WORK PLAN

REMEDIAL INVESTIGATION/ ALTERNATIVES ANALYSIS

HENRY JOHNSON BOULEVARD PROPERTIES
ALBANY, NEW YORK

City of Albany
Albany Community Development Agency
Albany, New York

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4279009

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1.0 INTRODUCTION

The City of Albany, New York (City) has received a grant under the 1996 Clean Water/Clean Air Bond Act Environmental Restoration Program to conduct a Remedial Investigation/Alternatives Analysis (RI/AA) for the Henry Johnson Boulevard Properties in Albany, New York. This site-specific Work Plan summarizes the scope of work for the RI/AA. The objectives of the investigation include:

- Assessment of the nature and extent of the environmental contamination conditions both on and off site.
- Evaluation of remedial options, which are protective of human health and the environment and consider the municipality's "Contemplated Use" of the property.
- Produce data for remedial decision-making which supports the evaluation of remedial alternatives and enables the New York State Department of Environmental Conservation (NYSDEC) to prepare a Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD) for the site.

This Work Plan and the associated Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP) including a Community Health and Safety Plan, and Citizen Participation Plan (CPP), will be submitted to the NYSDEC for regulatory approval. Phase I and Phase II Environmental Site Assessments (ESAs) were previously submitted in June 2003 (Malcolm Pirnie, 2003) and February 2005 (Malcolm Pirnie, 2005), respectively.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

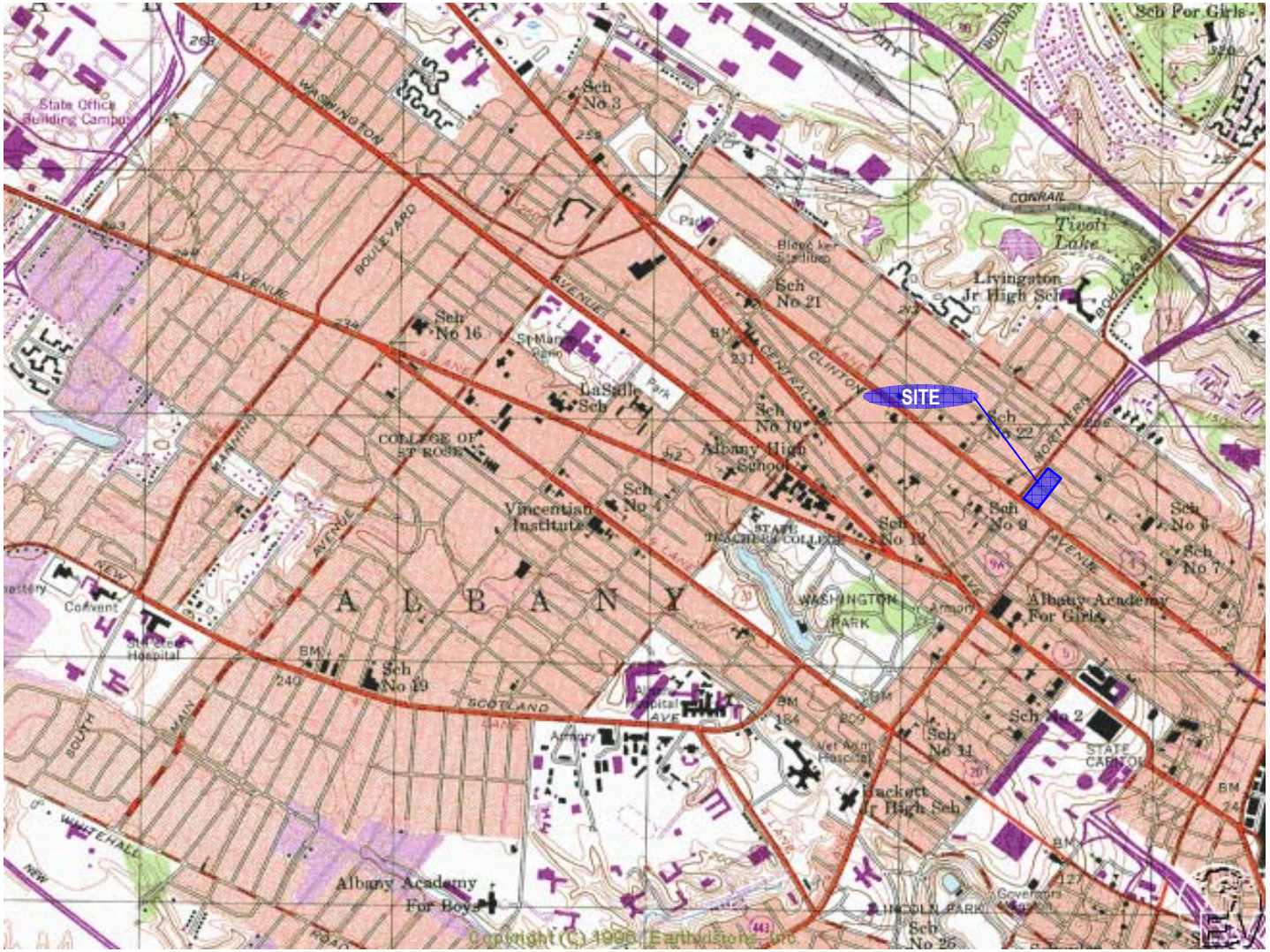
The site includes 10 properties located along Henry Johnson Boulevard (HJB), in the City of Albany, New York. Figure 2-1 shows the location of the site and Figure 2-2 identifies the properties included in the RI/AA. The assessment area extends for two blocks along the southeastern side of HJB, between Clinton Avenue to the south and Second Street to the north. One property fronts on Clinton Avenue; two properties front on Second Street; and seven properties front on HJB.

