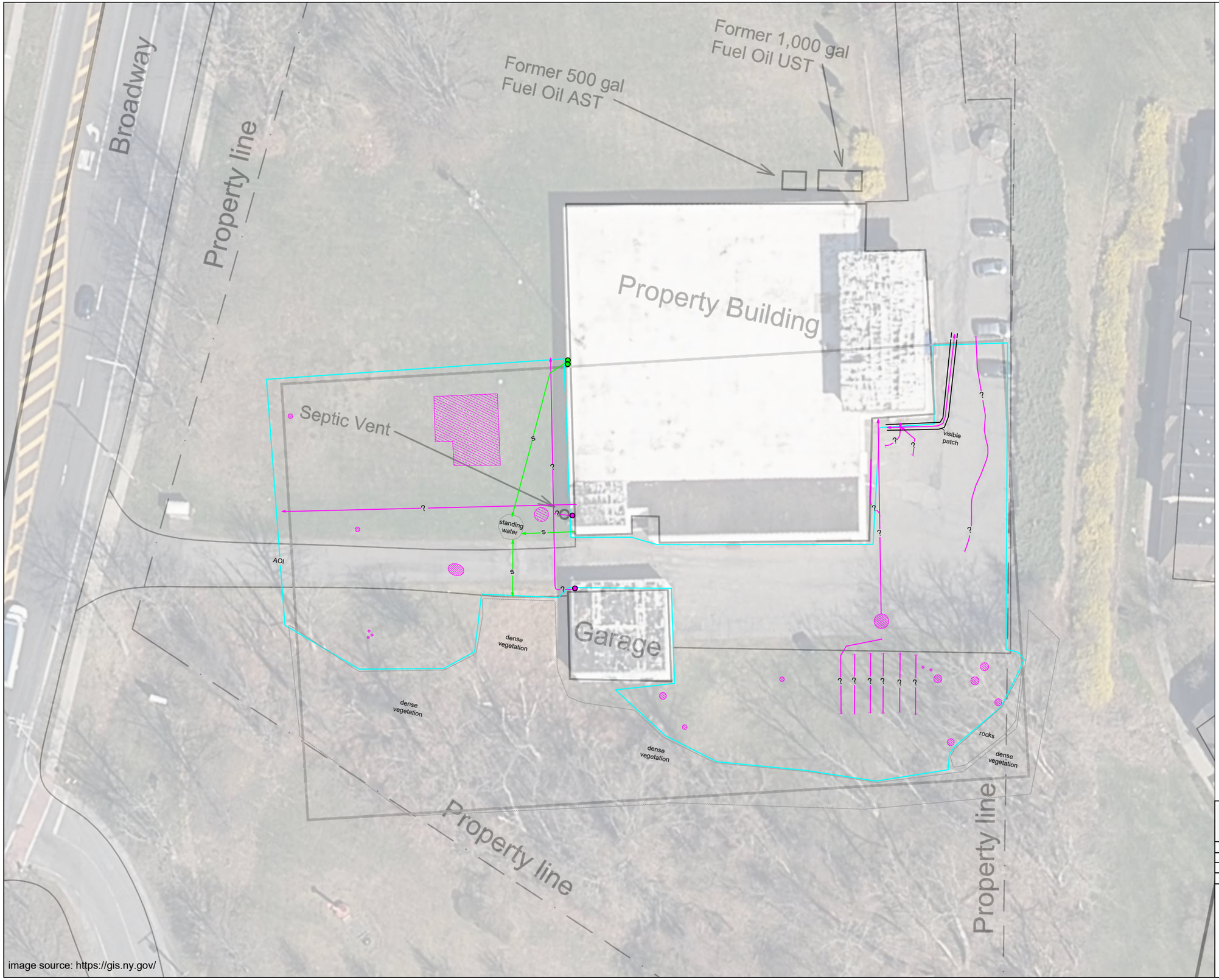


image source: https://gis.ny.gov/

CGE LEGEND

- AOI — area of investigation
- metal-detector (conductive) anomaly
- ground penetrating radar (non-conductive) anomaly
- ?— suspected utility of undetermined use
- s— sewer or drain pipe
- unknown pipe

0 20 40 ft

Scale: One inch equals approximately forty feet

Clean Globe Environmental LLC (CGE)

Long Island
34 Cain Dr.
Brentwood, NY 11717

Rockland County
PO BOX 1895
New City, NY 10956

Phone: 888-454-5923, Ext 700

Figure 1. Results of a geophysical investigation

Client: LaBella Associates

Site Address: 115 Broadway, Port Ewen, NY

Date of Investigation: July 27-28, 2023

Please note:
The Client supplied basemap was overlaid on an orthoimage to generate this figure. The orthoimage does not represent current conditions.
This is not a survey quality map and locations of features should be considered approximate. The scope for this investigation was to search for evidence of underground utilities and structures within the AOI. Not all utilities are detectable, and not all pipes and areas beyond the AOI boundary were thoroughly investigated for features in the ground.

ATTACHMENT B

SOIL BORING AND WELL COMPLETION LOGS

WELL / BORING NO. SB-1 / MW-1

Site Name: Community Manufacturing | Date Drilled: Probed: 08/30/23 1340-1418 Drilled: 09/05/23 1005-1105

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: HSA (Dia): 8" O.D. | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 13.0' (Dia): 8" O.D. | Sampled TD: 18.7' (Dia): 2.0"

Well TD: 13.0' (Dia): 2" I.D. | Well Type: Monitoring Well

Screen Interval: 13.0' - 5.0' | Slot Size: 0.010 Slot | Diameter: 2" I.D.

Cased Interval: 5.0' - 0.0' | Type: Schedule 80 PVC | Diameter: 2" I.D.

Sand Pack Interval: 13.0' - 3.0' | Type: Grade 4095 | Wellhead Prot: 8" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Chips | Grouted Interval: N.A.

LaBella
Powered by partnership

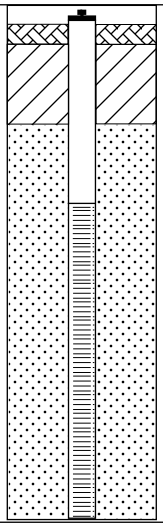
KEY:

Bentonite | Native Soil | Screen | pvc Riser | 0 Sand | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9108881

Easting: -73.9768012

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				GRASS SURFACE, WET CONDITIONS
0		SS-1 0.0' - 5.0' RES: 3.2' NO ODOR NO VISUAL	0.0	0.0' - 7.5' MEDIUM DENSE, DARK BROWN, POORLY GRADED FINE SAND & CLAY, MOIST, COHESIVE, OXIDIZED, UNLEACHED
2				
4			0.0	4.5' COLOR CHANGE TO DARK GRAY, REDUCED, UNLEACHED
6		SS-1 5.0'-10.0' REC: 3.1' NO ODOR NO VISUAL	0.0	5.0' COLOR CHANGE TO BROWN, OXIDIZED, UNLEACHED, DAMP
8			0.0	7.5' - 10.5' MEDIUM DENSE, GRAY TO DARK BROWN, POORLY GRADED FINE SAND W/ CLAY, WET, COHESIVE, REDUCED, LEACHED
10		SS-2 10.0'-15.0' REC: 5.0' NO ODOR NO VISUAL	0.0	10.5' - 12.5' MEDIUM DENSE, DARK GRAY, POORLY GRADED MEDIUM SAND, WET, COHESIVE, REDUCED, UNLEACHED, TRACE CLAY
12			0.0	12.5' - 15.0' STIFF, DARK GRAY, LEAN CLAY, MEDIUM PLACTICITY, MOIST, REDUCED, UNLEACHED
14				14.0' COLOR CHANGE TO GRAY, REDUCED, LEACHED
16		SS-3 15.0'-18.7' REC: 3.7' NO ODOR NO VISUAL	0.0	15.0' - 18.7' VERY STIFF, BROWN, GRAY & ORANGE MOTTLED, LEAN CLAY, HIGH PLACTICITY, DAMP, OXIDIZED, UNLEACHED
18			0.0	20.0' EQUIPMENT REFUSAL
20				
22				
24				
26				

WELL / BORING NO. SB-2 / SV-1

Site Name: Community Manufacturing | Date Drilled: Probed: 08/29/23 0810-0850 Drilled: 08/31/23 1310-1340

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: Macro Core (Dia): 2.0" | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 7.0' (Dia): 2.0" | Sampled TD: 20.0' (Dia): 2.0"

Well TD: 5.0' (Dia): 0.75" | Well Type: Soil Vapor Point

Screen Interval: 5.0' - 4.5' | Slot Size: | Diameter: 0.75"

Cased Interval: 4.5' - 0.0' | Type: Poly Tubing | Diameter: 0.75"

Sand Pack Interval: 7.0' - 3.0' | Type: Glass Beads | Wellhead Prot: 6" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Granular | Grouted Interval: N.A.

LaBella
Powered by partnership

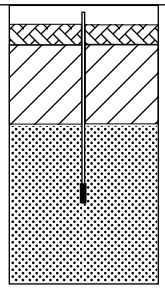
KEY:

Bentonite | Native Soil | Screen | pvc Riser | Glass Beads | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9111480

Easting: -73.9765541

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				GRASS SURFACE, DAMP CONDITIONS
0		Soft Dug 0.0' - 5.0' NO ODOR NO VISUAL	0.0	0.0' - 3.0' SOFT, BROWN, POORLY GRADED FINE SAND, DAMP, NON COHESIVE, OXIDIZED, UNLEACHED, TRACE COARSE SAND & SMALL SUB ANGULAR GRAVEL
2				
4			0.0	3.0' - 5.0' MEDIUM, BROWN, LEAN CLAY W/ SAND, HIGH PLASTICITY, DAMP, OXIDIZED, UNLEACHED
6		SS-1 5.0'-10.0' REC: 4.8' NO ODOR NO VISUAL	0.0	5.0' - 14.5' DENSE, BROWN, POORLY GRADED MEDIUM SAND, DAMP TO MOIST, NON COHESIVE, OXIDIZED, UNLEACHED
8			0.0	
10				9.5' BOREHOLE COLLAPSED 10.0' WET
12		SS-2 10.0'-15.0' REC: 3.9' NO ODOR NO VISUAL	0.0	
14			0.6	
16		SS-3 15.0'-20.0' REC: 3.2' NO ODOR NO VISUAL	0.0	14.5' - 19.5' MEDIUM DENSE, DARK GRAY, POORLY GRADED FINE SAND, WET, NON COHESIVE, REDUCED, UNLEACHED, TRACE CLAY LENS 17.0' CHANGE TO LOOSE, NO CLAY LENS
18			0.0	
20				19.5' - 20.0' STIFF, DARK GRAY, LEAN CLAY, HIGH PLASTICITY, MOIST, REDUCED, UNLEACHED
22				20.0' END OF EXPLORATION
24				
26				

WELL / BORING NO. SB-3 / MW-2

Site Name: Community Manufacturing | Date Drilled: Probed: 08/29/23 0930-1435 Drilled: 09/05/23 1440-1555

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: HSA (Dia): 8" O.D. | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 23.0' (Dia): 8" O.D. | Sampled TD: 30.0' (Dia): 2.0"

Well TD: 23.0' (Dia): 2" I.D. | Well Type: Monitoring Well

Screen Interval: 23.0' - 5.0' | Slot Size: 0.010 Slot | Diameter: 2" I.D.

Cased Interval: 5.0' - 0.0' | Type: Schedule 80 PVC | Diameter: 2" I.D.

Sand Pack Interval: 23.0' - 3.0' | Type: Grade 4095 | Wellhead Prot: 8" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Chips | Grouted Interval: N.A.

LaBella
Powered by partnership

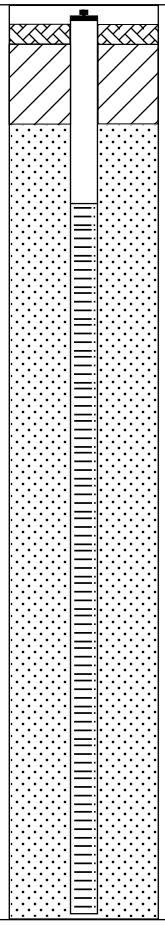
KEY:

Bentonite | Native Soil | Screen | pvc Riser | 0 Sand | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9115810

Easting: -73.9763280



Depth	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
			GRASS SURFACE 3"
0	SS-1 0.0'-5.0' REC: 3.4' NO ODOR NO VISUAL	0.0	0.25' - 2.5' MEDIUM DENSE, BROWN, POORLY GRADED FINE SAND, DAMP, NON COHESIVE, OXIDIZED, UNLEACHED, FEW MEDIUM SAND
2			
4		0.0	2.5' - 8.5' MEDIUM DENSE, TAN BROWN, POORLY GRADED MEDIUM SAND, DAMP, NON COHESIVE, OXIDIZED, LEACHED
6	SS-2 5.0'-10.0' REC: 2.3' NO ODOR NO VISUAL	0.0	
8		0.0	7.5' - 8.5' LARGER MEDIUM SAND GRAINS
10			8.5' - 10.0' MEDIUM DENSE, BROWN, POORLY GRADED FINE SAND, DAMP, NON COHESIVE, OXIDIZED, UNLEACHED, FEW MEDIUM SAND
12	SS-3 10.0'-15.0' REC: 3.9' NO ODOR NO VISUAL	0.0	10.0' - 15.0' DENSE, GRADATIONAL COLOR CHANGE FROM BROWN TO GRAY BROWN, POORLY GRADED FINE SAND W/ CLAY, MOIST TO WET, COHESIVE, OXIDIZED, LEACHED
14		0.0	
16	SS-4 15.0'-20.0' REC: 4.6' NO ODOR NO VISUAL	0.0	15.0' - 18.5' DENSE, DARK BROWN, POORLY GRADED MEDIUM SAND, WET, COHESIVE, OXIDIZED, UNLEACHED, FEW CLAY
18		0.0	
20	SS-5 20.0'-25.0' REC: 5.0' NO ODOR NO VISUAL	0.0	18.5' - 22.5' MEDIUM DENSE, DARK BROWN, POORLY GRADED MEDIUM SAND, WET, NON COHESIVE, OXIDIZED, UNLEACHED, FEW CLAY
22			21.0' - 21.5' CLAY BAND
24		0.0	22.5' - 24.0' STIFF, DARK GRAY, LEAN CLAY, MOIST, HIGH PLASTICITY, REDUCED, UNLEACHED
26		0.0	24.0' - 30.0' STIFF, DARK GRAY, LEAN CLAY W/ FINE SAND, MOIST, HIGH PLASTICITY, REDUCED, UNLEACHED

WELL / BORING NO. SB-3 / MW-2

Site Name: Community Manufacturing | Date Drilled: Probed: 08/29/23 0930-1435 Drilled: 09/05/23 1440-1555

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: HSA (Dia): 8" O.D. | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 23.0' (Dia): 8" O.D. | Sampled TD: 30.0' (Dia): 2.0"

Well TD: 23.0' (Dia): 2" I.D. | Well Type: Monitoring Well

Screen Interval: 23.0' - 5.0' | Slot Size: 0.010 Slot | Diameter: 2" I.D.

Cased Interval: 5.0' - 0.0' | Type: Schedule 80 PVC | Diameter: 2" I.D.

Sand Pack Interval: 23.0' - 3.0' | Type: Grade 4095 | Wellhead Prot: 8" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Chips | Grouted Interval: N.A.

LaBella
Powered by partnership.

KEY:

Bentonite | Native Soil | Screen

0 Sand | Concrete | pvc Riser | Grip Cap

GPS Coordinates:

Northing: 41.9115810

Easting: -73.9763280

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
28		SS-6 25.0'-30.0' REC: 5.0' NO ODOR NO VISUAL	0.0	24.0' - 30.0' STIFF, DARK GRAY, LEAN CLAY W/ FINE SAND, MOIST, HIGH PLASTICITY, REDUCED, UNLEACHED
30				30.0' END OF EXPLORATION MACRO CORE FROM 25.' - 30.0' INTERVAL WAS SANLOCKED. PLASTIC SLEEVE WAS DESTROYED UPON EXTRACTION

WELL / BORING NO. SB-4 / SV-2

Site Name: Community Manufacturing | Date Drilled: Probed: 08/29/23 0810-0850 Drilled: 08/31/23 1310-1340

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: Macro Core (Dia): 2.0" | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 7.0' (Dia): 2.0" | Sampled TD: 20.0' (Dia): 2.0"

Well TD: 5.0' (Dia): 0.75" | Well Type: Soil Vapor Point

Screen Interval: 5.0' - 4.5' | Slot Size: | Diameter: 0.75"

Cased Interval: 4.5' - 0.0' | Type: Poly Tubing | Diameter: 0.75"

Sand Pack Interval: 7.0' - 3.0' | Type: Glass Beads | Wellhead Prot: 6" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Granular | Grouted Interval: N.A.

LaBella
Powered by partnership

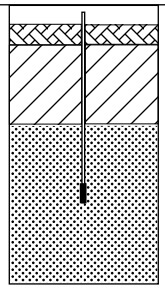
KEY:

Bentonite | Native Soil | Screen | pvc Riser | Glass Beads | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9114947

Easting: -73.9762262

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				ASPHALT SURFACE 3", MODIFIED GRAVEL 5"
0		Soft Dug 0.0' - 5.0' NO ODOR NO VISUAL	0.0	0.7' - 7.0' LOOSE, GRAY BROWN, POORLY GRADED MEDIUM SAND, DAMP, NON COHESIVE, OXIDIZED, UNLEACHED
2				
4			0.0	
6		SS-1 5.0'-10.0' REC: 4.8' NO ODOR NO VISUAL	0.0	
8			0.0	7.0' - 15.5' MEDIUM, BROWN, LEAN CLAY W/ FINE SAND, MEDIUM PLASTICY, DAMP TO MOIST, OXIDIZED, UNLEACHED
10				8.5' BOREHOLE COLLAPSED
12		SS-2 10.0'-15.0' REC: 3.9' NO ODOR NO VISUAL	0.0	
14			0.6	
16		SS-3 15.0'-20.0' REC: 3.2' NO ODOR NO VISUAL	0.0	15.5' - 20.0' MEDIUM, DARK GRAY, LEAN CLAY W/ FINE SAND, WET, MEDIUM PLASTICITY, REDUCED, LEACHED
18			0.0	17.5' - 18.0' LOOSE, BROWN, MEDIUM SAND BAND
20				20.0' END OF EXPLORATION
22				
24				
26				

WELL / BORING NO. SB-5 / MW-3

Site Name: Community Manufacturing | Date Drilled: Probed: 08/29/23 1605-1630 Drilled: 09/05/23 1330-1415

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: HSA (Dia): 8" O.D. | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 15.0' (Dia): 8" O.D. | Sampled TD: 20.0' (Dia): 2.0"

Well TD: 15.0' (Dia): 2" I.D. | Well Type: Monitoring Well

Screen Interval: 15.0' - 5.0' | Slot Size: 0.010 Slot | Diameter: 2" I.D.

Cased Interval: 5.0' - 0.0' | Type: Schedule 80 PVC | Diameter: 2" I.D.

Sand Pack Interval: 15.0' - 3.0' | Type: Grade 4095 | Wellhead Prot: 8" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Chips | Grouted Interval: N.A.

LaBella Powered by partnership

KEY:

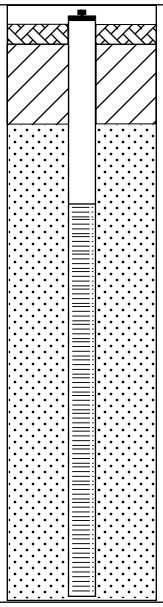
Bentonite | Native Soil | Screen

0 Sand | Concrete | pvc Riser | Grip Cap

GPS Coordinates:

Northing: 41.9112309

Easting: -73.9761407



Depth	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
			ASPHALT SURFACE 2", MODIFIED GRAVEL 6"
0	SS-1 0.0'-5.0' REC: 2.8' NO ODOR NO VISUAL	0.0	0.7' - 5.0' DENSE, BROWN, POORLY GRADED FINE SAND W/ CLAY, DAMP, COHESIVE, OXIDIZED, UNLEACHED, TRACE SUB ANGULAR GRAVEL
2			
4		0.0	
6	SS-2 5.0'-10.0' REC: 3.8' NO ODOR NO VISUAL	0.0	5.0' - 14.0' DENSE, BROWN, POORLY GRADED FINE SAND W/ CLAY, MOIST, COHESIVE, OXIDIZED, UNLEACHED
8			
10		0.0	
12	SS-3 10.0'-15.0' REC: 4.6' NO ODOR NO VISUAL		11.0' - 12.0' COLOR CHANGE TO GRAY
14		0.0	14.0' - 15.5' DENSE, DARK GRAY, POORLY GRADED FINE SAND W/ CLAY, DAMP, COHESIVE, REDUCED, LEACHED
16	SS-4 15.0'-20.0' REC: 4.9' NO ODOR NO VISUAL	0.0	15.5' - 20.0' STIFF, DARK GRAY, LEAN CLAY, DAMP TO MOIST, HIGH PLASTICITY, REDUCED, UNLEACHED
18		0.0	18.5' 2" BAND OF MEDIUM SAND
20			20.0' END OF EXPLORATION
22			
24			
26			

WELL / BORING NO. SB-6 / SV-3

Site Name: Community Manufacturing | Date Drilled: Probed: 08/30/23 0847-0920 Drilled: 08/31/23 1430-1440

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: Macro Core (Dia): 2.0" | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 6.0' (Dia): 2.0" | Sampled TD: 15.0' (Dia): 2.0"

Well TD: 4.0' (Dia): 0.75" | Well Type: Soil Vapor Point

Screen Interval: 4.0' - 3.5' | Slot Size: | Diameter: 0.75"

Cased Interval: 3.5' - 0.0' | Type: Poly Tubing | Diameter: 0.75"

Sand Pack Interval: 6.0' - 2.0' | Type: Glass Beads | Wellhead Prot: 6" Roadbox

Bentonite Seal Interval: 2.0' - 1.0' | Type: Benseal Granular | Grouted Interval: N.A.