At the time of the Phase II ESA, the site use was mixed and included active and inactive commercial and residential properties. The ground surface over the majority of the site was composed of sparse vegetation and asphalt paved areas and was generally free of debris (such as glass, metal, or wood). Generally, buildings on the assessed properties at the time of the Phase I and II ESAs were two or three stories. Very little ground surface was exposed at these properties. A concrete sidewalk was located between the front of the buildings and the adjacent street. The buildings extended laterally to their respective property lines. A small portion of ground surface was exposed at the rear of a majority of the properties which contained structures. The buildings were constructed of wood or brick and contained substructures (i.e., basements).

2.2 GEOLOGY/HYDROGEOLOGY

Since bedrock was not encountered during the site Phase II ESA investigation, the Hudson-Mohawk Sheet of the Geologic Map of New York was reviewed to determine the underlying bedrock at the site (Fisher et al., 1970). Normanskill shale, with minor mudstone and sandstone is present beneath the site and a majority of the surrounding area.

The Hudson-Mohawk Sheet of the Surficial Geologic Map of New York (Caldwell et al., 1987) was used to identify characteristics of the surface geology at the site. Lacustrine sand deposits were identified in the area underlying the site. Based on the subsurface evaluation conducted during the Phase II ESA, overburden materials observed in the soil



SOURCE: 7.5 MINUTE TOPOGRAPHIC MAP
ALBANY QUADRANGE, NEW YORK
UNITED STATES GEOLOGIC SURVEY 1980.

SCALE IN FEET

0 1000 2000 4000

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HENRY JOHNSON BOULEVARD PROPERTIES
ALBANY, NEW YORK

SITE LOCATION

FIGURE 2-1

N

2ND STREET

150 HJB

216 2ND ST.

214 2ND ST.

212 2ND ST.

210 2ND ST.

148 HJB

ALLEY

146 HJB

138 HJB

132 HJB

130 HJB

128 HJB

126 HJB

124 HJB

339 CLINTON AVE.

337 CLINTON AVE.

335 CLINTON AVE.

333 CLINTON AVE.

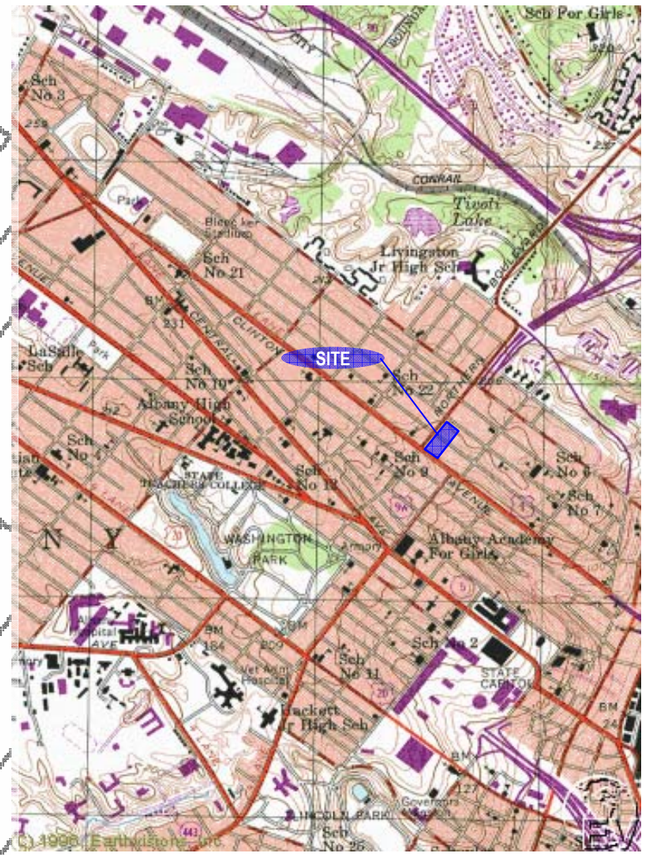
HENRY JOHNSON BOULEVARD

1ST STREET

CLINTON AVENUE

APPROXIMATE SCALE IN FEET

0 50 100 200



LEGEND

Henry Johnson Boulevard Properties

F:\PROJECT\4279009\FILE\HJ WORK PLAN\FIG 2-1.PPT

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ALBANY, NEW YORK

ASSESSMENT PROPERTIES

FIGURE 2-2

cores from the site were generally composed of fill material overlying medium to fine sand and silt. In most areas, silty clay was present beneath the fine sand and silt.

The Soil Survey of Albany County, New York, produced and distributed by the United States Department of Agriculture, Soil Conservation Service, identified soils at the site as urban lands with some areas of clayey and loamy udorthents complexes (USDA-SCS, 1992). Udorthents are generally brown silt loam from the surface to approximately five inches below ground surface and silty loam or silty clay with greater than 40 percent rock fragments to as deep as 60 inches. Since this complex is classified along with urban lands, which are identified as being greater than 85 percent covered by roads, parking lots, buildings and other generally impervious surfaces, variations and deviations resulting from human activity are likely. Additionally, urban lands are drained by man made improvements; therefore natural soil structure is likely disturbed by human activity.

Topography at the site varies from approximately 200 feet above mean sea level (amsl) at the northeastern end of the site to approximately 180 feet amsl at the southwestern end of the site. Groundwater levels at the site generally ranged from four to seven feet below ground surface (bgs). The direction of groundwater flow generally follows the topographic gradient of the site toward the west and southwest.

2.3 SITE HISTORY

Historical records for the site and surrounding areas indicate that it was developed prior to 1892 and the buildings and improvements along HJB have gone through modifications that required demolition. The properties have historically been residential or commercial.

The properties that front on Clinton Avenue have apparently remained unchanged or new buildings were built in the footprints of previous buildings. The locations of buildings at 124, 126, 128, and 130 HJB appeared to be relatively consistent through 1995; however, no buildings were present on these properties at the time of the Phase II ESA investigation. The properties at 132, 134, and 136 HJB were vacant at the time of the investigation. Historically, four separate commercial and residential buildings were on these properties, adjacent to HJB (historically Northern Boulevard) as late as 1908. By 1934 these buildings

had been demolished and a single building was located in the center of the combined properties. This facility was identified as a service station. The service station building was listed on the property as late as 1995 but was not present at the time of the investigation.

Four buildings occupied the properties at 138, 140, 142, and 144 HJB. The location of buildings on these properties was consistent until their demolition, which occurred between 1950 and 1989.

The building at 148 HJB was formerly used as a laundry and tailor shop, and potentially a dry cleaner. The interior of the building was inspected in March 2003 and no evidence of dry cleaning materials or machinery was observed.

The buildings located at 146 HJB and 216 Second Avenue, respectively were demolished after the field activities were completed for the Phase II ESA. The foundation areas of these buildings appear to have been returned to grade with fill material.

3.0 SITE INVESTIGATION

The scope of work for the RI/AA is designed to determine the nature and extent of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals detected in soil and groundwater, as well as VOCs in soil vapor and air, on and off site, and to gather sufficient information to evaluate remedial alternatives for all affected media. The base scope of work includes surface soil sampling and analysis, soil borings, subsurface soil sampling and analysis, monitoring well installation, groundwater sampling and analysis, soil vapor monitoring point installation, soil vapor sampling and analysis, and indoor and outdoor air sampling and analysis. A New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) and NYSDEC Analytical Services Protocol (ASP)-approved analytical laboratory will analyze all samples collected during the investigation. ASP Category B data packages will be produced for each soil and groundwater sample and full data packages will be provided for each air sample. A Data Usability Summary Report (DUSR) will be prepared upon the receipt of all analytical data to ensure that the quality of the data is sufficient to evaluate remedial alternatives.

3.1 BACKGROUND

Past uses and development of the site that could have affected soil and groundwater include:

- The historic long-term operation of a vehicle maintenance and refueling facility.
- The suspected historic storage and dispensation of gasoline.
- The suspected presence of former petroleum underground storage tanks.
- The suspected historic use of chlorinated solvents.
- The placement of urban fill material of unknown origin.

A subsurface evaluation of the site during the Phase II ESA, which was conducted by Malcolm Pirnie in 2004, identified concentrations of VOCs, SVOCs, and metals in groundwater and soil samples collected from the site that exceeded the applicable NYSDEC

Class GA Standards/Guidance Values and NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Soil Cleanup Objectives.

3.2 PRELIMINARY SITE INVESTIGATION ACTIVITIES

Prior to performing the Phase II ESA subsurface evaluation, Malcolm Pirnie conducted a surface survey on the accessible portions of the site using a Schonstadt® magnetic and dual frequency pipe and cable locator. The purpose of the survey was to identify buried metal infrastructure associated with historic buildings or former operations at the site. No significant buried metal objects were detected at the site.