LaBella Powered by partnership

KEY:

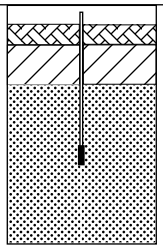
Bentonite | Native Soil | Screen

Glass Beads | Concrete | pvc Riser | Grip Cap

GPS Coordinates:

Northing: 41.9111588

Easting: -73.9761202

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				ASPHALT SURFACE 3", MODIFIED GRAVEL 5"
0		SS-1 0.0' - 5.0' REC: 2.7' NO ODOR NO VISUAL	0.0	0.7' - 3.0' LOOSE, LIGHT BROWN, POORLY GRADED MEDIUM SAND, DAMP, NON COHESIVE, OXIDIZED, LEACHED
2				
4			0.0	3.0' - 4.5' MEDIUM DENSE, BROWN, POORLY GRADED MEDIUM & FINE SAND, DAMP, NON COHESIVE, OXIDIZED, LEACHED
6		SS-2 5.0'-10.0' REC: 3.6' NO ODOR NO VISUAL	0.0	4.5' - 11.0' DENSE, BROWN, POORLY GRADED FINE SAND W/ CLAY, WET, COHESIVE, OXIDIZED, UNLEACHED
8				7.5' BOREHOLE COLLAPSED
10			0.0	
12		SS-3 10.0'-15.0' REC: 3.5' NO ODOR NO VISUAL	0.0	11.0' - 12.5' MEDIUM, BROWN, LEAN CLAY W/ FINE SAND, DAMP, MEDIUM PLASTICITY, OXIDIZED, UNLEACHED
14			0.0	12.5' - 15.0' MEDIUM, GRAY, LEAN CLAY W/ FINE SAND, DAMP, HIGH PLASTICITY, REDUCED, UNLEACHED
16				15.0' END OF EXPLORATION
18				
20				
22				
24				
26				

WELL / BORING NO. SB-7 / MW-5

Site Name: Community Manufacturing | Date Drilled: Probed: 08/30/23 1438-1506 Drilled: 09/05/23 1125-1200

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: HSA (Dia): 8" O.D. | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 10.0' (Dia): 8" O.D. | Sampled TD: 15.0' (Dia): 2.0"

Well TD: 10.0' (Dia): 2" I.D. | Well Type: Monitoring Well

Screen Interval: 10.0' - 5.0' | Slot Size: 0.010 Slot | Diameter: 2" I.D.

Cased Interval: 5.0' - 0.0' | Type: Schedule 80 PVC | Diameter: 2" I.D.

Sand Pack Interval: 10.0' - 3.0' | Type: Grade 4095 | Wellhead Prot: 8" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Chips | Grouted Interval: N.A.

LaBella
Powered by partnership

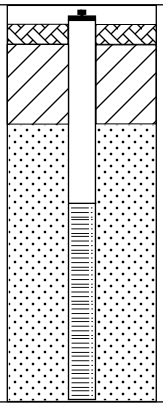
KEY:

Bentonite | Native Soil | Screen | pvc Riser | 0 Sand | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9110286

Easting: -73.9765018

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				ASPHALT SURFACE 3", MODIFIED GRAVEL 9"
0		SS-1 0.0'-5.0' REC: 3.2' NO ODOR NO VISUAL	0.0	1.0' - 4.0' MEDIUM DENSE, BROWN, POORLY GRADED FINE SAND W/ CLAY, DAMP, COHESIVE, OXIDIZED, UNLEACHED
2				
4			0.0	4.0' - 4.5' LOOSE, DARK BROWN, POORLY GRADED MEDIUM SAND, MOIST, NON COHESIVE, OXIDIZED, UNLEACHED
6		SS-2 5.0'-10.0' REC: 3.7' NO ODOR NO VISUAL	0.0	4.5' - 10.0' LOOSE, DARK GRAY, POORLY GRADED MEDIUM SAND, WET AT 6.0', NON COHESIVE, REDUCED, UNLEACHED, TRACE CLAY
8			0.0	
10		SS-3 10.0'-15.0' REC: 3.5' NO ODOR NO VISUAL	0.0	10.0' - 15.0' VERY STIFF, BROWN, GRAY & ORANGE MOTTLED, LEAN CLAY, DAMP, HIGH PLASTICITY, OXIDIZED, UNLEACHED
12				
14			0.0	15.0' END OF EXPLORATION
16				
18				
20				
22				
24				
26				

WELL / BORING NO. SB-8

Site Name: Community Manufacturing

Date Drilled: Probed: 08/30/23 1438-1506

Location: 115 Broadway, Port Ewen, NY

Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing

Driller: Mike Deyette

Phone No.:

Logged by: C. Herman

Drilling Method: (Dia):

Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: (Dia):

Sampled TD: 15.0' (Dia): 2.0"

Well TD: (Dia):

Well Type: Soil Boring

Screen Interval: Slot Size: Diameter:

Cased Interval: Type: Diameter:

Sand Pack Interval: Type: Wellhead Prot:

Bentonite Seal Interval: Type: Grouted Interval:

LaBella
Powered by partnership

KEY:

Bentonite | Native Soil | Screen | pvc Riser

0 Sand | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.910899

Easting: -73.9765770

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				GRASS SURFACE, WET CONDITIONS
0		SS-1 0.0'-5.0' REC: 2.4' NO ODOR NO VISUAL	0.0	0.0' - 7.0' MEDIUM DENSE, BROWN, POORLY GRADED MEDIUM SAND, WET (RAIN), NON COHESIVE, OXIDIZED, UNLEACHED
2				
4			0.0	
6		SS-2 5.0'-10.0' REC: 2.9' NO ODOR NO VISUAL	0.0	
8			2.6	7.0' - 14.0' MEDIUM DENSE, DARK GRAY, POORLY GRADED MEDIUM SAND, WET, COHESIVE, REDUCED, UNLEACHED, TRACE CLAY
10				8.0' COLOR CHANGE TO GRAY, LEACHED
12		SS-3 10.0'-15.0' REC: 5.0' NO ODOR NO VISUAL	0.0	13.0' COLOR CHNAGE TO BROWN, OXIDIZED, UNLEACHED
14			0.0	14.0' - 15.0' STIFF, BROWN, LEAN CLAY, DAMP, MEDIUM PLASTICITY, OXIDIZED, UNLEACHED
16				15.0' END OF EXPLORATION
18				
20				
22				
24				
26				

WELL / BORING NO. SB-9 / SV-5

Site Name: Community Manufacturing | Date Drilled: Probed: 08/30/23 1045-1130 | Drilled: 08/31/23 1445-1455

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: Macro Core (Dia): 2.0" | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 6.0' (Dia): 2.0" | Sampled TD: 20.0' (Dia): 2.0"

Well TD: 4.0' (Dia): 0.75" | Well Type: Soil Vapor Point

Screen Interval: 4.0' - 3.5' | Slot Size: | Diameter: 0.75"

Cased Interval: 3.5' - 0.0' | Type: Poly Tubing | Diameter: 0.75"

Sand Pack Interval: 6.0' - 2.0' | Type: Glass Beads | Wellhead Prot: 6" Roadbox

Bentonite Seal Interval: 2.0' - 1.0' | Type: Benseal Granular | Grouted Interval: N.A.

LaBella Powered by partnership

KEY:

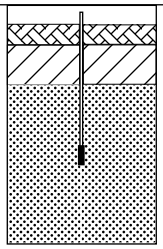
Bentonite | Native Soil | Screen

Glass Beads | Concrete | pvc Riser | Grip Cap

GPS Coordinates:

Northing: 41.9108155

Easting: -73.9766587

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				GRASS SURFACE, WET CONDITIONS
0		SS-1 0.0' - 5.0' REC: 3.5' NO ODOR NO VISUAL	0.0	0.0' - 4.0' MEDIUM DENSE, BROWN, POORLY GRADED FINE SAND W/ CLAY, MOIST, COHESIVE, OXIDIZED, UNLEACHED
2				
4			0.0	4.0' - 5.0' LOOSE, DARK BROWN, POORLY GRADED MEDIUM SAND, WET, NON COHESIVE, OXIDIZED, UNLEACHED
6		SS-2 5.0'-10.0' REC: 3.5' NO ODOR NO VISUAL	0.0	5.0' - 12.5' LOOSE, DARK GRAY, POORLY GRADED MEDIUM SAND, SATURATED, COHESIVE, REDUCED, UNLEACHED, TRACE CLAY
8			0.0	
10		SS-3 10.0'-15.0' REC: 4.1' NO ODOR NO VISUAL	0.0	
12				
14			0.0	12.5' - 13.5' STIFF, GRAY, LEAN CLAY, DAMP, HIGH PLASTICITY, REDUCED, LEACHED
				13.5' - 14.5' LOOSE, GRAY, POORLY GRADED MEDIUM SAND W/ CLAY, WET, COHESIVE, REDUCED, UNLEACHED
16		SS-4 15.0'-20.0' REC: 5.0' NO ODOR NO VISUAL	0.0	14.5' - 15.0' LOOSE, GRAY, SUB ANGULAR GRAVEL W/ SAND, WET, NON COHESIVE, REDUCED, UNLEACHED
18			0.0	
20				15.0' - 20.0' VERY STIFF, BROWN, GRAY & ORANGE MOTTLED, LEAN CLAY, DAMP, HIGH PLASTICITY, OXIDIZED, UNLEACHED
22				20.0' END OF EXPLORATION
24				
26				

WELL / BORING NO. SB-10

Site Name: Community Manufacturing Date Drilled: Probed: 08/30/23 1150-1220

Location: 115 Broadway, Port Ewen, NY Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing Driller: Mike Deyette

Phone No.: Logged by: C. Herman

Drilling Method: (Dia): Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: (Dia): Sampled TD: 15.0' (Dia): 2.0"

Well TD: (Dia): Well Type: Soil Boring

Screen Interval: Slot Size: Diameter:

Cased Interval: Type: Diameter:

Sand Pack Interval: Type: Wellhead Prot:

Bentonite Seal Interval: Type: Grouted Interval:

LaBella
Powered by partnership

KEY:

Bentonite | Native Soil | Screen
0 Sand | Concrete | pvc Riser | Grip Cap

GPS Coordinates:

Northing: 41.910815
Easting: -73.976762

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				GRASS SURFACE, WET CONDITIONS
0		SS-1 0.0'-5.0' REC: 2.7' NO ODOR NO VISUAL	0.0	0.0' - 1.5' MEDIUM DENSE, DARK BROWN, POORLY GRADED FINE SAND & CLAY, DAMP TO MOIST, COHESIVE, OXIDIZED, UNLEACHED, TRACE MEDIUM SAND
2				1.5' - 12.0' MEDIUM DENSE, GRAY BROWN, POORLY GRADED FINE SAND, DAMP, COHESIVE, REDUCED, UNLEACHED, TRACE CLAY
4			0.0	
6		SS-2 5.0'-10.0' REC: 2.4' NO ODOR NO VISUAL	0.0	6.5' COLOR CHANGE TO DARK GRAY, WET
8				
10			0.0	
12		SS-3 10.0'-15.0' REC: 3.9' NO ODOR NO VISUAL	0.0	12.0' - 15.0' STIFF, DARK BROWN, LEAN CLAY, DAMP, HIGH PLASTICITY, OXIDIZED, UNLEACHED
14			0.0	
16				15.0' END OF EXPLORATION
18				
20				
22				
24				
26				

WELL / BORING NO. SB-11 / MW-6

Site Name: Community Manufacturing | Date Drilled: Probed: 08/28/23 1400-1500 | Drilled: 09/01/23 0820-0920

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: HSA (Dia): 8" O.D. | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 15.0' (Dia): 8" O.D. | Sampled TD: 20.0' (Dia): 2.0"

Well TD: 15.0' (Dia): 2" I.D. | Well Type: Monitoring Well

Screen Interval: 15.0' - 4.0' | Slot Size: 0.010 Slot | Diameter: 2" I.D.

Cased Interval: 4.0' - 0.0' | Type: Schedule 80 PVC | Diameter: 2" I.D.

Sand Pack Interval: 15.0' - 3.0' | Type: Grade 4095 | Wellhead Prot: 8" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Chips | Grouted Interval: N.A.

LaBella
Powered by partnership

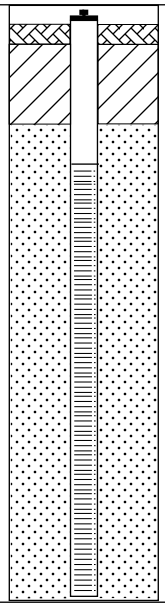
KEY:

Bentonite | Native Soil | Screen | pvc Riser | 0 Sand | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9111479

Easting: -73.9769098



Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				GRASS SURFACE, DAMP CONDITIONS
0		Soft Dug 0.0' - 5.0' NO ODOR NO VISUAL	0.0	0.0' - 5.0' SOFT, BROWN, POORLY GRADED FINE SAND, DAMP, NON COHESIVE, OXIDIZED, UNLEACHED, TRACE COARSE SAND & SMALL SUB ANGULAR GRAVEL
2				
4			5.6	
6		SS-1 5.0'-10.0' REC: 4.4' NO ODOR NO VISUAL	37.4	5.0' - 10.0' SOFT, BROWN & GRAY MOTTLED, POORLY GRADED FINE SAND, DAMP TO MOIST, COHESIVE, REDUCED, UNLEACHED, TRACE COARSE SAND & CLAY
8			16.0	CHANGE TO OXIDIZED, LEACHED AT 7.5'
10		SS-2 10.0'-15.0' REC: 4.4' NO ODOR NO VISUAL	1.0	10.0' - 11.5' SOFT, BROWN, POORLY GRADED MEDIUM SAND, WET, NON COHESIVE, REDUCED, LEACHED
12				11.5' - 14.5' SOFT, BROWN & GRAY MOTTLED, POORLY GRADED FINE SAND, WET, COHESIVE, REDUCED, UNLEACHED, TRACE COARSE SAND & CLAY
14			0.0	
16		SS-3 15.0'-20.0' REC: 4.4' NO ODOR NO VISUAL	0.0	14.5' - 20.0' MEDIUM, DARK GRAY, LEAN CLAY, MEDIUM PLACTICITY, MOIST, REDUCED, UNLEACHED, TRACE FINE SAND
18			0.0	17.5' CHANGE TO HIGH PLASTICITY
20				20.0' END OF EXPLORATION
22				
24				
26				

WELL / BORING NO. SB-12

Site Name: Community Manufacturing | Date Drilled: Probed: 08/31/23 0752-0830

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: (Dia): | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: (Dia): | Sampled TD: 20.0' (Dia): 2.0"

Well TD: (Dia): | Well Type: Soil Boring

Screen Interval: Slot Size: Diameter:

Cased Interval: Type: Diameter:

Sand Pack Interval: Type: Wellhead Prot:

Bentonite Seal Interval: Type: Grouted Interval:

LaBella
Powered by partnership

KEY:

Bentonite | Native Soil | Screen | pvc Riser | 0 Sand | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.910977

Easting: -73.976702

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
0				ASPHALT SURFACE 3", MODIFIED GRAVEL TO 1.5'
2		SS-1 0.0'-5.0' REC: 3.7' NO ODOR NO VISUAL	3.4	1.5' - 3.5' DENSE, DARK BROWN, POORLY GRADED FINE SAND & CLAY, DAMP COHESIVE, OXIDIZED, UNLEACHED
4			2.0	3.5' - 13.0' MEDIUM DENSE, DARK GRAY, POORLY GRADED MEDIUM SAND, DAMP, COHESIVE, REDUCED, UNLEACHED, TRACE CLAY
6		SS-2 5.0'-10.0' REC: 2.8' NO ODOR NO VISUAL	0.0	4.0' COLOR CHANGE TO GRAY, REDUCED, LEACHED
8			0.0	7.0' WET
10		SS-3 10.0'-15.0' REC: 5.0' NO ODOR NO VISUAL	0.0	10.0' SATURATED
12				
14			0.0	13.0' - 14.0' DENSE, GRAY W/ BROWN MOTTLING, POORLY GRADED MEDIUM SAND W/ CLAY, WET, COHESIVE, REDUCED, UNLEACHED
16		SS-4 15.0'-20.0' REC: 4.0' NO ODOR NO VISUAL	0.0	14.0' - 18.0' VERY STIFF, BROWN W/ GRAY & ORANGE MOTTLING, LEAN CLAY, DAMP HIGH PLASTICTY, OXIDIZED, UNLEACHED
18			0.0	18.0' - 19.0' LOOSE, BROWN, POORLY GRADED MEDIUM SAND W/ CLAY, WET, COHESIVE OXIDIZED, UNLEACHED
20				19.0' - 20.0' STIFF, BROWN, LEAN CLAY, DAMP, HIGH PLASTICTY, OXIDIZED, UNLEACHED
22				20.0' END OF EXPLORATION
24				
26				

WELL / BORING NO. SB-13 / MW-4

Site Name: Community Manufacturing | Date Drilled: Probed: 08/31/23 0955-1030 Drilled: 09/05/23 1255-1325

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: HSA (Dia): 8" O.D. | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 10.0' (Dia): 8" O.D. | Sampled TD: 17.0' (Dia): 2.0"

Well TD: 10.0' (Dia): 2" I.D. | Well Type: Monitoring Well

Screen Interval: 10.0' - 5.0' | Slot Size: 0.010 Slot | Diameter: 2" I.D.

Cased Interval: 5.0' - 0.0' | Type: Schedule 80 PVC | Diameter: 2" I.D.

Sand Pack Interval: 10.0' - 3.0' | Type: Grade 4095 | Wellhead Prot: 8" Roadbox

Bentonite Seal Interval: 3.0' - 1.0' | Type: Benseal Chips | Grouted Interval: N.A.

LaBella
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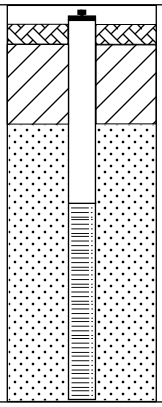
KEY:

Bentonite | Native Soil | Screen | pvc Riser | 0 Sand | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9109415

Easting: -73.9761695

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				GRASS SURFACE, DAMP CONDITIONS
0		Soft Dug 0.0' - 5.0' NO ODOR NO VISUAL	0.0	0.0' - 6.5' MEDIUM DENSE, BROWN, POORLY GRADED MEDIUM SAND, DAMP, NON COHESIVE, OXIDIZED, UNLEACHED, TRACE SUB ANGULAR GRAVEL
2				
4			0.0	
6		SS-1 5.0'-10.0' REC: 5.0' NO ODOR NO VISUAL	0.0	6.5' - 11.0' VERY STIFF, BROWN, LEAN CLAY, DAMP, HIGH PLASTICITY, OXIDIZED, UNLEACHED
8				8.5' 4" BAND OF MED SAND, WET
10			0.0	
12		SS-2 10.0'-15.0' REC: 4.5' NO ODOR NO VISUAL	0.0	11.0' - 14.0' VERY STIFF, BROWN, LEAN CLAY W/ SUB ANGULAR GRAVEL, DAMP, LOW PLASTICITY, OXIDIZED, LEACHED
14			0.0	14.0' - 17.0' DENSE, DARK BROWN, SUB ANGULAR GRAVEL W/ COARSE SAND, DAMP, NON COHESIVE, OXIDIZED, UNLEACHED, FEW MEDIUM SAND, TRACE CLAY
16		SS-3 15.0'-17.0' REC: 1.3' NO ODOR NO VISUAL	0.0	17.0' EQUIPMENT REFUSAL
18				
20				
22				
24				
26				

WELL / BORING NO. SB-14 / SV-4

Site Name: Community Manufacturing | Date Drilled: Probed: 08/30/23 1045-1130 Drilled: 08/31/23 1445-1455

Location: 115 Broadway, Port Ewen, NY | Drilling Co.: LaBella Associates, D.P.C.