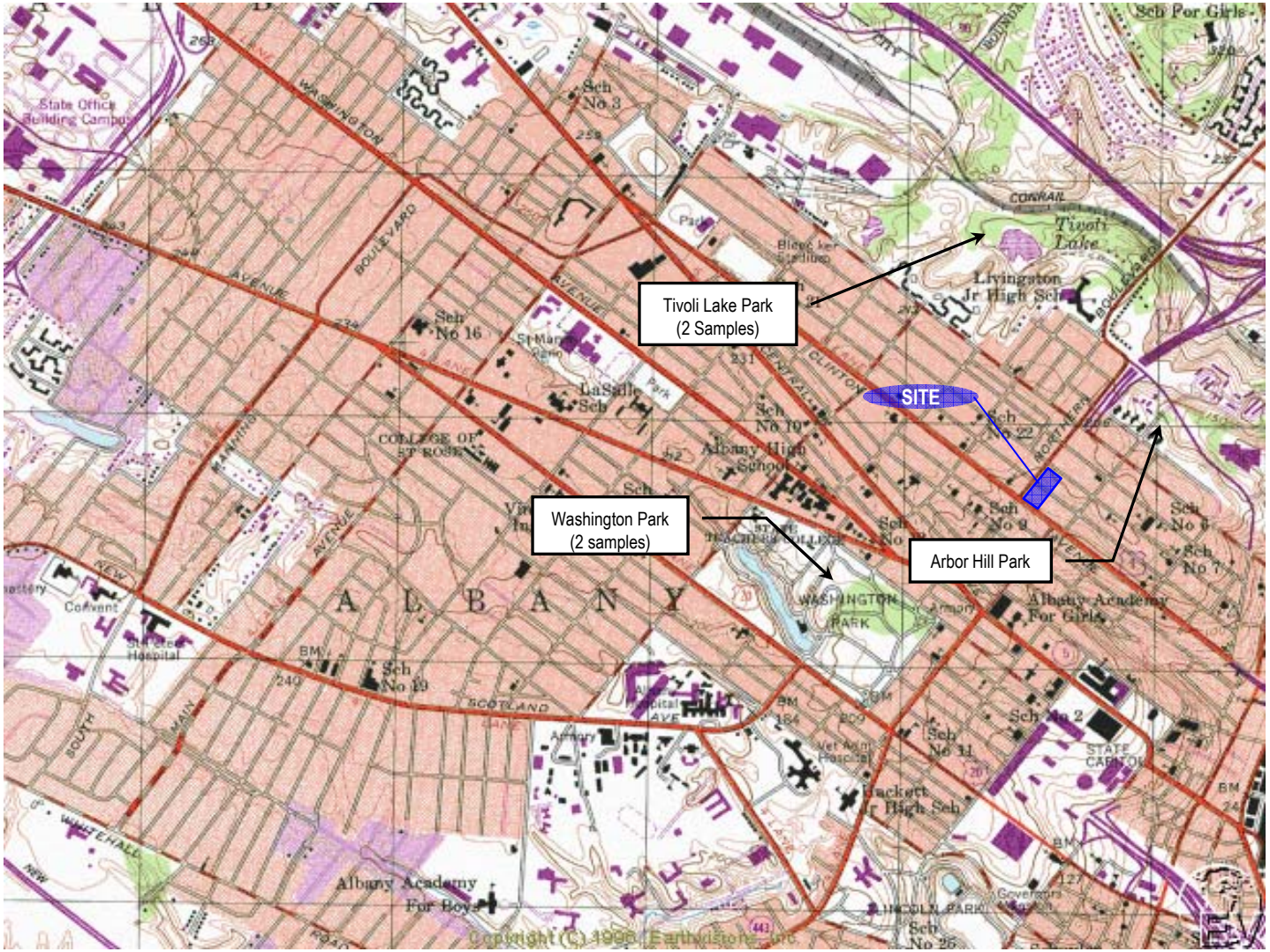
3.2.1 Groundwater Sampling

Prior to the implementation of the RI/AA site investigation, groundwater samples will be collected from the monitoring wells installed at the site during the Phase II ESA to evaluate existing groundwater conditions. Since several of the monitoring wells on the site are located in the vicinity of a staging area used for the recent HJB reconstruction, some of these wells may no longer be accessible. Therefore, a preliminary site survey will be conducted to verify the existence of all of the monitoring wells previously installed at the site. Groundwater samples will be collected from the existing wells in accordance with the Quality Assurance Project Plan (QAPP) and analyzed for Target Compound List (TCL) +Tentatively Identified Compound (TIC) VOCs and SVOCs, a Target Analyte List (TAL) of 23 metals, natural attenuation parameters (NAP), and geochemical parameters.

3.2.2 Background Surface Soil Sampling

Five surface soil samples will be collected from the vicinity of the site in accordance with the conditions specified in NYSDEC Draft DER-10 to establish site background concentrations for metals. The anticipated surface soil sampling locations are listed below and shown on Figure 3-1.

- Arbor Hill Park.
- Tivoli Lakes Wildlife Park (2 samples).
- Washington Park (2 samples).



SOURCE: 7.5 MINUTE TOPOGRAPHIC MAP
ALBANY QUADRANGE, NEW YORK
UNITED STATES GEOLOGIC SURVEY 1980.

SCALE IN FEET

0 1000 2000 4000

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BACKGROUND SURFACE SOIL SAMPLING LOCATIONS

FIGURE 3-1

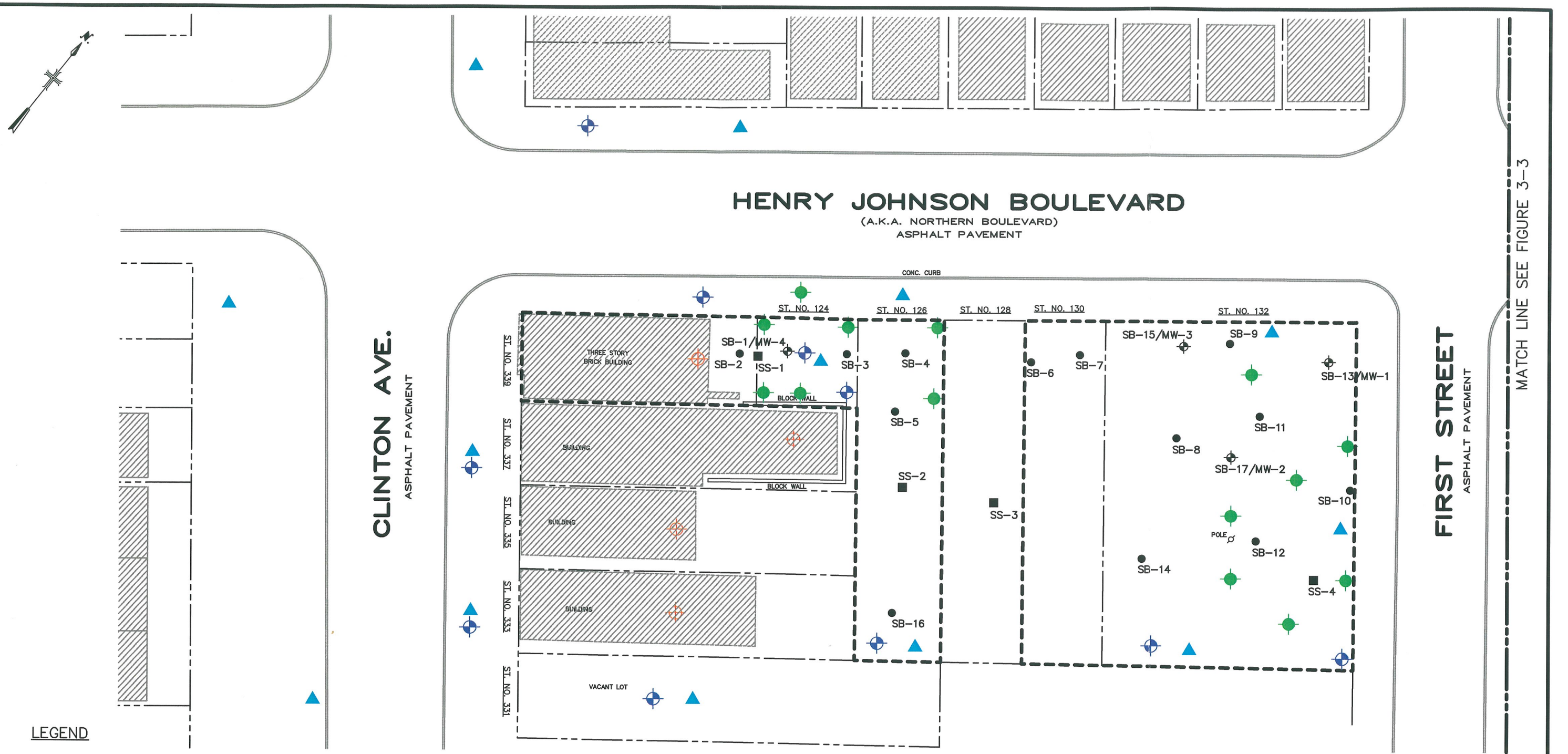
Each surface soil sample will be collected in accordance with the QAPP. Samples will be analyzed for TAL metals.