Client: Community Manufacturing | Driller: Mike Deyette

Phone No.: | Logged by: C. Herman

Drilling Method: Macro Core (Dia): 2.0" | Sampling Method: Macro Core (Dia): 2.0"

Drilled TD: 6.0' (Dia): 2.0" | Sampled TD: 15.0' (Dia): 2.0"

Well TD: 4.0' (Dia): 0.75" | Well Type: Soil Vapor Point

Screen Interval: 4.0' - 3.5' | Slot Size: | Diameter: 0.75"

Cased Interval: 3.5' - 0.0' | Type: Poly Tubing | Diameter: 0.75"

Sand Pack Interval: 6.0' - 2.0' | Type: Glass Beads | Wellhead Prot: 6" Roadbox

Bentonite Seal Interval: 2.0' - 1.0' | Type: Benseal Granular | Grouted Interval: N.A.

LaBella
Powered by partnership

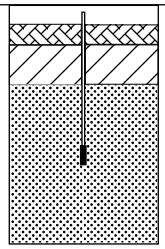
KEY:

Bentonite | Native Soil | Screen | pvc Riser | Glass Beads | Concrete | Grip Cap

GPS Coordinates:

Northing: 41.9111556

Easting: -73.9762785

Depth	Well Construction	Sample: Recovery: Blows	PID (ppm):	Description / Soil Classification
				ASPHALT SURFACE 3', MODIFIED GRAVEL 2"
0		SS-1 0.0' - 5.0' REC: 3.2' NO ODOR NO VISUAL	0.0	0.5' - 6.0' DENSE, BROWN, POORLY GRADED FINE SAND W/ CLAY, DAMP, COHESIVE, OXIDIZED, UNLEACHED, FEW MEDIUM SAND
2				
4			0.0	
6		SS-2 5.0'-10.0' REC: 4.1' NO ODOR NO VISUAL	0.0	6.0' - 7.5' LOOSE, BROWN, POORLY GRADED MEDIUM SAND, WET, NON COHESIVE, REDUCED, UNLEACHED
8			0.0	7.5' - 9.0' MEDIUM DENSE, BROWN, POORLY GRADED FINE SAND W/ CLAY, WET, COHESIVE, OXIDIZED, UNLEACHED
10				
12		SS-3 10.0'-15.0' REC: 3.5' NO ODOR NO VISUAL	0.0	9.0' - 15.0' STIFF, BROWN, LEAN CLAY, MOIST, HIGH PLASTICITY, OXIDIZED, UNLEACHED 10.0' COLOR CHANGE TO DARK GRAY, REDUCED, UNLEACHED
14			0.0	15.0' END OF EXPLORATION
16				
18				
20				
22				
24				
26				

ATTACHMENT C

SUMMARY TABLES

Summary of Compounds Identified in Soil Samples
Community Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Analyte	CAS	SCO*** Unrestricted	SCO*** Restricted Residential	Lab Sample ID	CO88255	CO88256	CO88257	CO88258	CO88259	CO88344	CO88345	CO88245	CO88246
				Collection Date	8/28/2023	8/29/2023	8/29/2023	8/29/2023	8/29/2023	8/29/2023	8/29/2023	8/30/2023	8/30/2023
				Client Id	SB-1	SB-2	SB-3	SB-4	SB-5	TB LL	TB HL	SB-6	SB-8 (1)
				Depth Range:	(13.5 - 14.5)	(18.5 - 19.5)	(21.5 - 22.5)	(17.5 - 18)	(14.5 - 15.5)			(10 - 11)	(3.5 - 4.5)
					Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals, Total													
Arsenic	7440-38-2	13	16		3.4	2.5	6.0	2.4	4.9	NA	NA	3.2	3.4
Barium	7440-39-3	350	400		35	17	45	30	199	NA	NA	50	42
Cadmium	7440-43-9	2.5	4.3		0.7	0.6	0.7	0.7	1.6	NA	NA	0.7	0.7
Chromium	7440-47-3	30	180		10	7.9	9.7	11	27	NA	NA	10	9.8
Lead	7439-92-1	63	400		8.6	6.7	11	10	16	NA	NA	9.4	15
Mercury	7439-97-6	0.18	0.81		-	-	-	-	-	NA	NA	-	-
Volatiles By SW8260D													
1,1-Dichloroethene	75-35-4	0.33	26		-	-	-	-	-	-	-	-	-
Acetone*	67-64-1	0.05	100		-	-	-	0.01	-	0.01	-	-	0.005
Carbon Disulfide	75-15-0	NA	100^		-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100		-	0.01	0.01	0.001	-	-	-	-	-
m&p-Xylene	179601-23-1	0.26	100		-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	78-93-3	0.12	100		-	-	-	-	-	-	-	-	-
Methylene chloride	75-09-2	0.05	100		-	-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	1.30	19		-	0.005	0.28	0.01	-	-	-	0.44	0.03
Tetrahydrofuran (THF)*	109-99-9	NA	NA		0.01	0.01	0.01	0.01	-	0.01	-	0.01	0.005
Toluene	108-88-3	0.70	100		-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100		-	-	-	-	-	-	-	-	-
Trichloroethene	79-01-6	0.47	21		-	0.01	0.02	0.004	-	-	-	0.001	-
Vinyl chloride	75-01-4	0.02	0.9		-	-	-	-	-	-	-	-	-
				Total VOCs:**	-	0.023	0.313	0.011	-	-	-	0.441	0.032
Semivolatiles By SW8270D					-	-	-	-	-	-	-	-	-

Notes:
All concentrations presented in milligrams per kilogram (mg/Kg)
CAS = Chemical Abstract Service compound identifier
* Compound detected in an associated blank at a similar concentration
** Total VOC concentration excludes Acetone & Tetrahydrofuran which were bot identified in an associated blanks at similar concentrations -
SCO = Soil Cleanup Objectives as defined by 6NYCRR Part 375-6.8(a) for unrestricted use and 6NYCRR Part 375-6.8(b) for Restricted Residential Use
NA = Soil Cleanup Objective not available or blank sample not analyzed for metals

Analyte	CAS	SCO*** Unrestricted	SCO*** Restricted Residential	Lab Sample ID	CO88247	CO88248	CO88249	CO88250	CO88251	CO88252	CO88253	CO88254	CO88341
				Collection Date	8/30/2023	8/30/2023	8/30/2023	8/30/2023	8/30/2023	8/30/2023	8/30/2023	8/30/2023	8/30/2023
				Client Id	SB-8 (2)	SB-8 (3)	SB-9 (1)	SB-9 (2)	SB-9 (3)	SB-10 (1)	SB-10 (2)	SB-10 (3)	TRIP BLANK LL
				Depth Range:	(7.5 - 8.5)	(13 - 14)	(3.0 - 4.0)	(8.5 - 9.5)	(11.5 - 12.5)	(4.0 - 5.0)	(9.0 - 10)	(11 - 12)	
					Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals, Total													
Arsenic	7440-38-2	13	16		2.4	3.9	2.8	3.9	3.2	4.3	3.5	3.1	NA
Barium	7440-39-3	350	400		23	30	55	35	80	58	42	55	NA
Cadmium	7440-43-9	2.5	4.3		0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.7	NA
Chromium	7440-47-3	30	180		7.5	10	11	10	12	10	11	12	NA
Lead	7439-92-1	63	400		7.0	9.7	9.0	9.3	11	25	9.6	13	NA
Mercury	7439-97-6	0.18	0.81		-	-	-	-	-	0.02	-	-	NA
Volatiles By SW8260D													
1,1-Dichloroethene	75-35-4	0.33	26		0.003	-	-	-	-	-	-	-	-
Acetone*	67-64-1	0.05	100		0.05	0.04	0.02	0.04	0.06	0.003	0.05	0.04	0.02
Carbon Disulfide	75-15-0	NA	100^		-	-	-	-	-	-	0.002	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100		**0.32**	0.002	0.01	0.01	-	0.004	0.001	-	-
m&p-Xylene	179601-23-1	0.26	100		0.001	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	78-93-3	0.12	100		0.005	-	-	-	0.01	0.01	0.02	0.01	-
Methylene chloride	75-09-2	0.05	100		-	-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	1.30	19		0.03	0.01	0.01	-	-	-	-	-	-
Tetrahydrofuran (THF)*	109-99-9	NA	NA		0.004	0.01	0.01	0.01	0.01	0.005	0.01	0.01	0.01
Toluene	108-88-3	0.70	100		-	-	-	-	-	-	0.001	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100		0.005	-	-	-	-	-	-	-	-
Trichloroethene	79-01-6	0.47	21		0.05	0.01	0.01	-	-	0.001	-	-	-
Vinyl chloride	75-01-4	0.02	0.9		**0.04**	0.001	-	-	0.002	-	-	-	-
				Total VOCs:**	0.456	0.019	0.023	0.007	0.015	0.012	0.019	0.011	-
Semivolatiles By SW8270D					-	-	-	-	-	-	-	-	-

Notes:
All concentrations presented in milligrams per kilogram (mg/Kg)
CAS = Chemical Abstract Service compound identifier
* Compound detected in an associated blank at a similar concentration
** Total VOC concentration excludes Acetone & Tetrahydrofuran which were bot identified in an associated blanks at similar concentrations
SCO = Soil Cleanup Objectives as defined by 6NYCRR Part 375-6.8(a) for unrestricted use and 6NYCRR Part 375-6.8(b) for Restricted Residential Use
NA = Soil Cleanup Objective not available or blank sample not analyzed for metals

Summary of Compounds Identified in Soil Samples
Community Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Analyte	CAS	SCO*** Unrestricted	SCO*** Restricted Residential	Lab Sample ID	CO88342	CO88787	CO88788	CO88789	CO88790	CO88791	CO88792	CO88793	CO88794
				Collection Date	8/30/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023
				Client Id	TRIP BLANK HL	SB-12 (1)	SB-12 (2)	SB-12 (3)	SB-13 (1)	SB-13 (2)	SB-13 (3)	SB-13 (4)	SB-14 (1)
				Depth Range:		(3.5 - 4.5)	(6.5 - 7.5)	(13 - 14)	(4.0 - 5.0)	(6.0 - 6.5)	(8.5 - 9.5)	(16 - 17)	(4.0 - 5.0)
					Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals, Total													
Arsenic	7440-38-2	13	16		NA	7.4	3.1	4.0	5.5	7.0	7.5	7.1	4.9
Barium	7440-39-3	350	400		NA	71	40	46	40	47	96	101	87
Cadmium	7440-43-9	2.5	4.3		NA	1.0	0.8	1.2	1.0	1.2	1.6	1.5	1.5
Chromium	7440-47-3	30	180		NA	11	8.6	14	11	13	20	20	20
Lead	7439-92-1	63	400		NA	28	17	10	18	13	19	15	14
Mercury	7439-97-6	0.18	0.81		NA	-	-	-	-	-	-	-	-
Volatiles By SW8260D													
1,1-Dichloroethene	75-35-4	0.33	26		-	-	-	-	-	-	-	-	-
Acetone*	67-64-1	0.05	100		-	-	0.05	-	-	-	-	-	-
Carbon Disulfide	75-15-0	NA	100*		-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100		-	0.004	-	-	-	-	-	0.01	-
m&p-Xylene	179601-23-1	0.26	100		-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	78-93-3	0.12	100		-	-	-	-	-	-	-	-	-
Methylene chloride	75-09-2	0.05	100		-	-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	1.30	19		-	0.68	-	-	-	-	-	**3.70**	-
Tetrahydrofuran (THF)*	109-99-9	NA	NA		-	-	-	-	-	-	-	-	-
Toluene	108-88-3	0.70	100		-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100		-	-	-	-	-	-	-	-	-
Trichloroethene	79-01-6	0.47	21		-	0.04	-	-	-	-	-	**1.10**	-
Vinyl chloride	75-01-4	0.02	0.9		-	-	-	-	-	-	-	-	-
				Total VOCs:**	-	0.726	-	-	-	-	-	4.811	-
Semivolatiles By SW8270D					-	-	-	-	-	-	-	-	-

Notes:
All concentrations presented in milligrams per kilogram (mg/Kg)
CAS = Chemical Abstract Service compound identifier
* Compound detected in an associated blank at a similar concentration
** Total VOC concentration excludes Acetone & Tetrahydrofuran which were bot identified in an associated blanks at similar concentrations
SCO = Soil Cleanup Objectives as defined by 6NYCRR Part 375-6.8(a) for unrestricted use and 6NYCRR Part 375-6.8(b) for Restricted Residential Use
NA = Soil Cleanup Objective not available or blank sample not analyzed for metals

Analyte	CAS	SCO*** Unrestricted	SCO*** Restricted Residential	Lab Sample ID	CO88795	CO88796	CO88798	CO88799	CO88800	CO88801	CO88802	CO88803	CO89255
				Collection Date	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/31/2023	8/30/2023
				Client Id	SB-14 (2)	SB-14 (3)	SB-7 (1)	SB-7 (2)	SB-7 (3)	SB-11 (1)	SB-11 (2)	SB-11 (3)	TB LL
				Depth Range:	(6.0 - 7.0)	(8.0 - 9.0)	(4.0 - 5.0)	(6.0 - 7.0)	(9.0 - 10)	(4.0 - 5.0)	(7.0 - 8.0)	(14 - 15)	
					Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals, Total													
Arsenic	7440-38-2	13	16		5.2	3.6	2.7	3.9	2.7	7.6	4.8	3.1	NA
Barium	7440-39-3	350	400		61	48	32	40	41	40	43	81	NA
Cadmium	7440-43-9	2.5	4.3		1.2	1.1	0.9	-	-	-	-	-	NA
Chromium	7440-47-3	30	180		15	12	9.2	8.9	9.8	11	11	13	NA
Lead	7439-92-1	63	400		13	11	8.6	20	8.6	11	10	5.7	NA
Mercury	7439-97-6	0.18	0.81		-	-	-	-	-	-	-	-	NA
Volatiles By SW8260D													
1,1-Dichloroethene	75-35-4	0.33	26		-	-	-	-	-	-	-	-	-
Acetone*	67-64-1	0.05	100		0.03	-	-	0.06	-	0.04	-	0.03	-
Carbon Disulfide	75-15-0	NA	100*		-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100		-	-	-	-	-	**1.30**	**1.40**	-	-
m&p-Xylene	179601-23-1	0.26	100		-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	78-93-3	0.12	100		-	-	-	-	-	-	-	-	-
Methylene chloride	75-09-2	0.05	100		0.02	-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	1.30	19		-	0.01	-	-	-	0.12	**17**	-	-
Tetrahydrofuran (THF)*	109-99-9	NA	NA		-	-	-	-	-	-	-	-	-
Toluene	108-88-3	0.70	100		-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100		-	-	-	-	-	0.03	-	-	-
Trichloroethene	79-01-6	0.47	21		-	-	-	-	-	**1.80**	**14**	-	-
Vinyl chloride	75-01-4	0.02	0.9		-	-	-	-	-	-	-	-	-
				Total VOCs:**	0.023	0.007	-	-	-	3.249	32.4	-	-
Semivolatiles By SW8270D					-	-	-	-	-	-	-	-	-

Notes:
All concentrations presented in milligrams per kilogram (mg/Kg)
CAS = Chemical Abstract Service compound identifier
* Compound detected in an associated blank at a similar concentration
** Total VOC concentration excludes Acetone & Tetrahydrofuran which were bot identified in an associated blanks at similar concentrations
SCO = Soil Cleanup Objectives as defined by 6NYCRR Part 375-6.8(a) for unrestricted use and 6NYCRR Part 375-6.8(b) for Restricted Residential Use
NA = Soil Cleanup Objective not available or blank sample not analyzed for metals

Summary of Compounds Identified in Groundwater Samples
Community Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Analyte	CAS	Units	Class GA GW Standard	Lab Sample Id	CP39258	CP39259	CP39260	CP39261	CP39262	CP39263	CP39264	CP39331
				Collection Date	10/30/2023	10/30/2023	10/30/2023	10/30/2023	10/30/2023	10/30/2023	10/30/2023	10/30/2023
				Client Id	MW-2	MW-3	MW-4	MW-1	MW-5	MW-6	BLIND DUP	TB
				Matrix	GW	GW	GW	GW	GW	GW	GW	GW
					Result	Result	Result	Result	Result	Result	Result	Result
Metals, Total												
Arsenic	7440-38-2	mg/L	0.025		-	-	-	-	0.009	-	-	NA
Barium	7440-39-3	mg/L	1.000		0.024	0.041	0.027	0.019	0.014	0.097	0.024	NA
Chromium	7440-47-3	mg/L	0.050		0.01	0.011	0.009	0.008	-	0.009	0.008	NA
Volatiles By SW8260D												
1,1-Dichloroethene	75-35-4	ug/L	5.0		-	-	-	-	-	**6.0**	-	-
Acetone	67-64-1	ug/L	50		-	-	-	-	-	-	-	-
Carbon Disulfide	75-15-0	ug/L	NA		-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	ug/L	5.0		**89**	-	1.0	-	4.5	**520**	**87**	-
m&p-Xylene	179601-23-1	ug/L	5.0		-	-	-	-	-	-	-	-
Methyl ethyl ketone	78-93-3	ug/L	50 (GV)		-	-	-	-	-	-	-	-
Methylene chloride	75-09-2	ug/L	5.0		-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	ug/L	5.0		**310**	**29**	1.6	-	**5.5**	**300**	**300**	-
Tetrahydrofuran (THF)	109-99-9	ug/L	50 (GV)		-	-	-	-	-	-	-	-
Toluene	108-88-3	ug/L	5.0		-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	ug/L	5.0		-	-	-	-	-	**15**	-	-
Trichloroethene	79-01-6	ug/L	5.0		**67**	-	-	-	1.6	**1,000**	**68**	-
Vinyl chloride	75-01-4	ug/L	2.0		-	-	-	-	1.2	**60**	-	-
			Total VOCs:		466	29	2.6		13	1,901	455	
Semivolatiles (SIM) By SW8270D (SIM)												
Benz(a)anthracene	56-55-3	ug/L	0.002		**0.13**	**0.11**	**0.13**	**0.12**	**0.16**	**0.12**	**0.10**	NA
Benzo(a)pyrene	50-32-8	ug/L	ND		**0.09**	**0.09**	**0.10**	**0.09**	**0.10**	**0.08**	**0.08**	NA
Benzo(b)fluoranthene	205-99-2	ug/L	0.002		**0.26**	**0.25**	**0.28**	**0.25**	**0.30**	**0.25**	**0.24**	NA
Benzo(k)fluoranthene	207-08-9	ug/L	0.002		**0.19**	**0.18**	**0.19**	**0.18**	**0.21**	**0.17**	**0.16**	NA
Chrysene	218-01-9	ug/L	0.002		**0.12**	**0.12**	**0.13**	**0.11**	**0.15**	**0.11**	**0.10**	NA
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	0.002		**0.19**	**0.19**	**0.20**	**0.20**	**0.20**	**0.19**	**0.19**	NA
PFAS (40) by Draft 1633 By EPA 1633 Draft 3												
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/L	NS		NA	NA	NA	NA	0.656	NA	NA	NA
Perfluoro-n-butanoic acid (PFBA)	375-22-4	ng/L	NS		NA	NA	NA	NA	0.967	NA	NA	NA
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	ng/L	10		NA	NA	NA	NA	2.73	NA	NA	NA
Perfluorooctanoic acid (PFOA)	335-67-1	ng/L	10		NA	NA	NA	NA	0.851	NA	NA	NA

Notes:
Concentrations in units indicated
Concentrations in **bold** indicate an exceedance of the Class GA groundwater standard or guidance value (GV)
Groundwater standards/guidance values per NYSDEC Technical and Operational Guidance Series (TOGS) Memorandum 1.1.1 (October, 1993 as ammended)
VOCs listed herin were also identified in at least one (1) soil sample.
NA - this analyte not analyzed in blank sample
NS = No standard established for this compound

Summary of Compounds Identified in Soil Vapor Samples
Community Manyufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Analyte	Lab Sample Id	CP39267	CP39268	CP39269
	Collection Date	10/30/2023	10/30/2023	10/30/2023
	Client Id	OPEN AIR	SV-4	SV-2
	Matrix	Air	Air	Air
Volatiles (TO15) By TO15	CAS	Result	Result	Result
1,1,1-Trichloroethane	71-55-6	-	2.16	-
1,2,4-Trimethylbenzene	95-63-6	-	1.12	1.29
4-Ethyltoluene	622-96-8	-	-	1.11
4-Methyl-2-pentanone(MIBK)	108-10-1	-	-	1.01
Acetone	67-64-1	9.21	32.3	38.5
Benzene	71-43-2	-	-	1.71
Carbon Tetrachloride	56-23-5	0.45	0.26	0.38
Chloroform	67-66-3	-	-	1.91
Chloromethane	74-87-3	1.21	-	-
Cis-1,2-Dichloroethene	156-59-2	-	-	1.92
Dichlorodifluoromethane	75-71-8	2.34	2.11	1.91
Ethanol	64-17-5	12.3	12.4	72.9
Isopropyl alcohol*	67-63-0	62.6	332	631
m,p-Xylene	179601-23-1	-	1.48	2.12
Methyl Ethyl Ketone	78-93-3	-	2.14	4.54
Propylene	115-07-1	-	-	1.1
Tetrachloroethene	127-18-4	0.51	96.9	42.2
Trichloroethene	79-01-6	-	0.28	23.3
Trichlorofluoromethane	75-69-4	1.16	1.01	1.35

Notes:

Concentrations in micrograms per cubic meter (ug/m^3)

"OPEN AIR" sample = Outside Air

CAS = Chemical Abstract Service

- indicates that this compound was not detected in that sample

* isopropyl alchohol was used in lieu of helium to check integrity of soil vapor point.