3.3 SURFACE SOIL SAMPLING

As discussed in Section 3.2.2, surface soil samples will be collected at five locations in the vicinity of the site to evaluate background environmental conditions in the vicinity of the site in accordance with NYSDEC Draft DER-10. Based on mercury and lead results in soil samples from the Phase II ESA and the recommendations of the data validator for these results (low-level blank recovery and poor QC recoveries), four surface soil sampling locations (SS-1, SS-3, S-4, and SS-8) will be re-sampled and analyzed for TAL metals only. Figures 3-2 and 3-3 show the Phase ESA II surface soil sampling locations. One additional surface soil sample will be collected to evaluate the potential for human exposures from fill material placed in the foundation area at 216 Second Street. Figure 3-3 shows the location of the surface soil sample. Sampling and sample handling procedures will be conducted in accordance with the QAPP. The surface soil sample collected at 216 Second Street will be analyzed for TCL+TICS SVOCs and TAL metals. Descriptions of the sampled soil and observations of the ground surface will be recorded during sampling.

3.4 SUBSURFACE SOIL SAMPLING

Subsurface soil samples will be collected from approximately 32 locations distributed across the site to address AOCs identified during the Phase II ESA (Malcolm Pirnie, 2005). Figures 3-1 and 3-2 identify the locations of the proposed borings. Soil borings for the RI/AA will be advanced in the vicinity of 124 HJB to evaluate the vertical and lateral extent of soil and groundwater containing chlorinated solvents. Soil borings at132 HJB will be advanced to evaluate the extent of petroleum-containing soil and groundwater in the area of the former vehicle maintenance and refueling facility. Borings will also be advanced in the vicinity of 150 HJB and 214 Second Street to evaluate the extent of VOCs, SVOCs, and metals in soil and groundwater samples identified during the Phase II ESA. Additional soil



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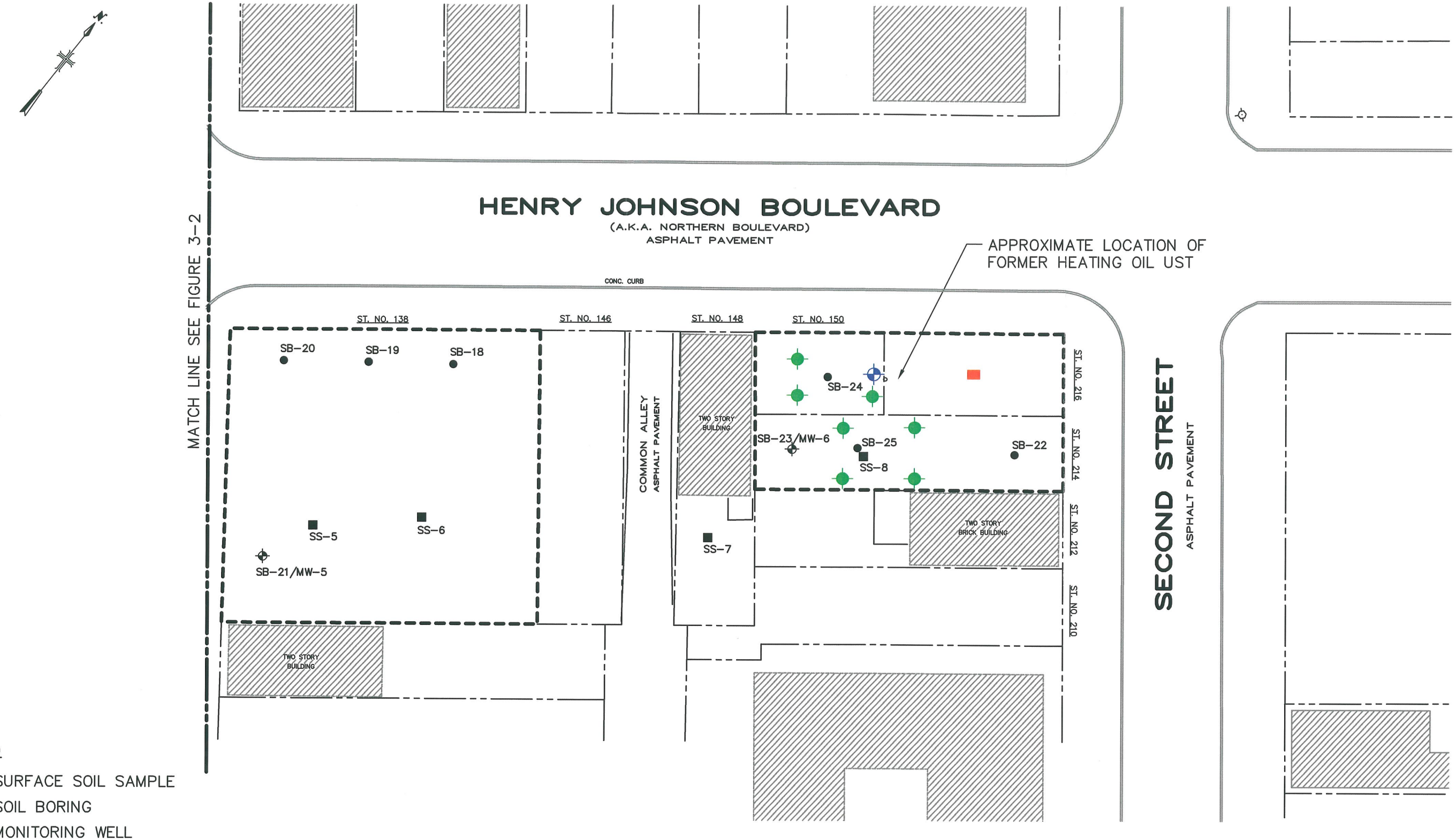
PROPOSED SAMPLING LOCATIONS

FIGURE 3-2



LEGEND

- SS-7 — SURFACE SOIL SAMPLE
- SB-18 — SOIL BORING
- SB-21 MW5 — MONITORING WELL
- PROPERTY LINE
- SITE BOUNDARY
- PROPOSED DIRECT-PUSH SOIL BORING
- PROPOSED HSA SOIL BORING/MONITORING WELL
- PROPOSED SURFACE SOIL SAMPLE

15 0 15 30

SCALE: 1" = 30'

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PROPOSED SAMPLING LOCATIONS

FIGURE 3-3

borings will be advanced along the perimeter of the site to evaluate the potential for off-site migration of VOCs, SVOCs, and metals from the site. It is expected that several borings advanced within the right-of-way for Clinton Avenue and HJB, respectively, will be placed within the area of curb-side tree plantings to minimize damage to recently renewed sidewalks. The exact location and number of borings drilled at the site will be determined in the field based on the observations made by the field geologist and the capabilities of the drilling equipment. All subsurface soil boring and sample collection and handling activities will be conducted in accordance with the QAPP. Real-time air monitoring for VOCs and particulates will be conducted during all drilling and ground intrusive activities as discussed in the Community Air Monitoring Plan (CAMP).

3.4.1 Soil Borings

Soil borings will be advanced using a combination direct-push (i.e., Geoprobe®) drill rig with 4.25-inch hollow-stem auger capabilities. Continuous soil cores (MacroCore®) will be collected from ground surface to the total depth of each boring. Upon collection, the core will be screened for VOCs using a photoionization detector (PID) and visually inspected for signs of contaminants (e.g., staining and/or sheens) and buried debris, and classified by the on-site field geologist. The final depth of each boring will be dependent on site-specific conditions as outlined in Section 3.4.2. All drilling equipment will be decontaminated by steam cleaning before use and between drilling locations.

3.4.2 Soil Sample Collection

One soil sample from each boring will be collected from the unsaturated interval containing the highest PID measurement and/or the greatest evidence of contamination (e.g., staining, sheens, and/or odor). If no contamination is evident, only the depth interval immediately above the water table will be collected for laboratory analysis. The borings that will not be completed as groundwater monitoring wells will be advanced to the water table. With the exception of three proposed "deep" wells, the borings that will be completed as groundwater monitoring wells will be advanced to five to seven feet below the water table. Soil borings advanced for deep wells will be double-cased through the clay layer beneath the site to prevent the downward migration of contaminants to strata beneath the clay. These

borings will be advanced to evaluate the potential presence of contamination in the underlying strata. The deep borings will be advance to a depth of 50-feet below ground surface (bgs) or to the top of bedrock, which ever is shallower. Soil sample collection procedures and monitor well construction procedures for double-cased borings are provided in the QAPP. Each subsurface soil sample will be analyzed for TCL+TICS VOCs and SVOCs, and TAL metals.

3.5 GROUNDWATER SAMPLING

Eleven monitoring wells will be installed for the RI/AA investigation. The locations of these wells are shown on Figure 3-2 and 3-3. Each monitoring well will be constructed of two-inch I.D. PVC riser and screen, in accordance with the QAPP. The wells will be constructed such that the well screen intersects the water table to allow for an evaluation of the presence or absence of Light Non-Aqueous Phase Liquid (LNAPL).A clean, appropriately sized, filter pack will be installed around the screened interval. The remainder of the well annulus will be backfilled with bentonite and cement-bentonite grout to within two feet of the ground surface.

As discussed above, deep well boreholes will be double-cased to avoid contaminating strata underlying the clay layer which was identified in soil borings advanced during the Phase II ESA. The locations for these wells will be evaluated based on groundwater data collected from existing and new shallow wells installed at the site, in addition to hydraulic conductivity testing results.

Each well will be completed at the surface with a steel flush-mounted cover and concrete pad. Upon completion, each well will be developed in accordance with the QAPP to remove sediment from the well and filter sand pack.