ATTACHMENT B

HEALTH AND SAFETY PLAN

Health and Safety Plan

Location:

115 Broadway
Hamlet of Port Ewen, Town of Esopus
Ulster County, New York

Prepared for:

Community Manufacturing Solutions, LLC
P.O. Box 903
Rifton, New York 12471

LaBella Project No. 2223878

May 11, 2023

LaBella
Powered by partnership.

5 McCrea Hill Road | Ballston Spa, NY 12020 | p 518-885-5383 | f 518-885-5385

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(continued)

ATTACHMENTS

ATTACHMENT A – Property Map
APPENDIX A – Forms
APPENDIX B – Chemical SDS Sheets

1.0 Introduction

This Project Specific Health and Safety Plan (HASP) is designed to act as the document covering the property characterization conducted by LaBellla Associates, P.C. for Community Manufacturing Solutions (CMS), LLC at 115 Broadway, Port Ewen (Town of Esopus) in Ulster County, New York. At all times, LaBella employees will follow all the requirements of this HASP as identified herein.

The objective of this HASP is to provide a mechanism for establishing safe working conditions at the property. The safety organization, procedures and protective equipment have been established based on an analysis of potential physical, chemical, and biological hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential for accident or injury.

This HASP discusses general safety hazards associated with specific field activities outlined in the scope of work for this project. This plan also specifies minimum safety precautions for various field activities. All subcontractors must review these activities and safety procedures with respect to their own standard safe operating procedures, provided the minimum requirements set forth in this HASP, 29 CFR 1910 and 29 CFR 1926 are met. All subcontractors are responsible for operating in a safe and healthful manner in order to protect their own staff as well as all other personnel concurrently on the property.

1.1 Property Background

The property, located at 115 Broadway in the Hamlet of Port Ewen, is currently owned by CMS, LLC of Kingston, New York. CMS purchased the property from Preservation Ridge, LLC. in May 2022. The property was first developed for commercial use in the 1960s when the current structures on the property were constructed. During that time, various manufacturing businesses (including Dana Manufacturing – a manufacturer of portable stoves and heaters and JC Metal Spinning - believed to have been a machine shop using metal lathes) operated on the property until the early 1980's. In approximately 1983, a microfilm services facility (with on-site film development activities through approximately 2002) began operating on the property. Potential releases of lubricants, solvents, and/or photographic chemicals during these historic commercial operations (during the time between the early 1980's and early 2000's) have been noted as recognized environmental concerns (RECs) in the Phase I ESA.

Additionally, a 550-gallon fuel-oil aboveground storage tank (AST) was removed from the property in February 2022. This 550-gallon AST had replaced a previous 1,000-gallon fuel-oil underground storage tank (UST) that was removed from the northeastern exterior corner of the main building in 2010.

CMS, after their purchase of the property, determined that a previous owner and/or occupant of the property appeared to have failed to disclose that it was likely that paints and other chemicals had once been stored or used in the detached one-story garage building. Apparently, there had been a past release that resulted in impacts to soil and groundwater on the property. Subsequent sampling of soil and groundwater during a subsequent Phase II ESA

on behalf of CMS in 2022 identified PCE, TCE and related degradation by-products in groundwater on the property at concentrations above the ambient water quality standards established by NYSDEC's TOGS 1.1.1 (June, 1998, as amended) and/or the soil cleanup objectives (SCOs) for unrestricted use as defined by 6NYCRR Part 375-6.8(a). PCE (tetrachloroethene) and TCE (trichloroethene) were also identified in indoor air samples at concentrations elevated above background ambient outdoor air concentrations.

LaBella has been contracted by CMS, LLC to perform property characterization activities for the site as detailed in the May XX, 2023 Property Characterization Work Plan. The general scope of work for field activities includes:

- Soil boring advancement and sampling;
- Monitoring Well Installation and development;
- Groundwater sampling;
- Soil vapor sampling;
- Sub-slab depressurization system installation.

A Property Map showing the proposed soil boring, monitoring well and soil vapor sample locations, as well as other site features, is included as Attachment A.

1.2 Potential Chemical Hazards

Based on analytical results of soil and groundwater samples collected during a limited Phase II ESA in 2022, chlorinated solvents, including PCE , TCE and related degradation by-products have been identified in soil, groundwater and indoor air on the property. PCE and TCE are historically common degreasers that have been associated with dry cleaning, wood processing and in metal fabrication. They can also be components of paint, paint remover, spot removers, adhesives, water repellents and wood cleaners. Based on the past use of the property for the manufacture of portable stoves and heaters, as well as a machine shop and film processing facility, LaBella has determined that the following volatile and semi-volatile compounds (VOCs and semi-VOCs) are the compounds of concern (COCs) that should be targeted for the investigations proposed herein:

- VOCs: chlorinated solvents including PCE; TCE; isomers of dichloroethene (cis-1,2-DCE; trans-1,2-DCE), vinyl chloride (VC) and petroleum hydrocarbons;
- Semi-VOCs, and
- Metals

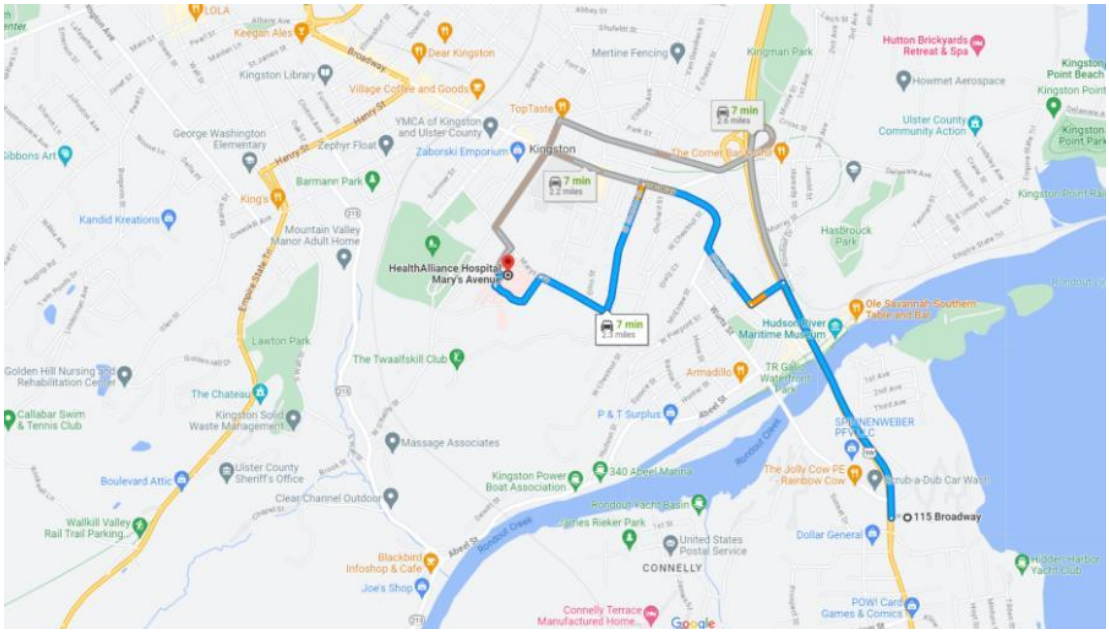
As noted above, these COCs were identified in soil and groundwater samples collected from the property during a limited Phase II ESA in 2022. Other COCs may be identified during the property characterization. This HASP will be amended as appropriate as warranted. Other potential COCs may include: polychlorinated biphenyls (PCBs), pesticides/herbicides, per- and polyfluoroalkyl substances (PFAS).

2.0 Emergency Information

2.1 Emergency Telephone Numbers

Hospital	Health Alliance Hospital 105 Marys Avenue Kingston, NY 12401	(845) 338-2500
Ambulance	Town of Esopus Volunteer Ambulance Squad 1 Cross Street Ulster Park, NY 12487	911 (845) 338-1788
Fire Department	Port Ewen Fire Department 161 Broadway Port Ewen, NY 12466	911 (845) 338-8422
Police Department	Kingston Police Police Dept 1 Garraghan Drive Kingston, NY 12401	911 (845) 331-1671
Gas/Electric	Central Hudson Gas & Electric 284 South Avenue Poughkeepsie, NY 12601	Gas Leak: 911 OR 1-800-942-8274 Elecrical Hazzard: 911
National Response Center (for all emergencies)	United States Coast Guard	800-424-8802
LaBella Associates, D.P.C.		
In case of accident notify:		
Project Manager	Mike Carr	(518) 369-7822
LaBella H&S Officer	Catherine Monian	(845) 546-5279
LaBella Human Resources	Michele Ebenhoch	(585) 454-6110

2.2 Hospital Route



Directions to Hospital:

1. From Site, travel 0.8 miles north on Broadway (US 9W)
2. Turn left onto Garraghan Drive
3. Travel 0.1 miles on Garraghan Drive, turn right onto Broadway
4. Travel 0.6 miles on Broadway, turn left onto Chester Street.
5. Travel 0.4 miles on Chester Street, turn right onto Mary's Avenue.
6. Travel 0.2 miles on Mary's Avenue, turn left onto Webster Street.
7. Travel 0.2 miles on Webster Street, turn right
8. Hospital is on the Right…Follow signs to Emergency Room.

Distance: 2.3 Miles

Estimated Time: 7 Mins

3.0 Responsibilities

3.1 Overview

All personnel will be responsible for continuous adherence to the procedures set forth in the HASP during the performance of property characterization activities. In no case should work be performed that conflicts with the intent-of (or the inherent safety and environmental cautions expressed-in) these procedures. If LaBella (or subcontractor personnel) are found violating HASP procedures, they will be subject to disciplinary action up to and including dismissal.

3.2 Access

Prior to initial property characterization activities the primary and secondary emergency evacuation routes will be posted so all workers on property are aware of the evacuation routes and procedures. Additionally, no worker will be allowed access to the property until all required training has been satisfactorily received. Minimum training requirements are presented in the following section.

3.3 Project Safety and Health Training Requirements

All personnel permitted to access the property shall (at a minimum) receive OSHA 24-hr HAZWOPER training to satisfy the standards set forth in 29CFR 1910.120(e). Personnel who have previously received training for OSHA 40-hr HAZWOPER will supersede the OSHA 24-hr requirement. In addition to holding the proper HAZWOPER certificate, each employee permitted to work on the property will be required to maintain a current 8-hr OSHA refresher certificate. Copies of the appropriate certificates for each employee will be maintained on the property and be available for review.

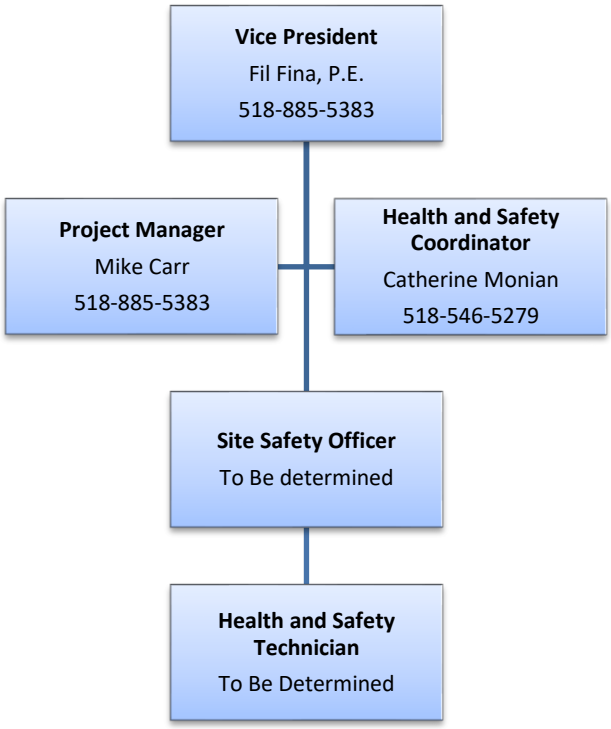
For each new work assignment on the property, the Project Manager shall initiate a work order that includes hospital and emergency information relevant to the scope of work. The work order will be provided to the employee responsible for conducting the requested task who will return the completed work order and associated documentation to the Office Manager. Once returned, the completed work order will be stamped as

"Completed", and the information disseminated to the Project Manager and later filed. Each Manager or Supervisor visiting the property during a field task shall complete a Health and Safety Spot Inspection Form. Completed forms (**Appendix A**) shall be returned to the Health and Safety Officer and the relevant Project Manager or Supervisor.

A Health and Safety Checklist will be completed by the senior staff member present on the property for commencing with property characterization activities. The checklist will be completed on a daily basis and be sent with the daily timesheet(s) to the Field Safety Coordinator. The checklist shall also be used for conducting daily toolbox talks.

3.4 Project Manager and Site Health and Safety Structure

The Project Manager is ultimately responsible for field implementation of the safety and health program. This includes communicating specific health and safety requirements to field staff regarding planned property characterization activities and unforeseen conditions. The Project Manager is also responsible for resolution of any questions with regard to safety procedures and/or levels of protection to be used. The structural flow of health and safety roles specific to this property characterization area as follows:



4.0 Chemical, Physical, and Biological Hazards

4.1 Overview

The purpose of this section is to identify the physical, chemical, and biological hazards associated with implementation of the activities at the Site. Subsections of this section will discuss each task or operation for the project in terms of the general hazards associated with it. The following sections will identify the protective measures to be implemented during the performance of each specific activity. If additional activities

beyond those identified are conducted onsite by LaBella or its subcontractors, a supplemental health and safety task analysis will be performed specifically for those activities. The purpose of this information is to maintain an accident and injury free work Site. This section will also outline the specific chemical contaminants of concern, as well as anticipated physical hazards that may be encountered at the Site.

4.2 Chemical Hazards

Chemical hazards associated with the property involve potential contact with soils and water containing property related COCs. Specific COCs related to the property are identified in Section 1.2. Their respective safety data sheets are included in **Appendix B.**

In general, skin absorption, inhalation and ingestion are identified as three (3) potential routes of exposure for the COCs identified herein. These routes of chemical exposure will be significantly reduced through the proper use of personal protective equipment (PPE) and good personal hygiene.

4.2.1 Property Related Chemical Hazards

At all times, exposure of LaBella employees to property related COCs must remain below the OSHA permissible exposure limits (PELs). Any time that air monitoring identifies airborne concentrations of COCs sustained above the PELs for 15 consecutive minutes, work will be halted until engineering controls and/or an upgrade in PPE can be established that will to reduce worker exposure to below the OSHA PEL concentrations.

4.2.2 Materials of Trade Chemical Hazards

When materials of trade (MOT) chemicals are used (i.e. solvents, adhesives, etc…), workers must adhere to the Hazard Communication Program (i.e., 29 CFR §1910.1200). The following procedures must be followed for all MOT chemicals used on the property:

- Labels on MOT chemical containers must not be defaced.
- MOT chemical containers must be stored in appropriate storage cabinets.
- MOT secondary containers and storage cabinets must be correctly and clearly labeled using the Hazardous Materials Identification System (HMIS).
- Incompatible MOT chemicals must not be stored together.
- A material safety data sheet (MSDS) for each MOT chemical must be included in an MSDS book that is maintained on the property.
- Workers must receive training on the hazards of the MOT chemicals included in SDS book.

4.3 Physical Hazards

The topics below identify the type of physical hazards, which may be present during property characterization activities:

- **Slip, Trip, Fall (S.T.F)** - These type of hazards result from unleveled surfaces, slippery surfaces, and hard to see objects located across walking paths (i.e., rope, cords), and are responsible for a large majority of work-related injuries. A fall

hazard may originate as a result of voids created by excavations and uneven surfaces on the property.

- **Heavy Equipment** - Heavy equipment may be necessary for clearing access to proposed soil boring locations, advancing soil borings and/or carrying supplies. Associated hazards include: energized machinery; poor operator visibility; and inability to be fully aware of surroundings at all times (i.e., people, mobile and stationary objects). Severe slopes may be present which present potential rollover and/or fall hazards to equipment operators and/or other personnel.
- **Excavations** - Excavations have the potential to create hazards to Site personnel. For example, equipment and/or personnel may potentially fall into improperly sloped or shored excavations. Excavations often have the potential to fill with water following extensive rainfall.
- **Oxygen-Deficient Atmosphere** - Oxygen-deficient atmospheres may occur in some areas including excavations and or areas of limited ingress/egress. OSHA defines oxygen deficient atmospheres as environments with less than 19.5% oxygen content by volume. When an oxygen deficiency is suspected or has the potential to exist, measurements will be performed to quantify oxygen concentrations prior to entry. If oxygen deficiency is determined, appropriate ventilation will be performed prior to entry. Also, the requirement for confined space entry [see *LaBella's Permit-required Confined Space Program*] must be followed.
- **Drum Handling** - Should property characterization activities uncover buried drums, unknown containers, or other unknown contaminants, the procedure will be to cease operations and evacuate the area. The Project Manager will be notified. Prior to resuming activities in that immediate area, all unknown situations will be identified and evaluated. If necessary, a specialized contractor trained in safe methods for identifying and handling unknown contaminants will be brought-in.
- **Housekeeping and Sanitation** - In order to permit safe and efficient work conditions, all work areas shall be kept clean and free of debris. All hand tools will be kept in appropriate storage containers until they are needed for use. Trash containers will be leak proof, clean and maintained in a sanitary condition. Vermin (if encountered) will be handled via an approved extermination method.

  Potable water will be used for first aid, drinking, and personal hygiene purposes.
- **Falling Objects** - Drilling operations and general construction activities can create hazards from falling objects. Hard hats, safety glasses, and steeled-toed footwear will be required for personnel during the property characterization activities.
- **Heat Stress** - Drilling operations and general construction activities in the summer months can create heat stress conditions for employees. The use of respiratory protective equipment and protective (non-breathable) clothing, boots, and gloves can greatly increase the potential for heat stress. Frequent breaks will be required during times of extremely warm temperatures.
- **Cold Stress** - Cold-related problems are the result of low ambient air temperatures and/or wind velocity. Wind chill is the term used to describe the effect of moving air on human flesh. Frostbite and hypothermia are the two cold-related problems of concern. Warming breaks will be required during times of extremely cold temperatures.
- **Electrical** - Electrical hazards may be encountered during installation of the sub-slab depressurization system blower and associated equipment. Only qualified personnel

will be utilized in completing any tasks involving electrical equipment. Personnel will be trained in and shall use lockout/tagout procedures as required.

- **Traffic Safety** - During various property characterization operations, movement of various equipment around the property will be on-going. LaBella personnel are trained to be aware of their surroundings at all times and are required to wear high visibility clothing.
- **Unleveled Surfaces** - Unleveled surfaces can result from excavation or drilling activities and/or the natural terrain in some areas. These areas, if identified, will be flagged or roped off to minimize potential hazzards.
- **Flammable Atmosphere** - Flammable atmospheres may exist around buried lines and unidentified tanks, but are not expected. The Project Manager will be notified if any potentially hazardous atmospheres are discovered.
- **Noise** - High noise levels (in excess of 85 decibels (dBA) for extended periods) can result in temporary and permanent loss of hearing. Areas where noise levels exceed 85 dBA will be posted and hearing protection will be provided and worn. Noise dosimetry will be performed where required by OSHA regulation.

4.4 Natural Biological Hazards

It is likely biological hazards will be encountered within the proposed soil boring and monitoring well locations. Potential biological hazards include poisonous plants, ticks, snakes, ants and various stinging insects. Some of the most common biological hazards can be prevented or the effects reduced by over the counter medications. These medications, as recommended by local pharmacists, will be kept in supply in the first aid kit. Workers who know they are sensitized to any biological hazard should not perform any task that would increase their risk for anaphylactic shock.

4.4.1 Poisonous Plants

Common poisonous plants on the property may include plants from the poison ivy group, including poison oak and sumac. The most distinctive features of poison ivy and oak are that their leaves are composed of three leaflets (Figure 4-1). Both poison ivy and poison oak have greenish-white flowers and berries that grow in clusters. Contact with these plants can produce a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim may also develop a headache, high fever and feel very ill. The rash appears within a few hours of contact, but may be delayed from 24 to 48 hours. If contact occurs with a poisonous plant, remove all contaminated clothing and wash any exposed skin thoroughly with soap and water, followed by rubbing alcohol. Apply calamine lotion if rash is mild. Seek medical advice if a severe reaction occurs or if there is a known history of previous sensitivity. If a poisonous plant is found in the work area, the Site Safety Officer should be notified so that it can be removed. All personnel working in an area with poisonous plants should wear a Tyvek® suit, at a minimum, to avoid skin contact.