Two rounds of groundwater samples will be collected from both new and existing monitoring wells using the USEPA Low Flow-Low Purge Sampling Protocol, in accordance with the QAPP. A peristaltic pump will be used to collect the groundwater samples. Prior to sampling, the water level and (if present) LNAPL and/or DNAPL thickness in each well will be measured using an oil-water interface probe. To evaluate geochemical characteristics of the groundwater, and to evaluate the effectiveness of well purging, field parameters

including temperature, pH, oxidation-reduction potential, specific conductivity, turbidity, and dissolved oxygen will be measured during purging and immediately prior to groundwater sampling using a flow-through cell system. If groundwater turbidity is greater than 50 Nephelometric Turbidity Units (NTUs) at the time of sampling, both filtered and unfiltered samples will be collected and analyzed for TAL metals. Purged groundwater will be visually assessed for the potential presence of LNAPL and/or DNAPL. Groundwater samples will be sent to a NYSDOH ELAP and NYSDEC ASP-approved analytical laboratory under chain-of-custody procedures for analysis of TCL+TICS VOCs by USEPA Method 8260B, TCL+TICS SVOCs by USEPA Method 8270C, and TAL metals by USEPA Methods 6010B and 7471. In addition, groundwater samples will be also be analyzed for NAP and geochemical parameters to provide additional information for remedial alternatives at the site. Specific analytes included in NAP and geochemical parameter analyses are listed in Section 3.1.6.3 of the QAPP. A DUSR will be prepared upon the receipt of all analytical data to ensure that the quality of the data is sufficient to evaluate remedial alternatives. All groundwater sample collection, handling activities, and QA/QC sampling will be conducted in accordance with the QAPP.

Rising head hydraulic conductivity tests will be performed at three of the groundwater monitoring wells upon the completion of groundwater sampling. The monitoring wells selected for hydraulic conductivity test will be positioned at up-gradient, intermediate, and downgradient site locations. Water levels in all tested wells will be allowed to fully recover from purging prior to the initiation of hydraulic conductivity testing. Hydraulic conductivity testing will be conducted in accordance with the QAPP.

3.6 AIR SAMPLING

Ambient indoor and outdoor air and soil vapor samples will be collected concurrently in accordance with NYSEC Draft DER-10 and NYSDOH guidelines to evaluate the potential for soil vapor intrusion of VOCs. Flow rates for all air samples collected at the site will be regulated to less than 0.2 liters per minute (i.e. sampling intervals greater than 30 minutes for a 6-liter Suma canister). Samples from each monitoring point will be sent to a NYSDOH ELAP and NYSDEC ASP-certified analytical laboratory under chain-of-custody procedures

for analysis by USEPA Method TO-15. The proposed air sample monitoring locations are shown on Figure 3-2.

3.6.1 Indoor Air Samples

Prior to the initiation of the RI/AA, a NYSDOH Indoor Air Quality Questionnaire and Building Inventory (NYSDOH Questionnaire) will be completed for each of the buildings included in the site survey. A copy of the NYSDOH Questionnaire is provided in Appendix B. Two air samples will be collected from within each of the buildings located at 333, 335, 337, and 339 HJB, respectively. However, sampling locations and methods will be determined based on the information gathered in the NYSDOH Questionnaire and will be approved by NYSDEC and NYSDOH officials prior to sampling. It is anticipated that one sample will be collected from the basement or lowest level accessible in each building and will consist of collection of either a soil vapor sample or a sub-slab soil vapor sample depending on the nature of foundation construction (i.e. dirt floor or concrete slab). The second sample will consist of an indoor air sample collected from the ground floor of each building.

Indoor air samples will be collected over a 24-hour period using 6-liter Summa canisters. All canisters will be evacuated and certified as analyte-free by the laboratory prior to use at the site. Flow regulators will be used to ensure continuous sampling over the 24-hour period. Each flow regulator will be equipped with a filter to prevent particulate matter from entering the canister.

The Summa canisters will be set at approximately three feet above floor level for each sampling location. Laboratory protocols for checking vacuum pressure and regulating the sample flow rate will be followed during sampling. Upon completion of sampling, each canister will be checked for final vacuum pressure and shipped to the laboratory for analysis of VOCs by USEPA Method TO-15. Compounds included in this analysis are presented in the QAPP. Standard laboratory QA/QC procedures will be followed during all analyses. Sample results will be reported with full data deliverables under a standard two-week turnaround time.

3.6.2 Soil Vapor Samples

The distribution of the soil vapor monitoring locations focuses on areas downgradient of 124 HJB, where the highest concentrations of chlorinated VOCs were detected during the Phase II ESA. Seven soil vapor points will be constructed within the right-of-way for HJB and Clinton Avenue to evaluate preferential pathways near buried utilities and to evaluate soil vapor intrusion pathways to off-site receptors. One soil gas point will be placed near the southern site boundary at 126 and 132 HJB, respectively, and one point will be installed in the vacant lot at 331 Clinton Avenue. Sub-slab soil vapor sampling points will be constructed in the basement or crawl space of each of the buildings (333, 335, 337, and 339 Clinton Avenue) that have a finished concrete floor.

The depth of each sampling collection point will be based on observed conditions including foundation depths and preferential pathways for buried utilities. Subsurface geology and depth to water will also be considered. In general, the depth of each soil vapor sampling point will be equal to the depth of adjacent building foundation footers, equal to the depth of nearby buried utilities or approximately 1-foot above the water table if no buildings or utilities are located near the sampling point. Procedures for sub-slab soil vapor and soil vapor monitoring point construction and sampling procedures are presented in the QAPP.

Since most of the soil vapor sampling points are located within pedestrian walkways and since there is no practical method to secure air sampling equipment at sampling points located outside of buildings, each soil vapor point will be sampled over a two-hour period using a 6-liter Summa canister. All canisters will be evacuated and certified as analyte-free by the laboratory prior to use at the site. Flow regulators will be used to allow for continuous sampling over the two-hour period. Laboratory protocols for checking vacuum pressure and regulating the sample flow rate will be followed during sampling. Upon completion of sampling, each canister will be checked for final vacuum pressure and shipped to the laboratory for analysis of VOCs using USEPA Method TO-15. Soil gas sample results will be reported with full data deliverables. Procedures to be used during soil gas sample collection are detailed in the QAPP.