Figure 4-1
Poisonous Plants

Poison Oak

Poison Ivy

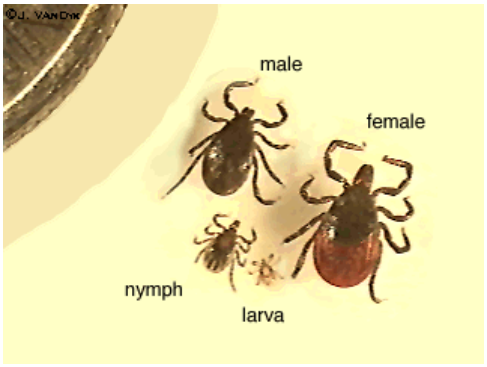
4.4.2 Ticks

Ticks (**Figure 4-2**) are wingless, bloodsucking insects. Certain types of ticks can carry diseases such as Rocky Mountain Spotted Fever (RMSF) and Lyme Disease.

Figure 4-2
American Dog Tick (dermacentar *variables*)

Symptoms of RMSF include the sudden onset of moderate to high fever, severe headache, fatigue, deep muscle pain, chills and rash. Lyme disease is caused by a bacteria transmitted by the deer tick (Ixodes s*capularis*) (**Figure 4.3**). The chances of being bitten by a deer tick vary depending on the time of year. Deer ticks in the nymphal stage are active from mid-May to mid-August. Adult deer ticks are most active in mid to late fall. In 60-to-80 percent of tick bite cases, a large, reddish rash about 2.0-inches in diameter appears around or near the bite location. This rash is sometimes referred to as the "bull's eye" rash and the rash may develop from three (3) days to 30-days after the tick bite. Multiple rashes may occur. Symptoms of Lyme disease include chills and fever, headache, fatigue, stiff neck, muscle and/or joint pain, and swollen lymph nodes. If left untreated, serious nerve and heart damage may develop. Early treatment of Lyme disease symptoms with antibiotics can prevent the more serious medical problems of the later stages of the disease. If you suspect that you have been bitten by a tick or, if you have symptoms of Lyme disease, notify the Site Safety Officer.

Figure 4-3
All Four Stages of the
Deer Tick (Ixodes *scapularis*)



When working in high grasses or brush, personnel should wear Tyvek® coveralls and boot covers with the joints taped. An insect repellant containing DEET (N,N-diethyl-meta-toluamide) is also recommended. It has been proven that the longer an infected tick remains on the body, the greater the chance that it will transmit disease. Because of this, workers should check themselves for ticks on a regular basis.

If an attached tick is found, remove it by grasping the tick with a pair of tweezers as close to the skin as possible. Be careful not to leave any part of the tick attached. The skin area of the victim should be marked or circled to indicate where the bite occurred. The tick should be placed in a container or zip-lock bag and marked as to the date, time and body area from which it was removed. Universal precautions (Section 4.5) should be used during this procedure. The area should be washed with soap and water and then covered with an antibiotic ointment to prevent infection.

4.4.3 Snakes

To prevent snakebites, wear shoes and heavy pants where snakes are likely found (i.e. near water, thick brush). Do not reach into rocky cracks, under logs, or large rocks. Do not touch a snake even if it looks dead. Do not get near or tease a snake. If someone is bitten by a snake, keep warm and rested. Take them to the nearest hospital immediately (if possible, bring the snake). Do not give them anything to eat or drink. Do not use a tourniquet. Do not cut the bite or suck out the venom. Do not put ice on the Site of the bite.

4.4.4 Insect Stings

Stings from insects are often painful, cause swelling and can be fatal if a severe allergic reaction (such as anaphylactic shock) occurs. If a sting occurs, the stinger should be scraped out of the skin, opposite of the sting direction. The area should be washed with soap and water followed by an ice pack. If the victim has a history of allergic reaction, he should be taken to the nearest medical facility. If the victim has medication to reverse the effects of the sting, it should be taken immediately. If the victim experiences a severe reaction, a constricting band should be placed between the sting and the heart. The bitten area should

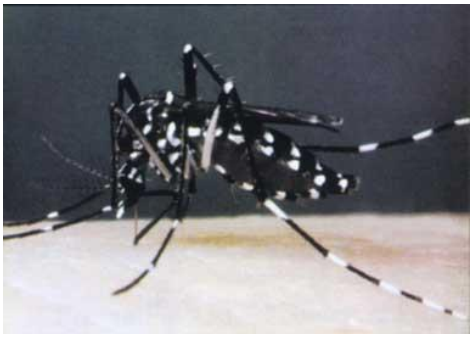
be kept below the heart if possible. A physician should be contacted immediately for further instructions.

4.4.5 Mosquitos

Mosquitoes are a common vector in the United States and a source for the West Nile virus. The West Nile virus is spread by the bite of infected mosquitoes which may, in turn, infect people, horses, birds, and other animals. Most people who become infected with the West Nile virus will have either no symptoms or only mild symptoms. However, on rare occasions, a West Nile virus infection can result in a severe and sometimes fatal illness known as West Nile encephalitis (an inflammation of the brain). The population with the highest risk from the West Nile virus are persons 50 years of age and older. There is no evidence to suggest that the West Nile virus can be spread from person to person or, from animal to person.

To avoid mosquito bites, apply insect repellent containing DEET when outdoors and wear long-sleeved clothes and long pants during peak mosquito feeding hours (dusk until dawn). Eliminating standing water sources around the job site will also prevent mosquitoes from nesting.

Figure 4-4
Mosquito



4.5 Blood-Borne & Body Fluid Biological Hazards

The majority of the occupational tasks on-Site will not involve a significant risk of exposure to blood, blood components, or body fluids. The highest risk of acquiring any blood-borne pathogen will be following an injury. When administering first aid care, there are potential hazards associated with blood-borne pathogens that cause diseases such as Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), Hepatitis A (HAV), Hepatitis C (HCV), or the Herpes Simplex Virus (HSV). A person who has not received the appropriate certification should never execute first aid and/or CPR (cardio pulmonary resuscitation).

In order to minimize any potential pathogen exposure, all employees should use hand washing facilities on a regular basis. The following universal precautions should also be followed to prevent further potential risk:

- Direct skin or mucous membrane contact with blood should be avoided.
- Open skin cuts or sores should be covered to prevent contamination from infectious agents.

- Body parts should be washed immediately after contact with blood or body fluids that might contain blood, even when gloves or other barriers have been used.
- Gloves and disposable materials used to clean spilled blood should be properly disposed in an approved biological waste container.
- First aid responders should wear latex or nitrile gloves when performing any procedure risking contact with blood or body fluids.
- Safety glasses should be worn to protect the eyes from splashing or atomization of body fluids.
- A CPR mask should be worn if performing CPR to avoid mouth-to-mouth contact.
- Work gloves should be worn to minimize the risk of injury to the hands and finger when working on all equipment with sharp or rough edges.
- Never pick up broken glass or possibly contaminated material with unprotected hands.

5.0 Training and Medical Program

5.1 Employee Training Requirements

All LaBella personnel will have training relative to their job responsibilities or role at the property. Such training will be provided prior to their being allowed to engage in activities that could expose them to health and safety hazards. The Project Manager (or designated alternate) has the responsibility to ensure this training is provided and updated as needed.

All personnel who will work on the property characterization will be required to read this HASP. Prior to commencing with the property characterization, each individual must read and sign a **Health and Safety Plan Acknowledgement Form** *(Appendix A)* indicating they have read and understand the requirements set forth in this HASP.

5.2 General Medical Program

LaBella will maintain medical surveillance records for its employees and require lower-tier subcontractors (if any) to do likewise. These records will be available to the regulatory agencies upon request by appropriate officials following all rules prescribed under 29 CFR 1910.120. A medical clearance form will be maintained for each employee (and subcontractor personnel). These records will be maintained for the duration of employment plus 30 years.

5.2.1 Respirator Certification

Prior to authorizing the use of any air purifying or supplied-air respirator, OSHA, under 29 CFR 1910.134 and 29 CFR 1925.58, requires that a determination be made regarding the prospective wearer's physical ability to safely use such equipment. Consequently, individuals scheduled to work in areas that require the use of respiratory protection will have current documentation, signed by a qualified physician, regarding the individual's physical ability to wear a respirator on file with the company. The medical clearance form will indicate the employee's ability to wear respiratory protection on the property. In addition to the medical clearance, an annual fit test will be issued to each employee.

5.2.2 Exposure/Injury Medical Emergency

As a follow-up to an injury or illness, or as a result of potential exposure to either a chemical or physical hazard, all employees are entitled and required to seek appropriate medical attention. The Project Manager (or designated alternate) must be apprised of the need for seeking such medical attention and assist in determining the immediacy of the situation.

6.0 Property Control

6.1 General

Control of the property will minimize the potential contamination of workers and observers, protect the public, and prevent vandalism of equipment and materials. Site control measures also enhance response in an emergency. The field operations associated with the property characterization will be divided into three work zones. These zones are described below:

1. **Exclusion Zone (EZ)** - The exclusion zone will encompass the are immediate to each soil boring location while drilling activities are underway. Personal protective equipment is required in this area. At a minimum, this will include "Level D" PPE (including long sleeves/pants, steel toe shoes and hard hat). The EZ will be demarcated by barricades or barrier tape that will be placed a minimum of 3 feet from the edge of an active operation. Visitors are not permitted into the EZ without the approval of management. Additionally, visitors must have satisfactorily completed the required OSHA training, be properly fitted with respiratory protection, and have medical clearance, as required.
2. **Contamination Reduction Zone (CRZ)** - The CRZ will be located in the area immediately adjacent to the EZ. The CRZ is used to minimize the potential for contact with contaminated soils by decontamination and other work practices. The CRZ will include facilities for personnel or equipment decontamination. PPE worn in the EZ may not be worn outside the CRZ except during emergencies.
3. **Support Zone (SZ)** – The SZ includes all areas outside the CRZ and EZ. The exposure potential in these zones is minimal. The SZ provides a changing area for personnel entering the CRZ and EZ, a lunch area, office space, as well as an area for storage of clean equipment and material. PPE worn in an EZ may not be worn in a SZ except in an emergency.

The final locations of the EZ, CRZ and SZ for each location zones will be determined and modified as necessary in the field. In addition, it may be necessary to make modifications as weather and conditions on the property change. Movement of personnel between the three zones will be limited to the extent practical.

7.0 Safe Work Practices

7.1 General

To maintain strong safety awareness and enforce safe procedures at the property, a list of standing orders has been developed stating the practices that must always be followed and those that must never occur in the EZ and CRZ. The list of standing orders is as follows:

1. No smoking, eating, or gum chewing will be permitted in the EZ or in the CRZ;

2. Fieldwork will only be conducted during daylight hours unless adequate artificial lighting is provided;
3. All personnel are required to read the HASP, and sign all appropriate forms prior to initiating work;
4. Personnel will be advised of the precautions to be taken against heat/cold stress;
5. Walkways will be kept clear of equipment, sampling materials, and other obstructions.

Appropriate warning signs, devices, and fences will be erected and posted when warranted.

In addition to the standing orders, the Site's Hazard Communication Program will include safety data sheets (SDSs), which list the names and properties of chemicals present on the property. All chemicals that are used on the property will be properly stored and labeled. Employees will be briefed on this information at the beginning of the project or whenever they first join the work team.

7.1.1 Personal Protective Equipment (PPE)

With regard to the anticipated tasks and COCs associated with the property, Level D protection will be utilized during all phases of work. The PPE required for Level D protection will include (but, is not limited to) the following:

- Hard Hat
- Safety glasses with side shields
- Leather work shoes with steel toe and shank
- Gloves, chemical and abrasion resistant dependent on task
- Hearing protection (as needed)
- Face shield (as needed)

All required Level D PPE shall be donned prior to performing any task. More stringent PPE requirements are not anticipated; however, the level of protection being used may be upgraded to Level C, which will require the use of a respirator equipped with the appropriate air purifying and/or particulate filter if conditions warrant the upgrade. The Site safety officer will monitor the usage of proper PPE in compliance with this HASP.

7.2 Heavy Equipment Operation

Working with tools and heavy equipment (e.g., Drilling and excavation equipment) is a major hazard at the Site. Injuries can result from equipment hitting or running over personnel, impacts from flying objects, burns from hot objects, and damage to PPE. The following general precautions will be followed to help prevent injuries from such hazards:

- Before any heavy equipment, machinery or mechanized equipment is placed in use, it will be in safe operating condition. Records of the inspections (performed each shift and weekly) will be maintained and will be available on request.
- A competent person will be designated to be responsible for the daily inspection of all machinery/equipment and during use to make sure it is in safe operating

condition. Checks will be made at the beginning of each shift. The equipment to be used will be tested to determine that the various operating systems are in proper working condition.

- Preventative maintenance procedures recommended by the manufacturer will be followed.
- Any machinery or equipment found to be unsafe will be sidelined, tagged as unsafe, and its use prohibited until safe conditions have been restored.
- Machinery and mechanized equipment will be operated only by designated, experienced and qualified personnel. Equipment deficiencies observed at any time that affect their safe operation will be corrected before continuing operation.
- Getting on (or off) any equipment while it is in motion is prohibited.
- Machinery or equipment will be shut down and means taken to prevent its operation while repairs or manual lubrications are being done. (***Exemption:*** *Equipment designed to be serviced while running).*
- Bulldozer and scraper blades, front-end loader buckets, dump bodies, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. All controls will be in a neutral position, with the engines stopped and brakes set, unless work being performed on the machine requires otherwise.
- All points requiring lubrication during operation will have fittings located and guarded as to be accessible to employees without potential for injury.
- When necessary, all mobile equipment and the area in which it is operated will be adequately illuminated while work is in progress.
- Mechanized equipment will be shut down prior to and during fueling operations. Closed systems, with automatic shutoff that will prevent spillage if connections are broken, may be used to fuel diesel-powered equipment left running.
- All towing devices used on any combinations of equipment will be structurally adequate for the weight drawn and securely mounted.
- Personnel will not be permitted to get between a towed object and towing piece of equipment until the towing equipment has been stopped and secured by setting the brakes, placing in neutral, and choking.
- All equipment with windshields will be equipped with powered wipers. Vehicles that operate under conditions that cause fogging or frosting of windshields will be equipped with operable defogging or defrosting devices.
- The controls of loaders, excavators, or similar equipment with folding booms or lift arms will not be operated from a ground position unless so designed.
- All self-propelled construction equipment (except light service trucks, panels, pickups, station wagons), crawler cranes, power shovels, and draglines, whether moving alone or in combination, will be equipped with a reverse signal alarm. The alarm will be audible and sufficiently distinct to be heard above prevailing conditions and will operate automatically upon commencement of backward motion. The alarm may be continuous or intermittent (not to exceed three-second intervals) and will operate during the entire backward movement.
- All bulldozers, tractors, or similar equipment used in clearing operations will be provided with substantial guards, shields, canopies, and grills to protect the

operator from falling and flying objects as appropriate to the nature of the clearing operations.

- Trucks will not trail debris or track mud outside the CRZ. Visible loose dirt will be removed. Pressure washing will be used where required to remove dirt.
- Operators will be required to wear seat belts while operating equipment equipped with a Roll-Over Protection System (ROPS).

7.3 Electrical Safety

Working with electrical systems to install necessary services to buildings and equipment presents safety hazards. Lack of basic electrical safety and sound wiring practices can result in fatalities due to electric shock.

- Three-wire (grounded) systems with ground fault circuit interrupters (GFCI) will be used on all temporary 110-volt electrical systems (extension cords, etc.).
- Wiring and grounding of all new facilities will be in accordance with the latest edition of the National Electrical Code (NEC).
- Wiring will be performed by a qualified electrician.
- No work will be performed on energized electrical systems capable of delivering current greater than 0.005 amps.
- Any wiring required will be protected from the elements while in use.
- High-voltage overhead lines will be identified to all equipment operators and safe clear distances will be maintained at all times.

7.4 Heat Stress

To minimize the likelihood of employee heat stress, all workers must observe the following at temperatures above 70°F:

- Avoid prolonged periods of high heat stress;
- Take regular breaks;
- Consume increased amounts of fresh water (or Gatorade) to replenish body fluids;
- Observe coworkers (buddy system) for signs of fatigue; and
- Report any symptoms to the Responsible Person or Project Manager.

The Responsible Person must regularly monitor the condition of the work force for signs of heat stress. Work in high ambient temperatures, coupled with protective clothing, can quickly result in worker heat stress. Heat stress monitoring and modified work-rest schedules will be instituted in accordance with ACGIH guidelines as required.

Alcohol consumption dehydrates the body and increases the likelihood of heat stress. Workers should curb their alcohol consumption after work and arrive each morning physically fit for work. Any worker deemed unfit for work because of alcohol consumption (or, for any reason) will be restricted from property characterization activities. If a worker has been placed on restrictive duty by a physician, he will be restricted from any activities that could potentially cause injury/accidents to himself or to coworkers. The LaBella

Responsible Party and Project Manager will be responsible for ensuring that unfit workers are restricted from property characterization activities as warranted.

7.5 Cold Stress

Workers should be protected from exposure to cold so that the deep core temperature does not fall below 36^0 C (96.8^0 F). Lower body temperatures will vary and can likely result in reduced mental alertness; reduction in rational decision making, or; loss of consciousness with the threat of fatal consequences. Pain in the extremities may be the first early warning of danger to cold stress. During exposure to cold, maximum severe shivering develops when the body temperature has fallen to 35^0C (95^0F). This must be taken as a sign of danger to the workers, and exposure to cold should be immediately terminated for any workers when severe shivering becomes evident. Useful physical or mental work is limited when severe shivering occurs.

Since prolonged exposure to cold air, or to immersion in cold water, at temperatures well above freezing can lead to dangerous hypothermia, whole-body protection must be provided.

7.6 Confined Space Entry

Workplaces that are not intended for human occupancy are defined as confined spaces. Limited openings hinder proper ventilation, escape, and rescue; therefore, creating a potentially life-threatening situation for a worker.

Confined space entry will not be undertaken without prior approval from the Responsible Person and Project Manager. Any confined space entry will be governed by the OSHA regulation, 29 CFR 1910.146, and will be conducted in accordance with LaBella's confined space entry procedures.

7.7 Slips, Trips and Falls

Slips, trips, and falls can easily occur at construction sites. Pedestrian traffic will be excluded from the property. Walkways to and from equipment storage in the CRZ will be established and maintained as level and free of obstructions as possible. Walking surfaces will be constructed where required and maintained free of obstacles.

Work activity on elevated surfaces must be conducted in accordance with fall protection criteria 29 CFR 1910.23. Proper guardrails or a fall arrest system must be in place for work on surfaces six (6) feet or higher.

7.8 Fire Hazards

Smoking will not be allowed inside the EZ or CRZ. Cigarettes, lighters, chewing tobacco (or any other personal effects) will not be allowed in the Exclusion Zone.

Debris (paper, brush, scrap, wood, etc.) shall be removed from work areas on a daily basis or as needed to preclude accumulation of sources of fuel. Flammable and combustible liquids will be maintained in the smallest quantities possible. No

flammable/combustible liquids will be stored inside; fuel cans will have a designated storage area.

Portable fire extinguishers shall be provided for each mobile vehicle and piece of heavy equipment. Each employee will have received instruction on the proper operation of a portable fire extinguisher.

Cutting and welding will require an inspection of the area and review of the operation by the Responsible Person prior to cutting or welding activities being performed. A request to perform cutting or welding activities will be submitted and will require the inspection and testing of the work area. The Responsible Person or Project Manager will prepare the cutting and welding permit request form and sign it. The permit will be issued only for the specific operation for a specified time.

7.9 Work Zone Safety

This policy applies to all work performed by LaBella employees and contractors on or near roads, highways, and areas where motor vehicle traffic may present a hazard.

Hazard Assessment:

When evaluating the hazards that may be present in a potential work zone the following considerations should be included:

- Engineering studies
- Existing utilities, UDIG NY or private mark out
- Information on traffic patterns, speed and how time of day affect both.
  - Special consideration should be given to nighttime work
- Length of project

Engineering judgement is essential for determining which devices are required and where they shall be placed in compliance with federal, state, and local regulations.

Flaggers:

- **Flaggers Must:**
  - Always face oncoming traffic.
  - Never leave their position until relieved.
  - Know where crew members and equipment are, be aware of changes, and never stand among workers and equipment.
  - Be courteous, yet authoritative.
  - Minimize conversations with other workers, motorists, and pedestrians.
  - Be positioned to compensate for limited sight distance, to provide maximum advance warning, and remain clearly visible to traffic at all times.
  - Maintain continuous communication with all other flaggers.
  - Establish eye contact with drivers to whom they must give direction.

A flagger's activities bring them in constant contact with the public. Courtesy should be always exercised. Even under trying conditions, a flagger should remain courteous, yet firm.

Traffic Control Devices:

Traffic control devices are intended to safely guide road users through work zones and to keep the public and employees safe.

- Traffic control devices must be designed and placed according to:
  - The Manual on Uniform Traffic Control Devices (MUTCD)
  - Local, State, and Federal Regulations
  - Engineering studies and knowledge

Management is responsible to maintain enough appropriate traffic control devices as required in the plan and described in the MUTCD.

In addition, to be effective, Traffic Control Devices must be:

- Necessary.
- Noticeable.
- Clearly recognizable and understandable.
- Placed correctly so that road users have time to respond.

While traffic control devices are required to be consistent and uniform, it is also important for them to be appropriate for the specific situation.

Traffic Control Devices may include, as required by the Traffic Control Plan:

- Signs (regulatory, warning, guide, highway traffic, or low volume, etc.).
- Barricades.
- Gates.
- Marking (pavement, curbs, etc.).
- Pedestrian controls (signals, detectors, etc.).
- Signals and beacons.
- Attenuating/Shadow vehicles.

Personnel Safety Equipment and Personal Items:

- Water.
- Sunscreen.
- Insect repellant.
- Notepad.
- Whistle or air horn.
- Communication devices, radios, cameras, or mobile phone.
- Personal medications.
- Personal protective clothing and equipment as listed below.

Administrative Controls:

- Rotate flaggers to different locations on the job site to prevent boredom, confirm changing conditions.
- Provide regular breaks to flaggers to allow them to rest and get off their feet to allow them to use the bathroom.

Personal Protective Equipment:

- PPE increases visibility of work zone personnel and must comply with MUTCD.

Work zone clothing:

- High visibility clothing should be maintained in accordance with manufacturers recommendations and regularly cleaned to maintain visibility.
- Reflective vests (fully zipped), reflective coveralls, proper reflective clothing for the weather conditions, rainwear, cold weather, warm weather, etc.
- ANSI Class 2 vests are required for workers near traffic between 25-50 mph, heavy machinery, inclement weather, and low visibility conditions.
- ANSI Class 3 vests (which have sleeves) are required for workers near traffic exceeding 50 mph and dark or no visibility conditions.
- For night work, Class E reflective pants or full body clothing, headlamp, reflective hard hat strip should be used.

Safety Awareness:

The safety of personnel in a work zone is dependent on planning. Working around traffic for an extended period of time can lead to complacency, Therefore, personnel must remain aware of the hazards present to themselves and other personnel. All personnel working on or near roadways and motor vehicle traffic must:

- Complete all required training.
- Be aware and alert, assume that vehicles do not see you.
- Stay focused and not participate in horseplay.
- Follow all safety rules and procedures.
- Ensure traffic control devices are in place according to the designed traffic control plan.

The traffic control Supervisor shall:

- Perform a daily pre-job work site and reflective clothing review to ensure personnel visibility.
- In daily pre-job meeting remind workers to “assume that vehicles do not see you”.
- Ensure regular meetings are conducted.

Inspections and Program Review:

All work zone traffic controls must be regularly inspected to:

- Verify equipment is still visible, legible, and functional.
- Verify no unnecessary or unauthorized equipment is in use.

- Determine if any changes to setup are necessary.
- Nighttime inspections of retro-reflectivity, lighting glare, positioning of flagger stations shall be conducted.

Preventative maintenance is required to keep equipment in good condition. Equipment should be removed or replaced if it:

- Is unnecessary.
- Is unauthorized.
- Has reached the end of its expected life.
- Is deteriorated or damaged.

The work zone traffic controls must be tested for effectiveness before work begins. Each project work zone traffic control plan must be audited/updated as necessary to accommodate changing conditions. A plan for periodic inspection and update of the work zone traffic control plan shall be developed.

Daily reports shall be provided to the Project Manager and Safety Manager with needed modifications outlined and a summary of enhancements or changes made to the work zone traffic control plan. Communication of changes shall be confirmed with contractors.

Traffic delays and capacity should be anticipated and addressed. Methods include consulting local, state, and federal authorities as appropriate, consulting local lane closure work hour charts, advanced warnings, and radio warnings.

Working with Authorities:

The traffic control plan must be submitted to applicable highway authorities for approval including:

- State Department of Transportation, Thruway Authority, Bridge Authority.
- The Federal Highway Administration (FHWA) if federal highways are impacted.
- Local county representatives, for work under county jurisdiction.
- Local town, or city representatives, as required.

Work shall be coordinated with the Safety Department, local traffic police, as necessary, and local authorities shall be kept apprised of work status.

7.10 Hand clearing /Soft Digging

All locations subjected to intrusive work such as drilling will require hand clearing to a minimum of four (4.0) feet below existing grade. Hand clearing using soft digging practices are implemented to provide a level of protection from impacting a subsurface utility during intrusive work (i.e., excavation, drilling). The following guidelines will be followed for all hand clearing work:

- If the surface consists of asphalt or concrete pavement, use shallow cuts with a demo saw in order to slowly remove the layers until soil or the subsurface substrate is encountered.
- Each location should be cleared to a minimum of four (4) feet using non-intrusive excavation tools (i.e., air knife, hand auger)
- Each location should be cleared to minimum diameter of the largest tool size to be used.
- Should large rocks or other debris be encountered that impede clearing advancement; use an electrical resistant digging bar or shovel to remove the obstruction.
- If obstructions cannot be removed or utilities are positively encountered, then the location must be moved a minimum distance of two (2.0) feet.

All employees working in or around excavations or trenches shall be required to wear PPE for the head, eyes, respiratory organs, hands, feet, and other parts of the body as deemed necessary by the hazards present.

8.0 Decontamination Protocols

8.1 General

Decontamination is the process of removing or neutralizing contaminants that have accumulated on personnel, PPE, and equipment. Decontamination activities are critical to health and safety by protecting workers from hazardous substances that may contaminate and eventually permeate protective clothing, respiratory equipment, tools, vehicles, and other equipment used during property characterization activities. Personnel are protected by minimizing the transfer of harmful materials into clean areas, and the community is protected by preventing uncontrolled transportation of contaminants.

8.2 Prevention of Contamination

The first step in decontamination is to establish decontamination procedures that minimize contact with waste and minimize the potential for spreading contaminants.

<u>Personnel:</u>

- Stress work practices that minimize contact with hazardous substances (e.g., do not walk through areas of obvious contamination; do not directly touch potentially hazardous substances).
- Use remote sampling, handling, and container-opening techniques when possible.
- Protect monitoring and sampling instruments by bagging. Make openings in the bags for sample ports and sensors as needed.
- Wear disposable outer garments and use disposable equipment where appropriate.

<u>Heavy Equipment:</u>

- Limit the surface area of contact, i.e., on excavator or drill rigs, limit tire contact with soil to the extent practical.

- If contaminated tools are to be placed on non-contaminated equipment for transport to the decontamination pad, plastic will be used on top of the non-contaminated equipment to keep it clean.
- Soil cuttings and wastewater will be placed in drums away from personnel and equipment traffic. Drums will be stored at a designated location until disposal is coordinated.

In addition, the following procedures will be used in sequential order, to maximize worker protection. The proper procedures for dressing prior to entering the EZ will minimize the potential for contaminants to by-pass the protective clothing and escape decontamination. In general, all fasteners should be used (i.e., zippers fully closed, all buttons used, all snaps closed, etc.). Gloves and boots should be tucked under the sleeves and legs of outer clothing, and hoods (if not attached) should be worn outside the collar. Another pair of tough outer gloves will be worn over the sleeves. All junctures will be taped to prevent contaminants from running inside the gloves, boots, and jackets (or suits, if one-piece construction).

Prior to each use, the PPE will be inspected to ensure that it contains no cuts or punctures that could expose workers to contaminants. Similarly, any injuries to the skin surface, such as cuts and scratches, may enhance the potential for chemicals or infectious agents that directly contact the worker's skin to penetrate into the body. Particular care will be taken to protect these areas. Workers with large areas of damaged skin will not be allowed to work until the skin heals.

8.3 Types of Contamination

Contaminants can be located on the surface of personal protective equipment and/or adsorbed into the PPE material. Surface contaminants may be easy to detect and remove; however, contaminants that have permeated a material are difficult or impossible to detect and subsequently remove. If contaminants that have permeated a material are not removed by decontamination, they may continue to permeate to the inner surface of the material where they can cause an unexpected exposure.

Five factors, which may affect the extent of permeation, are listed below:

1. **Contact Time** – The longer a contaminant is in contact with an object, the greater the probability and extent of permeation. For this reason, minimizing contact time is one of the most important objectives of a decontamination program. When working with VOCs, respiratory contact time can be reduced by avoiding the vapors from the contaminated soil (or groundwater). Employees can reduce dermal contact time by using the correct PPE to avoid direct contact with hazardous materials. Employees can reduce their overall contact time by washing their exposed body parts, with soap and water, on a regular basis.
2. **Concentration** – Molecules move from areas of high concentration to areas of low concentration. As contaminant concentrations increase, the potential for permeation of PPE increases. Because of this, workers will be instructed to change their outer layer of PPE if it becomes heavily soiled.

3. **Temperature** – An increase in temperature generally increases the volatilization rate of contaminants. For example, VOCs have the ability to produce vapors, which can become an inhalation hazard. As the ambient temperature increases, the concentration of hazardous vapors may become sufficient to implement or increase the level of respiratory protection. The decision to increase respiratory protection will be based upon the results of the real-time air monitoring performed in the workers breathing zones.
4. **Size of Contaminant** – Permeation increases as the size of the contaminant molecule becomes smaller and, as the pore space of the material to be permeated increases. Tyvek® coveralls should keep the majority of soils (and, chemical contaminants if present) from contacting the employee's skin. However, workers will be required to tape all PPE junction points (when necessary) to further decrease the opportunity of contact with contaminated media. Coveralls and other PPE should be checked regularly to ensure there are no tears, rips or holes, which might allow contaminants and/or contaminated media, to contact the skin surface.
5. **Physical State of Wastes** – As a rule, gases, vapors, and low-viscosity liquids tend to permeate more readily than high-viscosity liquids or solids. The contaminated material on the property has the potential to produce hazardous vapors, which could possibly pose an inhalation hazard. Because of this, the handling of soils will be minimized (to the extent practical) in order to reduce vapor generation.

8.4 Personal Hygiene and Decontamination Procedures

Level D PPE is anticipated for use during the property characterization activities. However, in the unlikely event that upgraded PPE and respiratory protection need to be implemented, a decontamination area will be provided (if warranted) for LaBella employees who work in the EZ. Employees will be required to don the PPE before entering CRZ and doff the PPE when leaving the CRZ.

All personnel and equipment leaving the EZ will be thoroughly decontaminated. The procedure for personnel decontamination is task-dependent, however, the general elements will include:

- Gross boot wash and rinse;
- Suit remove (optional)l;
- Outer/ Inner glove removal;
- Respirator removal and wash (optional);

Workers should check for gross contamination on boots and clothing before leaving the EZ. Protective clothing should be removed in an inside-out fashion and disposed properly in waste receptacles provided. Employees will be required to wash face, hands, and any exposed areas with soap and water. Boots will be cleaned using a series of tubs containing soap, water, and a brush to remove contamination.

These decontamination procedures must be followed each time the employee leaves the EZ, with the exception of emergency escape situations, such as a fire. If employees encounter contaminated materials, portable eyewash bottles and portable showers will be located on-Site for employees to wash affected skin or to flush the eyes (at least 15

minutes). If irritation, redness or swelling arises in the contact area, a physician will be contacted immediately.

Respirators will be removed and be properly cleaned and disinfected by either the employee or a designated technician. A specific decontamination station for cleaning respirators will be located within the CRZ. The respirator, without the cartridge, should be wiped clean with a benzalkonium chloride antiseptic towelette, followed by the use of a wash and rinse solution and then dried with a paper towel. The respirator will be kept in a two-gallon zip-lock bag inside the employee's locker for storage. New cartridges should be inserted in accordance with OSHA Respiratory Protection Standard 29 CFR 1910.134. The Responsible Person will monitor effectiveness of the decontamination procedures and, if found ineffective, will take appropriate steps to correct any deficiencies. If respirators are used, a monthly inspection of the respirators will be conducted by a member of Site management or his designee.

8.4.1 Equipment Decontamination

All equipment will be decontaminated prior to exiting the Property. Typically, excessive mud and dirt will be knocked off equipment/vehicles with long-handled shovels or brooms. A high-pressure power washer will then be used to remove the dirt/mud prior to driving on local roads. A decontamination pad with a wash water collection sump will be constructed for decontaminating vehicles and equipment. Wash water will be collected and managed in accordance with the property characterization work plan. Prior to heavy equipment leaving the property, the Responsible Person will visually inspect the equipment for signs of excessive dirt. No equipment will be permitted to leave the property until all excessive soil is removed.

9.0 Emergency Response and Contingency Plan

9.1 General

The activities, layout, and hazards of the property characterization have been evaluated in order to identify potential emergencies that could arise during the course of investigation activities. Based on the nature of the property, three (3) possible emergency conditions have been identified. These include:

- Personnel Injury and Illness
- Natural Hazards
- Abrasions, Bruises and Lacerations

Each of these conditions would require general first aid types of responses/care for the affected personnel.

9.2 Personnel Injury and Illness

Emergency first aid will be administered as deemed necessary. Emergency medical services will be contacted to respond (if warranted) or, the injured person will be transported to the designated medical facility. The medical data sheet will accompany the injured person in each case. *The* primary hospital route map and directions to the

hospital (as well as emergency contact information) are provided in Section 2.2 of this HASP. The hospital will be called and notified of the impending arrival while the injured person is being transported. The hospital will also be provided with pertinent information regarding the victim, nature of the injury, etc...

If a person is physically injured (abrasions, bruises, lacerations) or is exposed to natural hazards such as poisonous plants or tick bites, basic first aid procedures must be followed. Depending on the severity of the injury, emergency medical response may be sought. If the person can be moved, he/she will be taken to the edge of the work area where PPE will be removed, and emergency first aid administered. If necessary, transportation to a local emergency medical facility will be provided.

If the person can only be moved by emergency medical personnel, then the Responsible Person will decide what PPE (if any) is required to be worn by emergency personnel. Each work area will have extra equipment available for emergencies.

If the injury involves a chemical exposure, the following first aid procedures must be initiated as soon as possible:

Eye Exposure - If solid or liquid gets into the eyes, flush eyes immediately, for at least 15 minutes, using water and lift the lower and upper eyelids occasionally. Obtain medical attention immediately.

Skin Exposure - If solid or liquid gets on the skin, wash skin immediately with soap and water. Obtain medical attention immediately.

Inhalation - If a person inhales large amounts of organic vapor, dust, etc.; move him/her to fresh air at once. Obtain medical attention immediately. If breathing has stopped, appropriately trained personnel should perform cardiopulmonary resuscitation. Keep affected person warm and at rest.

Ingestion - If solid or liquid is swallowed, medical attention must be obtained immediately, and the Poison Control Center consulted. The Responsible Person must inform the Project Manager of the injury/accident, and a written report detailing the incident, its causes, and consequences must be submitted to the project principal within 48 hours of the incident.

Heat Stress - First aid for all forms of heat stress includes cooling the body by removing PPE, moving to an area outside the EZ and CRZ, and allowing the person to rest in a cooler environment. If cold stress is the issue, the affected personnel will be moved to a warm environment. Emergency response personnel will be contacted for further guidance with respect to both heat and cold stress.

10.0 Work Site Inspection & Housekeeping

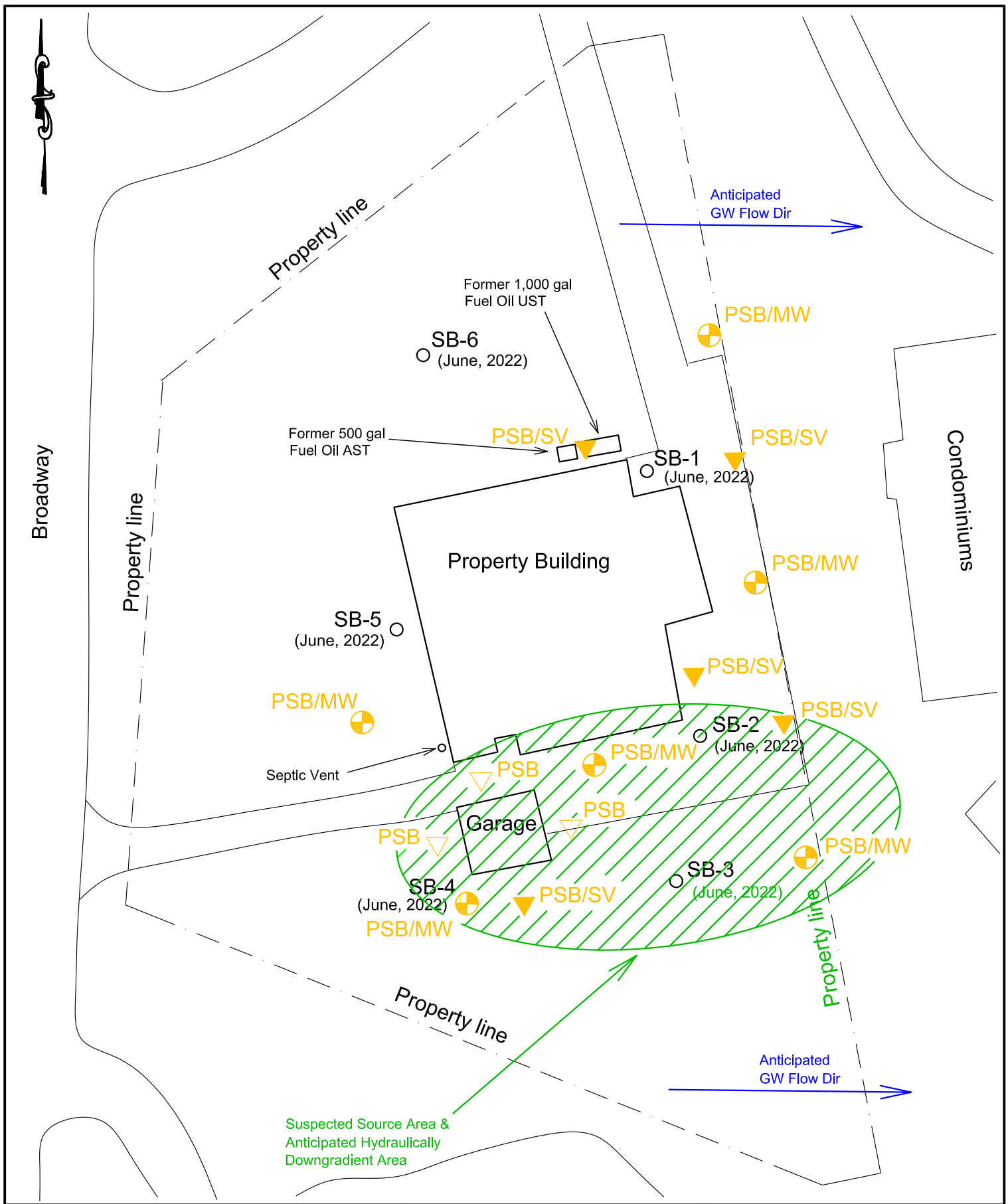
Work site inspection will be conducted by the Responsible Person and/or the Project Manager. Job site inspection will be conducted daily, and the nature of the inspection will vary depending on the type of job scheduled for that day and the safety hazards

associated with that task. Work site inspections will include PPE, general housekeeping an work area protection such as signs, demarcation tape, barriers, etc. Fire extinguishers, first aid equipment, tools, and vehicles will receive daily inspections.

Inspections, that identify deficiencies will be brought immediately to the project team and, corrective actions will be implemented immediately.

ATTACHMENT A

PROPERTY MAP



LaBella
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SITE: Comm. Manufacturing Solutions, LLC
115 Broadway
Port Ewen, Town of Esopus
Ulster County, New York

Figure 1

Date: April 2023

0 (approx scale) 70
feet

Proposed Soil Boring, Monitoring Well and Soil Vapor Sample Locations

- Proposed Soil Boring
- Proposed Soil Boring/Monitoring Well
- Proposed Soil Boring/Soil Vapor Sample

APPENDIX A

FORMS

6.07 JOB SITE SAFETY INSPECTION CHECKLIST - CONSTRUCTION

Submitted By:	Division:	Date Completed:
Project Name:	Project Number:	Town/County:
Services Being Provided: ☐ Construction Work ☐ Construction Inspection ☐ Other:		
Description of Services:		

SECTION I - Check the box if the item is ACCEPTABLE.

PPE Required:	☐ Level D: Hard Hat (E-rated), Safety Glasses, Hi-Viz Vest, Safety Boots, Gloves, Face Covering ☐ Fire Retardant or Arc Resistant Clothing ☐ Floatation Device ☐ Respiratory Protection (List): ☐ Hearing Protection (List): ☐ Additional PPE (List):
Safety Equipment Needed:	☐ Fire Extinguishers ☐ First Aid Kits ☐ Gas Meter (indicate type): ☐ Noise Level Meter ☐ Fall Protection Harness ☐ Permits (indicate type – e.g, confined space, hot work): ☐ Other (list) Spill Kit (chemical or petroleum) ☐ Portable Eyewash or Saline bottles
Worksite General	☐ OSHA Posters Displayed ☐ Emergency Numbers Posted ☐ Work Areas Well Lit ☐ Materials Properly Labeled and Stored (including flammable) ☐ Appropriate Number of Toilets
Training and Documen-tation	☐ Appropriate Training for Work Conducted ☐ Daily Pre-Job Safety Talk ☐ THA/JHA ☐ HASP ☐ Safety Data Sheets Available ☐ Materials Properly Labeled and Stored (including flammable) ☐ Appropriate number of toilets

SECTION II - Check the box IF the item is IDENTIFIED/DEFICIENT. NO hazard = NO checkmark.

HAZARDS: (Check or Circle All That Apply)

☐ **Weather Related**
- ☐ Hot Weather and Sun
- ☐ Cold Weather and Snow
- ☐ Heavy Wind/Dust
- ☐ Heavy Rain
- ☐ Lightening
- ☐ Allergens

☐ **Contaminants/Haz Matl's/Waste**
- ☐ Petroleum
- ☐ Chlorinated Solvents
- ☐ Metals
- ☐ Lead based paint
- ☐ PCBs
- ☐ Asbestos

☐ **Plants/Animals/Seasonal**
- ☐ Hazardous Animals
- ☐ Hazardous Plants
- ☐ Hunting Season

☐ **Location**
- ☐ Remote Location
- ☐ Parking Along Road
- ☐ Roads
- ☐ Bridges
- ☐ Culverts
- ☐ Railroad Tracks

☐ **Improper Lifting/Carrying**

☐ **COVID-19 Requirements**

☐ **Struck By/Caught Between**

(E.g. mobile equipment on site)

☐ **Site Conditions**
- ☐ Steep Slopes
- ☐ Water Bodies
- ☐ Uneven/Wet/Slippery Terrain
- ☐ Dilapidated Building
- ☐ High Risk-Crime Area
- ☐ Falling/Overhead Objects
- ☐ Heavy Equipment/Machinery
- ☐ Congested Site Traffic
- ☐ Poor Lighting
- ☐ Poor Housekeeping
- ☐ Loud Noise (sustained)
- ☐ Overhead Utilities
- ☐ Concrete Dust

6.07 JOB SITE SAFETY INSPECTION CHECKLIST - CONSTRUCTION

	☐ **Contaminants – Cont'd** ☐ Mold ☐ Radioactive Materials ☐ PNORM ☐ Hazardous Gases ☐ Compressed Gases ☐ Flammable Materials ☐ Improper Containment ☐ Improper Storage/Not Secured ☐ SDS Sheets Not Available	☐ **Falls/Height** ☐ Working Above **6** feet (1926) ☐ Ladder Use ☐ Scaffolding Use ☐ Scissor/Aerial Lift Use ☐ Fall Protection Gear ☐ Lanyard/Tie Off ☐ Improper Use of Equipment	☐ **Open Excavations/Trenches** ☐ Proper egress (4 ft) ☐ Shoring/shielding/sloping @ 5' ☐ Competent Person?
	☐ **Hazardous Energy** ☐ Electrical systems (shocks/arcs) ☐ Hydraulic Systems ☐ Mechanical Systems ☐ Pneumatic Systems ☐ GFCI Not Utilized or Tested ☐ LOTO issue ☐ Damaged Electrical Cord ☐ Overhead Power Lines	☐ **Utilities** ☐ DIG SAFE Not Called ☐ Utilities Not Marked Out ☐ Overhead Utilities Not Discussed	☐ **Fire Protection & First Aid** ☐ No Fire Extinguisher ☐ No First Aid Kit ☐ No Emergency Action Plan ☐ Combustible Scrap Disp.
	☐ **Hot Work** ☐ Permit Required ☐ PPE ☐ Possible Burns	☐ **Tools** ☐ Improper Ladder or Use ☐ No Ladder Inspection ☐ Defective Tool or Equipment ☐ Improper Hand Tool Use ☐ Tool Not Grounded ☐ Improper Equipment Use	☐ **Confined Spaces** ☐ Permit Required ☐ Atmospheric Testing ☐ **Ladders** ☐ Condition ☐ Incorrect Ladder ☐ Incorrect Positioning ☐ Staff Using Top 2 Steps ☐ **Scaffold** ☐ Improper Erection ☐ Defects
		☐ Other(s)/Comments/Additional Information on Identified Hazards:	

Solutions for Identified Hazards:

Are any of the hazards observed a Near Miss/Hazard Observation? ☐ **Yes** ☐ **No**
If yes, complete this form Accident-Incident-Near Miss-Hazard Report – LaBella Associates
Note: For construction sites this Form serves as the Competent Person Inspection Form per 29 CFR 1926.20(b)(2).

6.08 PRE-JOB SAFETY TAILGATE/TOOLBOX MEETING FORM

Date		Time	
Location or Address		Temperature	
Project Number		Humidity	
Conducted by		Conditions	
Were all workers reminded that COVID is still prevalent and that appropriate measures should be taking to prevent infection of themselves and others?			Yes ☐ No ☐

911	**If 911 is unavailable at this location, please state the procedure for reporting emergencies** _____

List Safety Topic of Discussion and/or Any Specific Hazards for the Work Being Performed Today	
1	
2	
3	
4	
5	
6	
7	
List Control Measures for Each Specific Hazard Listed Above	
1	
2	
3	
4	
5	
6	
7	

PLEASE SIGN THE BACK OF THIS SHEET

The presenter and all attendees shall print and sign in the appropriate areas on the back of this sheet

By signing, you declare that you understand the information presented in today's meeting, and that you have had the opportunity to ask questions and to clarify any uncertainty regarding such information.

All Visitors and Contractors Must Print Their Company Name

Name	Signature	Company

PART A – INCIDENT/LOSS MANAGEMENT REPORTING SCHEDULE

Event	Form(s) Required	Action
Property damage to company property (including Fleet vehicles) **OR** Damage to non-company property by company employee	All cases: LaBella's Online Incident/Near-Miss/ Hazard Reporting Form ("Online Reporting Form") **or** Part B- Incident/Near-Miss Hazard Report ("Part B: Employee Rpt.") from the Safety Manual 6.01 Incident/Near Miss/Hazard Report Package. Include photos. Losses greater than $5,000: Online Reporting Form or Part B: Employee Rpt. Part C: Supervisor Invest/Analysis Report Part D: Witness Statement Form Photos, Diagrams, Maps, etc. **In addition to insurance forms	Immediate verbal notification to Supervisor and Online Reporting Form within 24 hours Send Parts B, C and D to Safety Manager as soon as possible but within 2-4 business days.
Near Miss Incidents: Low* potential for significant injury or property damage Moderate* or High* potential for significant injury or property damage *Category to be determined by Safety Manager	All cases: Online Reporting Form or Part B: Employee Report Online Reporting Form or Part B: Employee Rpt. Online Reporting Form/Part B: Employee Rpt. Part C: Supervisor Invest. & Analysis Report Part D: Witness Statement Form Photos, Diagrams, Maps, etc.	Same-day verbal notification to Supervisor Send to Safety Manager and HR within 24 hours. Send Parts C and D to Safety Manager as soon as possible but within 2-4 business days.
Employee Injury or Illness: Minor injury (first aid treatment/non-OSHA recordable) Serious Injury (employee received medical treatment/lost days away from work, or required job restriction or transfer) Catastrophes (examples: fatality, multiple persons injured)	All cases: Online Reporting Form or Part B – Employee Report Online Reporting Form or Part B: Employee Rpt. Online Reporting Form or Part B: Employee Rpt. Part C: Supervisor Invest. & Analysis Report Part D: Witness Statement Form Photos, Diagrams, Maps, etc. Above documentation plus additional documentation as requested Health and Safety Manager or Senior Management **In addition to insurance forms	Immediate verbal notification to Supervisor and/or Field Supervisor (in all cases). Send to Safety Manager and HR within 24 hours. Send Parts C and D to Safety Manager as soon as possible but within 2-4 business days. IMMEDIATELY call Safety Manager and Vice President of Operations (24/7).
Incidents Involving Personnel Other than LaBella (example: subcontractors)	Part C: Supervisor Invest. & Analysis Report Part D: Witness Statement Form Photos, Diagrams, Maps, etc.	Same verbal reporting requirements as employees.

PART B - INCIDENT/ NEAR MISS / HAZARD REPORT

Completed by Employee with Supervisor

Complete all fields. Be as specific as possible and include drawings, photos, additional narrative, as needed.

Person Submitting Form:	Name of Affected Employee:	Employee's Supervisor:
Employee's Division Director:	Employee's Home Office Location:	Date of Hire:

-An incident is an unwanted event that causes injury or illness to the body and/or involves damage to property, equipment, or the environment.
-A near-miss is an incident in which no property was damaged and no personal injury was sustained, but where given a slight shift in time or position, damage or injury easily could have occurred.
-A hazard is an object or situation that has the potential to harm people or cause damage to property or the environment.

If you have IT equipment that has been stolen or damaged, you must complete the **IT Incident Report** located on the Information Technology page of the intranet immediately for security purposes.

Date of Event	Time of Event:	Type of Incident: ❑ Incident ❑ Near Miss ❑ Hazard	Project Number:
Address of Incident:	Additional information Regarding Incident Location:		

How did the incident happen? *(Describe step by step the events that led up to the event and site conditions, weather and tools. Document any immediate action taken to protect internal/internal staff)*

Incident involved the following (check all that apply): ❑ Vehicles If Yes, list license Plate Numbers: _____

❑ Machines ❑ Equipment ❑ Tools ❑ Property ❑ Environment ❑ Chemicals ❑ Electronic Equipment ❑ Wildlife

Describe how items above played a part in the incident and if they contributed to/resulted in injury:

Did property or equipment damage occur: ❑ Yes ❑ No	Approximate estimated value of damage:

Names of all involved persons:	Witness Statements Attached (1 for each witness)(see Safety Manual 1.22): ❑ Yes ❑ No

Did this Incident involve an injury? ❑ Yes ❑ No If No – sign at bottom and provide to Supervisor, Safety Manager and HR.

Injured Employee Name:	SSN: (last 4 digits)	Date of Birth:	Gender:

Job Title:	Employee type: ❑ Full time ❑ Part Time ❑ On-Call/temporary	Time Employee Began Work & Time of Injury:	Phone Number:

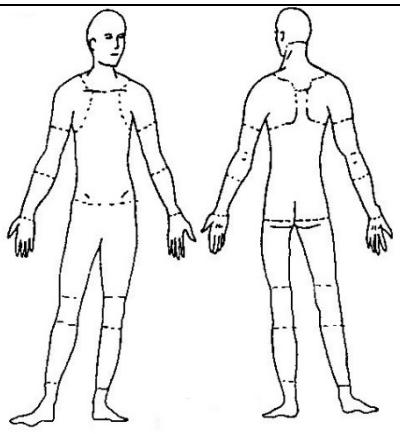
Type of Injury (e.g. abrasion, bruise, burn, sprain, cut, etc):	Was PPE being used & what type:

Was medical treatment provided? ❑ Yes ❑ No

Was medicine prescribed? ❑ Yes ❑ No Type:

Describe treatment:

Hospital/Clinic & Dr Name:	Is employee still being treated? ❑ Yes ❑ No
Has employee returned to work? ❑ Yes ❑ No	Was employee assigned: ❑ Restricted duty ❑ Job transfer ❑ Days away from work



Part of body affected:
Shade all that apply or list:

Employee Name (print):	Signature:	Date:
Supervisor Name (print):	Signature:	Date:

PART C - SUPERVISOR INVESTIGATION & ANALYSIS REPORT

Completed by Supervisor with Input by Safety Manager and Others as Needed

Date of Event	Time of Event:	Type of Event: ❑ Incident ❑ Near Miss ❑ Hazard	Date of this Report:
Event Location:	Project Number:	Supervisor:	Title:

Description of Incident:

Incident involved the following (check all that apply): ❑ Vehicles If Yes, list license Plate Numbers: _____

❑ Machines ❑ Equipment ❑ Tools ❑ Property ❑ Environment ❑ Chemicals ❑ Electronic Equipment ❑ Wildlife

EMPLOYEE & INJURY INFORMATION

Involved Employee:	Employee Age:	Employee Gender:	Date of Hire:
Was employee injured: ❑ Yes ❑ No	If Yes, describe injury:		
Date last worked:	Date returned to work:	Was employee assigned: ❑ Restricted duty ❑ Job transfer ❑ Days away from work	
Hospital/Clinic Name:	Doctor name:	Type of Injury:	

INVOLVED PARTIES and WITNESSES

Names of all involved persons:	Witnesses (name and contact information):	Witness Statements Attached? ❑ Yes ❑ No

PROPERTY DAMAGE

Did property damage occur? ❑ Yes ❑ No	If Yes, what is nature of damage and what inflicted the damage:
Cost to repair damage:	Repercussions from damage:

INCIDENT DESCRIPTION

Describe what happened. (Investigate scene of incident or conditions. Describe who was involved, when and where the incident happened, what happened, and how.) Attach photographs, maps, drawings.

What PPE was being used at the time of the event and was it appropriate?	❑ Yes ❑ No
Is there a task that applies to the **task** being performed when the injury or incident occurred? *If Yes, review the THA, answer the following questions, and attach a copy to this report. If no, please explain why the THA was not required for the task.*	❑ Yes ❑ No
Were hazards sufficiently identified? If not, please explain.	❑ Yes ❑ No
Were identified controls adequate and implemented? If not, please explain.	❑ Yes ❑ No
Were the identified controls not implemented? If not, please explain.	❑ Yes ❑ No

PART C - SUPERVISOR INVESTIGATION & ANALYSIS REPORT

Root Cause (What was the root cause of the incident, i.e., actually caused the illness, injury, or incident?)

Unsafe Acts	**Unsafe Conditions**	**Management System Deficiencies**
❑ Improper Work Technique	❑ Poor Workstation Design or Layout	❑ Lack of Written Procedures or Safety Rules
❑ Improper PPE, Not Used or Used Incorrectly	❑ Fire or Explosion Hazard	❑ Safety Rules Not Enforced
❑ Safety Rule Violation	❑ Congested Work Area	❑ Hazards Not Identified
❑ Operating Without Authorization	❑ Hazardous Substances	❑ PPE Unavailable
❑ Failure to Warn or Secure	❑ Inadequate Ventilation	❑ Insufficient Worker Training
❑ Operating at Improper Speeds	❑ Improper Material Storage	❑ Insufficient Supervisor Training
❑ By-Passing Safety Devices	❑ Improper Tool or Equipment	❑ Improper Maintenance
❑ Guards Not Used	❑ Insufficient Job Knowledge	❑ Inadequate Supervision
❑ Improper Loading or Placement	❑ Slippery Conditions	❑ Insufficient Job Planning
❑ Improper Lifting	❑ Poor Housekeeping	❑ Inadequate Hiring Practices
❑ Servicing or Adjusting Machinery in Motion	❑ Excessive Noise	❑ Poor Process Design
❑ Horseplay	❑ Inadequate Guarding of Hazards	❑ Inadequate Workplace Inspections
❑ Drug or Alcohol Use	❑ Defective Tools/Equipment	❑ Inadequate Equipment
❑ Unsafe Act(s) of Others	❑ Insufficient Lighting	❑ Unsafe Design or Construction
❑ Unnecessary Haste	❑ Inadequate Fall Protection	❑ Unrealistic Scheduling
❑ Other:	❑ Other:	❑ Other:

Contributing Cause(s) (Conditions that made the incident more likely)

Immediate Actions Taken

Actions to Prevent Recurrence (Be specific as to what would prevent injury, incident or damage from recurrence) (use extra page if needed)

CORRECTIVE ACTION TRACKING (All Blocks Must be Filled In and Information Verifiable)

List action(s) that have or will be taken to prevent a recurrence.	Assigned To Whom	Scheduled Completion Date	Actual Completion Date	Follow-up Date

INVESTIGATOR SIGNATURES:

Signature:	Name;	Title;	Date;
Signature:	Name;	Title;	Date;
Signature:	Name;	Title;	Date;
Signature:	Name;	Title;	Date;
Signature:	Name;	Title;	Date;

PART D – WITNESS STATEMENT FORM

Date of Incident: _____ Date of this Statement: _____

Name of Witness: _____

Name of Interviewer: _____

Instructions: Witness statements should be fact based and when possible written by the witness. If the interviewer writes the statement for the witness, the witness must review the statement completely before signing this form. Deletions must be lined out and initialed by the witness. All changes must be initialed by the witness.

Statement:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Witness Signature & Date: _____

Interviewer Signature & Date: _____

*Note. If the Witness refuses to sign this form, the interviewer should print "refused to sign" and the date on the Witness Signature line.

APPENDIX B

CHEMICAL SDS SHEETS

SAFETY DATA SHEET

Version 6.9
Revision Date 03/18/2023
Print Date 05/06/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Trichloroethylene

Product Number : PHR1562
Brand : Sigma-Aldrich
Index-No. : 602-027-00-9
CAS-No. : 79-01-6

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Skin sensitization (Category 1), H317
Germ cell mutagenicity (Category 2), H341
Carcinogenicity (Category 1B), H350
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336
Short-term (acute) aquatic hazard (Category 3), H402
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram	
Signal Word	Danger

Hazard statement(s)

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing mist or vapors.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing must not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	C2HCl3
Molecular weight	:	131.39 g/mol
CAS-No.	:	79-01-6
EC-No.	:	201-167-4
Index-No.	:	602-027-00-9

Component	Classification	Concentration

trichloroethylene		
	Skin Irrit. 2; Eye Irrit. 2A; Skin Sens. 1; Muta. 2; Carc. 1B; STOT SE 3; Aquatic Acute 3; Aquatic Chronic 3; H315, H319, H317, H341, H350, H336, H402, H412 Concentration limits: >= 20 %: STOT SE 3, H336;	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at Room Temperature.

Storage class
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
trichloroethylene	79-01-6	TWA	10 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Suspected human carcinogen		
		STEL	25 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Suspected human carcinogen		
		Potential Occupational Carcinogen		
		TWA	100 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		CEIL	200 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Peak	300 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		C	300 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		PEL	25 ppm 135 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		STEL	100 ppm 537 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
trichloroethylene	79-01-6	Trichloroacetic acid	15 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift at end of workweek			
		Trichloroethanol	0.5 mg/l	In blood	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			
		Trichloroethylene		In blood	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

		Trichloroethylene		In end-exhaled air	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 10 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Body Protection
protective clothing

Respiratory protection
required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance Form: liquid, clear

		Color: colorless
b)	Odor	characteristic
c)	Odor Threshold	28 ppm
d)	pH	No data available
e)	Melting point/freezing point	Melting point: -84.8 °C (-120.6 °F) at 1,013 hPa
f)	Initial boiling point and boiling range	86.7 °C 188.1 °F at 1,013 hPa
g)	Flash point	() - closed cupdoes not flash
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: > 99 %(V) - (Saturation - at high volume fractions, explosion turns into a decomposition reaction) Lower explosion limit: 7.9 %(V)
k)	Vapor pressure	81.3 hPa at 20.0 °C (68.0 °F)
l)	Vapor density	No data available
m)	Density	1.46 g/cm3 at 20 °C (68 °F)
	Relative density	1.4620 °C
n)	Water solubility	1.1 g/l at 20 °C (68 °F)
o)	Partition coefficient: n-octanol/water	log Pow: 2.53 at 20 °C (68 °F) - Bioaccumulation is not expected.
p)	Autoignition temperature	410.0 °C (770.0 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Oxygen

(as liquefied gas)
Alkaline earth metals
alkali amides
semimetallic hydrogen compounds
perchloric acid
Light metals
aluminium chloride
Strong oxidizing agents
potassium nitrate
Risk of explosion with:
Alkali metals
Aluminum
Barium
alkali hydroxides
Lithium
magnesium
Powdered metals
sodium amide
Strong oxidizing agents
nitrogen dioxide
Boranes
Oxygen
with
alkali hydroxides
Oxygen
with
Pressure
Risk of ignition or formation of inflammable gases or vapours with:
Titanium
Beryllium
Epoxy constituents

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
various plastics

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
LC50 Inhalation - Rat - male - 4 h - 67.41 mg/l

Remarks: (ECHA)
LD50 Dermal - Rabbit - > 20,000 mg/kg
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Skin irritation
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Eye irritation - 24 h
Remarks: (RTECS)

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: positive
(OECD Test Guideline 429)

Germ cell mutagenicity
In vitro tests showed mutagenic effects
Test Type: Ames test
Test system: S. typhimurium
Method: OECD Test Guideline 471
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative
Remarks: (ECHA)

Test Type: in vivo assay
Species: Mouse

Result: negative
Remarks: (ECHA)

Carcinogenicity
Possible human carcinogen

IARC:	1 - Group 1: Carcinogenic to humans (trichloroethylene)
NTP:	Known - Known to be human carcinogen (trichloroethylene)
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
May cause drowsiness or dizziness. - Central nervous system

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Exposure to and/or consumption of alcohol may increase toxic effects., Gastrointestinal disturbance, Kidney injury may occur., narcosis
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Jordanella floridae - 28.3 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	Remarks: No data available (trichloroethylene)
Toxicity to algae	ErC50 - Chlamydomonas reinhardtii (green algae) - 36.5 mg/l - 72 h Remarks: (ECHA) (trichloroethylene)
Toxicity to bacteria	
Toxicity to fish(Chronic toxicity)	flow-through test NOEC - Jordanella floridae (flagfish) - 5.76 mg/l - 10 d Remarks: (ECHA)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 28 d Result: 19 % - Not readily biodegradable. (OECD Test Guideline 301D)

12.3 Bioaccumulative potential

Bioaccumulation	Lepomis macrochirus - 14 d (trichloroethylene) Bioconcentration factor (BCF): 17

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)
UN number: 3082 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (trichloroethylene)
Reportable Quantity (RQ): 100 lbs
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

Further information
Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
trichloroethylene	79-01-6	2007-07-01

Reportable Quantity : D040 lbs

Massachusetts Right To Know Components

	CAS-No.	Revision Date
trichloroethylene	79-01-6	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
trichloroethylene	79-01-6	2007-07-01

California Prop. 65 Components

	CAS-No.	Revision Date
, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.trichloroethylene	79-01-6	2017-04-11

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.9 Revision Date: 03/18/2023 Print Date: 05/06/2023

SAFETY DATA SHEET

Version 6.9
Revision Date 03/18/2023
Print Date 05/06/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Trichloroethylene

Product Number : 251402
Brand : SIGALD
Index-No. : 602-027-00-9
CAS-No. : 79-01-6

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Skin sensitization (Category 1), H317
Germ cell mutagenicity (Category 2), H341
Carcinogenicity (Category 1B), H350
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336
Short-term (acute) aquatic hazard (Category 3), H402
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram	
Signal Word	Danger

Hazard statement(s)

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing mist or vapors.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing must not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	TCE Trichloroethene
Formula	:	C_2HCl_3
Molecular weight	:	131.39 g/mol
CAS-No.	:	79-01-6
EC-No.	:	201-167-4
Index-No.	:	602-027-00-9

Component	Classification	Concentration
trichloroethylene		
	Skin Irrit. 2; Eye Irrit. 2A; Skin Sens. 1; Muta. 2; Carc. 1B; STOT SE 3; Aquatic Acute 3; Aquatic Chronic 3; H315, H319, H317, H341, H350, H336, H402, H412 Concentration limits: >= 20 %: STOT SE 3, H336;	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Combustible.

Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Light sensitive. Handle and store under inert gas.

Storage class
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
trichloroethylene	79-01-6	TWA	10 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Suspected human carcinogen		
		STEL	25 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Suspected human carcinogen		
		Potential Occupational Carcinogen		
		TWA	100 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		CEIL	200 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Peak	300 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		C	300 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		PEL	25 ppm 135 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		STEL	100 ppm 537 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
trichloroethylene	79-01-6	Trichloroacetic acid	15 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift at end of workweek			
		Trichloroethanol	0.5 mg/l	In blood	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			
		Trichloroethylene		In blood	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

		Trichloroethylene		In end-exhaled air	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 10 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Body Protection
protective clothing

Respiratory protection
required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance Form: liquid, clear

		Color: colorless
b)	Odor	characteristic
c)	Odor Threshold	28 ppm
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: -84.8 °C (-120.6 °F) - lit.
f)	Initial boiling point and boiling range	86.7 °C 188.1 °F - lit.
g)	Flash point	() - closed cupdoes not flash
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: > 99 %(V) - (Saturation - at high volume fractions, explosion turns into a decomposition reaction) Lower explosion limit: 7.9 %(V)
k)	Vapor pressure	81.3 hPa at 20.0 °C (68.0 °F)
l)	Vapor density	No data available
m)	Density	1.463 g/mL at 25 °C (77 °F) - lit.
	Relative density	1.4620 °C
n)	Water solubility	1.1 g/l at 20 °C (68 °F)
o)	Partition coefficient: n-octanol/water	log Pow: 2.53 at 20 °C (68 °F) - Bioaccumulation is not expected.
p)	Autoignition temperature	410.0 °C (770.0 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Oxygen

(as liquefied gas)
Alkaline earth metals
alkali amides
semimetallic hydrogen compounds
perchloric acid
Light metals
aluminium chloride
Strong oxidizing agents
potassium nitrate
Risk of explosion with:
Alkali metals
Aluminum
Barium
alkali hydroxides
Lithium
magnesium
Powdered metals
sodium amide
Strong oxidizing agents
nitrogen dioxide
Boranes
Oxygen
with
alkali hydroxides
Oxygen
with
Pressure
Risk of ignition or formation of inflammable gases or vapours with:
Titanium
Beryllium
Epoxy constituents

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
various plastics

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
LC50 Inhalation - Rat - male - 4 h - 67.41 mg/l

Remarks: (ECHA)
LD50 Dermal - Rabbit - > 20,000 mg/kg
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Skin irritation
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Eye irritation - 24 h
Remarks: (RTECS)

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: positive
(OECD Test Guideline 429)

Germ cell mutagenicity
In vitro tests showed mutagenic effects
Test Type: Ames test
Test system: S. typhimurium
Method: OECD Test Guideline 471
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative
Remarks: (ECHA)

Test Type: in vivo assay
Species: Mouse

Result: negative
Remarks: (ECHA)

Carcinogenicity
Possible human carcinogen

IARC:	1 - Group 1: Carcinogenic to humans (trichloroethylene)
NTP:	Known - Known to be human carcinogen (trichloroethylene)
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
May cause drowsiness or dizziness. - Central nervous system

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: KX4550000
burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Exposure to and/or consumption of alcohol may increase toxic effects., Gastrointestinal disturbance, Kidney injury may occur., narcosis
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Jordanella floridae - 28.3 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	Remarks: No data available (trichloroethylene)
Toxicity to algae	ErC50 - Chlamydomonas reinhardtii (green algae) - 36.5 mg/l - 72 h Remarks: (ECHA) (trichloroethylene)
Toxicity to bacteria	
Toxicity to fish(Chronic toxicity)	flow-through test NOEC - Jordanella floridae (flagfish) - 5.76 mg/l - 10 d Remarks: (ECHA)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 28 d Result: 19 % - Not readily biodegradable. (OECD Test Guideline 301D)

12.3 Bioaccumulative potential

Bioaccumulation	Lepomis macrochirus - 14 d (trichloroethylene) Bioconcentration factor (BCF): 17

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)
UN number: 1710 Class: 6.1 Packing group: III
Proper shipping name: Trichloroethylene
Reportable Quantity (RQ): 100 lbs
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 1710 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TRICHLOROETHYLENE

IATA
UN number: 1710 Class: 6.1 Packing group: III
Proper shipping name: Trichloroethylene

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
trichloroethylene	79-01-6	2007-07-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Reportable Quantity : D040 lbs

Massachusetts Right To Know Components

	CAS-No.	Revision Date
trichloroethylene	79-01-6	2007-07-01

Pennsylvania Right To Know Components

trichloroethylene	CAS-No. 79-01-6	Revision Date 2007-07-01

California Prop. 65 Components

, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.trichloroethylene	CAS-No. 79-01-6	Revision Date 2017-04-11

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.9 Revision Date: 03/18/2023 Print Date: 05/06/2023

SAFETY DATA SHEET

Version 9.4
Revision Date 01/25/2023
Print Date 05/06/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : cis-Dichloroethylene

Product Number : 48597
Brand : Supelco
Index-No. : 602-026-00-3
CAS-No. : 156-59-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 4), H332
Skin irritation (Category 2), H315
Short-term (acute) aquatic hazard (Category 3), H402
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word	Danger

Hazard statement(s)

H225	Highly flammable liquid and vapor.
H302 + H332	Harmful if swallowed or if inhaled.
H315	Causes skin irritation.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	C2H2Cl2
Molecular weight	:	96.94 g/mol
CAS-No.	:	156-59-2
EC-No.	:	205-859-7
Index-No.	:	602-026-00-3

Component	Classification	Concentration
cis-Dichloroethylene		
	Flam. Liq. 2; Acute Tox. 4; Skin Irrit. 2; Aquatic Acute 3; Aquatic Chronic 3; H225, H302, H332, H315, H402, H412	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Combustible.
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.
Forms explosive mixtures with air at ambient temperatures.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Storage stability
Recommended storage temperature
2 - 8 °C

Handle and store under inert gas. Air and moisture sensitive. Light sensitive.

Storage class
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
cis-Dichloroethylene	156-59-2	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Central Nervous System impairment Eye irritation		

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
required

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Color: light yellow
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	-80.0 °C (-112.0 °F)
f)	Initial boiling point and boiling range	60.0 - 61.0 °C 140.0 - 141.8 °F at 1,013.2 hPa

g)	Flash point	6.0 °C (42.8 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	1.28 g/cm3 at 20 °C (68 °F)
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
Vapors may form explosive mixture with air.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Warming.

10.5 Incompatible materials
Oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 770 mg/kg
Remarks: (RTECS)
Acute toxicity estimate Inhalation - 4 h - 11.1 mg/l - vapor

(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Dermal: No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Moderate skin irritation - 24 h
Remarks: (RTECS)

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: KV9420000
narcosis
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Lepomis macrochirus (Bluegill sunfish) - 140 mg/l - 96 h Remarks: (ECOTOX Database)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)
UN number: 1150 Class: 3 Packing group: II
Proper shipping name: 1,2-Dichloroethylene
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG
UN number: 1150 Class: 3 Packing group: II EMS-No: F-E, S-D
Proper shipping name: 1,2-DICHLOROETHYLENE

IATA
UN number: 1150 Class: 3 Packing group: II
Proper shipping name: 1,2-Dichloroethylene

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
cis-Dichloroethylene	156-59-2	1993-04-24

	CAS-No.	Revision Date
cis-Dichloroethylene	156-59-2	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
cis-Dichloroethylene	156-59-2	1993-04-24

	CAS-No.	Revision Date
cis-Dichloroethylene	156-59-2	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
cis-Dichloroethylene	156-59-2	1993-04-24

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 9.4 Revision Date: 01/25/2023 Print Date: 05/06/2023

SAFETY DATA SHEET

Version 6.7
Revision Date 02/07/2023
Print Date 05/09/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : *trans*-1,2-Dichloroethene solution

Product Number : 48612
Brand : Supelco
Index-No. : 603-001-00-X

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 3), H311
Specific target organ toxicity - single exposure (Category 1), H370

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word Danger

Hazard statement(s)

H225	Highly flammable liquid and vapor.
H301 + H311 + H331	Toxic if swallowed, in contact with skin or if inhaled.
H370	Causes damage to organs.

Precautionary statement(s)

P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P311	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.
P363	Wash contaminated clothing before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Formula : C2H2Cl2
Molecular weight : 96.94 g/mol

Component		Classification	Concentration
Methanol			
CAS-No. EC-No. Index-No. Registration number	67-56-1 200-659-6 603-001-00-X 01-2119433307-44-XXXX	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301, H331, H311, H370 Concentration limits: >= 10 %: STOT SE 1, H370; 3 - < 10 %: STOT SE 2, H371;	>= 90 - <= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Advice on protection against fire and explosion
Use explosion-proof equipment.Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Storage class
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Methanol	67-56-1	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Danger of cutaneous absorption		
		STEL	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Danger of cutaneous absorption		
		ST	250 ppm 325 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		

		TWA	200 ppm 260 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200 ppm 260 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		PEL	200 ppm 260 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		C	1,000 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		STEL	250 ppm 325 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		TWA	200 ppm 260 mg/m3	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
		Skin notation		
		STEL	250 ppm 325 mg/m3	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
		Skin notation		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Methanol	67-56-1	Methanol	15 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 30 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: -98 °C (-144 °F)
f)	Initial boiling point and boiling range	64.6 - 64.7 °C 148.3 - 148.5 °F at 1,013 hPa
g)	Flash point	11 °C (52 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid,	No data available

	gas)	
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 36 %(V) Lower explosion limit: 6 %(V)
k)	Vapor pressure	130.2 hPa at 20 °C (68 °F) 547 hPa at 50 °C(122 °F)
l)	Vapor density	No data available
m)	Density	0.791 g/cm3
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	385 °C (725 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	Not classified as explosive.
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Vapors may form explosive mixture with air.

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Acids, Oxidizing agents, Alkali metals, Acid chlorides, Acid anhydrides, Reducing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Mixture

Acute toxicity
Oral: No data available
Acute toxicity estimate Oral - 100.02 mg/kg
(Calculation method)

Inhalation: No data available

Acute toxicity estimate Inhalation - 4 h - 3 mg/l - vapor(Calculation method)

Dermal: No data available

Acute toxicity estimate Dermal - 300.06 mg/kg
(Calculation method)

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Methyl alcohol may be fatal or cause blindness if swallowed., Cannot be made non-poisonous., Effects due to ingestion may include:, Nausea, Dizziness, Gastrointestinal disturbance, Weakness, Confusion., Drowsiness, Unconsciousness, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Stomach - Irregularities - Based on Human Evidence

Components

Methanol

Acute toxicity
Acute toxicity estimate Oral - 100.1 mg/kg
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Symptoms: Nausea, Vomiting
Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapor
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Symptoms: Irritation symptoms in the respiratory tract.
Acute toxicity estimate Dermal - 300.1 mg/kg
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation
Remarks: (ECHA)
Remarks: Drying-out effect resulting in rough and chapped skin.

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation
Remarks: (ECHA)

Respiratory or skin sensitization
Sensitisation test: - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Based on available data the classification criteria are not met.
Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Result: negative
Method: OECD Test Guideline 474
Species: Mouse - male and female - Bone marrow
Result: negative

Carcinogenicity
Did not show carcinogenic effects in animal experiments.

Reproductive toxicity
Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure
Causes damage to organs. - Eyes, Central nervous system
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute oral toxicity - Nausea, Vomiting
Acute inhalation toxicity - Irritation symptoms in the respiratory tract.

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

SECTION 12: Ecological information

12.1 Toxicity

Mixture
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

Components

Methanol

Toxicity to fish	flow-through test LC50 - Lepomis macrochirus (Bluegill) - 15,400.0 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	semi-static test EC50 - Daphnia magna (Water flea) - 18,260 mg/l - 96 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata (green algae) - ca. 22,000.0 mg/l - 96 h (OECD Test Guideline 201)
Toxicity to bacteria	static test IC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)
Toxicity to fish(Chronic toxicity)	NOEC - Oryzias latipes (Orange-red killifish) - 7,900 mg/l - 200 h Remarks: (External MSDS)

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG
UN number: 1230 Class: 3 (6.1) Packing group: II EMS-No: F-E, S-D
Proper shipping name: METHANOL

IATA
UN number: 1230 Class: 3 (6.1) Packing group: II
Proper shipping name: Methanol

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

trans-Dichloroethylene	156-60-5	1993-02-16

Methanol	CAS-No. 67-56-1	Revision Date 2007-07-01
trans-Dichloroethylene	156-60-5	1993-02-16

New Jersey Right To Know Components

Methanol	CAS-No. 67-56-1	Revision Date 2007-07-01

California Prop. 65 Components

, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.Methanol	CAS-No. 67-56-1	Revision Date 2012-03-16

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.7 Revision Date: 02/07/2023 Print Date: 05/09/2023

SAFETY DATA SHEET

Version 6.4
Revision Date 02/07/2023
Print Date 05/06/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Vinyl chloride solution

Product Number : 48625
Brand : Supelco
Index-No. : 603-001-00-X

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 3), H311
Specific target organ toxicity - single exposure (Category 1), Eyes, Central nervous system, H370

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word Danger

Hazard statement(s)

H225	Highly flammable liquid and vapor.
H301 + H311 + H331	Toxic if swallowed, in contact with skin or if inhaled.
H370	Causes damage to organs (Eyes, Central nervous system).

Precautionary statement(s)

P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P311	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Molecular weight : 32.04 g/mol

Component		Classification	Concentration
Methanol			
CAS-No. EC-No. Index-No. Registration number	67-56-1 200-659-6 603-001-00-X 01-2119433307-44-XXXX	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301, H331, H311, H370 Concentration limits: >= 10 %: STOT SE 1, H370; 3 - < 10 %: STOT SE 2, H371;	>= 90 - <= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: fresh air. Make victim drink ethanol (e.g. 1 drinking glass of a 40% alcoholic beverage). Call a doctor immediately (mention methanol ingestion). Only in exceptional cases, if no medical care is available within one hour, induce vomiting (only in fully conscious persons) and make victim drink ethanol again (approx. 0.3 ml of a 40% alcoholic beverage/kg body weight/hour).

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air at ambient temperatures.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Methanol	67-56-1	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Danger of cutaneous absorption		
		STEL	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Danger of cutaneous absorption		
		ST	250 ppm 325 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200 ppm 260 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200 ppm 260 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		PEL	200 ppm 260 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		C	1,000 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		STEL	250 ppm 325 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		TWA	200 ppm 260 mg/m3	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
		Skin notation		
		STEL	250 ppm 325 mg/m3	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
		Skin notation		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Methanol	67-56-1	Methanol	15 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 30 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: -98 °C (-144 °F)

f)	Initial boiling point and boiling range	64.6 - 64.7 °C 148.3 - 148.5 °F at 1,013 hPa
g)	Flash point	11 °C (52 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 36 %(V) Lower explosion limit: 6 %(V)
k)	Vapor pressure	130.2 hPa at 20 °C (68 °F) 547 hPa at 50 °C(122 °F)
l)	Vapor density	No data available
m)	Density	0.791 g/cm3
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	385 °C (725 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	Not classified as explosive.
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
Vapors may form explosive mixture with air.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Warming.

10.5 Incompatible materials
Acids, Oxidizing agents, Alkali metals, Acid chlorides, Acid anhydrides, Reducing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Mixture

Acute toxicity
Oral: No data available
Acute toxicity estimate Oral - 100.1 mg/kg
(Calculation method)

Inhalation: No data available

Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapor(Calculation method)

Dermal: No data available

Acute toxicity estimate Dermal - 300.1 mg/kg
(Calculation method)
No data available

Skin corrosion/irritation
Remarks: No data available

Serious eye damage/eye irritation
Remarks: No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure

Remarks: No data available
Mixture causes damage to organs. - Eyes, Central nervous system

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Methyl alcohol may be fatal or cause blindness if swallowed., Cannot be made non-poisonous., Effects due to ingestion may include:, Nausea, Dizziness, Gastrointestinal disturbance, Weakness, Confusion., Drowsiness, Unconsciousness, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Stomach - Irregularities - Based on Human Evidence

Components

Methanol

Acute toxicity
Acute toxicity estimate Oral - 100.1 mg/kg
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Symptoms: Nausea, Vomiting
Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapor
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Symptoms: Irritation symptoms in the respiratory tract.
Acute toxicity estimate Dermal - 300.1 mg/kg
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation
Remarks: (ECHA)
Remarks: Drying-out effect resulting in rough and chapped skin.

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation
Remarks: (ECHA)

Respiratory or skin sensitization
Sensitisation test: - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Based on available data the classification criteria are not met.

Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Result: negative
Method: OECD Test Guideline 474
Species: Mouse - male and female - Bone marrow
Result: negative

Carcinogenicity
Did not show carcinogenic effects in animal experiments.

Reproductive toxicity
Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure
Causes damage to organs. - Eyes, Central nervous system
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Acute oral toxicity - Nausea, Vomiting
Acute inhalation toxicity - Irritation symptoms in the respiratory tract.

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

SECTION 12: Ecological information

12.1 Toxicity

Mixture
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

Components

Methanol

Toxicity to fish	flow-through test LC50 - Lepomis macrochirus (Bluegill) - 15,400.0 mg/l - 96 h

	(US-EPA)
Toxicity to daphnia and other aquatic invertebrates	semi-static test EC50 - Daphnia magna (Water flea) - 18,260 mg/l - 96 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata (green algae) - ca. 22,000.0 mg/l - 96 h (OECD Test Guideline 201)
Toxicity to bacteria	static test IC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)
Toxicity to fish(Chronic toxicity)	NOEC - Oryzias latipes (Orange-red killifish) - 7,900 mg/l - 200 h Remarks: (External MSDS)

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: MethanolSOLUTION

Reportable Quantity (RQ): 5000 lbs
Reportable Quantity (RQ): 1 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 1230 Class: 3 (6.1) Packing group: II EMS-No: F-E, S-D
Proper shipping name: METHANOLSOLUTION

IATA
UN number: 1230 Class: 3 (6.1) Packing group: II
Proper shipping name: MethanolSOLUTION

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Chronic Health Hazard

Reportable Quantity : D043 lbs

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01
Vinyl chloride	75-01-4	2007-07-01

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01
Vinyl chloride	75-01-4	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01
Vinyl chloride	75-01-4	2007-07-01

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01
Vinyl chloride	75-01-4	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

California Prop. 65 Components

	CAS-No.	Revision Date
, which is/are known to the State of California to cause cancer, andVinyl chloride	75-01-4	2007-09-28
, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.Methanol	67-56-1	2012-03-16

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.4 Revision Date: 02/07/2023 Print Date: 05/06/2023