3.6.3 Tracer Gas Test

A tracer gas test will be performed in accordance with NYSDOH Guidance for

Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, 2005) to confirm that the soil vapor probes were constructed in a manner that minimize the entrainment of ambient air into the soil vapor samples. Sulfur hexafluoride (SF_6) will be used as the tracer gas since it is non-toxic, non-reactive, and provides a sensitive response for the analytical equipment. Tracer gas testing will be performed at all of the proposed soil vapor and sub-slab soil vapor sampling locations. A 1-liter container will be placed around the probe and the SF_6 will be released within the container when the air sampling activities are initiated. The initial concentration of SF_6 released into the container will be 100 percent. The SF_6 will be allowed to equilibrate prior to collecting the sample. Soil vapor samples will then be collected at each location as described in Sections 3.6.1 and 3.6.2 and in accordance with the QAPP. The tracer gas will be included in the target list of analytes for laboratory analysis. If concentrations of SF_6 are detected at concentrations > 20 % of the initial SF_6 concentration in samples collected at the site, the integrity of the soil vapor sampling probe seals at that location will be improved and additional samples will be collected.

3.6.4 Ambient Air Samples

Two ambient air samples will be collected at the site. One will evaluate the potential on-site exposures resulting from chlorinated VOCs in soil and groundwater in the vicinity of 124 HJB; the second will be installed upwind of the source area to establish background values for local ambient air quality. Sample collection will be performed concurrently with the collection of indoor air, soil vapor, and sub-slab soil vapor samples in accordance with the QAPP.

3.7 INVESTIGATION DERIVED WASTE

Investigation derived wastes will be handled in accordance with the NYSDEC Proposed Decision TAGM Disposal of Contaminated Groundwater Generated During Site Investigations and the Final TAGM – Disposal of Drill Cuttings. If required, soil and/or groundwater will be contained in United Nations (UN)-approved 55-gallon drums. The drums will be properly labeled with their contents, staged on pallets, and covered with a tarp until they can be properly disposed off-site. Final disposal of any containerized soil cuttings

and/or groundwater will be based on the results of soil and groundwater samples collected from the site and analysis of disposal characteristics, if required.

3.8 SITE SURVEY

Upon completion of the field investigation activities, the location and elevation of each new groundwater monitoring well will be surveyed to the nearest 0.1-foot horizontally and the nearest 0.01-foot vertically using the existing datum and will be added to the existing AutoCAD base map for the site. In addition, locations of the surface soil and subsurface soil samples and soil vapor monitoring points will be surveyed to the nearest 0.1-foot horizontally and added to the existing AutoCAD base map.

3.9 PRELIMINARY DATA EVALUATION AND IRM RECOMENDATIONS

A continuous evaluation of the information and data obtained from the Site Investigation will be performed. Recommendations in the form of Interim Remedial Measures (IRMs) which may be appropriate for the site will be made as warranted based upon the investigation. The IRM objective and proposed IRM soil excavation and post-excavation sampling procedures are provided in Appendix A.

4.0 REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

4.1 RI REPORTING

A RI Report will be prepared and submitted to the NYSDEC for review and comment. The report will include the following:

- Discussion of field investigation activities.
- Discussion of the physical characteristics of the site and surrounding off-site areas.
- Presentation of analytical results for all media sampled.
- Quality assurance/quality control evaluation of the analytical data including the results of the data quality review.
- Discussion of the nature and extent of contaminants.
- Comparison of analytical results to background concentrations and applicable regulatory standards and objectives.
- Qualitative risk assessment in terms of health and environment will be made based upon identified contaminant fate and transport mechanisms.
- Conclusions and recommendations based on the interpretation of the data, including development of Preliminary Remedial Action Objectives (RAOs) for each affected media.
- Supporting data, including analytical data packages, field log forms, and monitoring well construction diagrams.

4.2 ALTERNATIVES ANALYSIS REPORTING

The Alternatives Analysis portion of the report will evaluate the applicable remedial alternatives for the site. Each of the alternatives will be evaluated for relative technical applicability and cost effectiveness. The AA will also include the contemplated use (i.e., Restricted Use – Commercial/Retail) for the site so that an appropriate remedy, which is protective of human health and the environment, can be selected. Cleanup objectives for the

site will be developed in accordance with the applicable local, state, and federal regulations, as provided in Draft DER-10 Technical Guidance for Site Investigation and Remediation. General response actions will be developed based on the results of the RI, the clean-up objectives, and the anticipated future of the site.

4.2.1 End-use Planning

The City of Albany wishes to redevelop the site to increase the aesthetic quality of the City's entranceway, and promote tourism and economic growth. Remedial action goals that are protective of human health and the environment will be developed based on this end-use scenario.

4.2.2 Development and Analysis of Alternatives

Potential remedial alternatives will be developed based on site characteristics evaluated during the RI. Remedial action alternatives will be developed to restore the site to pre-release conditions to the extent feasible and to remediate off-site areas by:

- Identifying potential general response actions;
- Evaluating response actions for effectiveness, reliability, and cost; and
- Assembling suitable general response actions into alternative remedial actions.

Alternatives will be evaluated in accordance with the factors in 6NYCRR375-1.10(c) (1-7, inclusive). The following criteria will be used to evaluate remedial alternatives:

- Overall protection of human health and the environment.
- Compliance with Standards, Criteria, and Guidance (SCG).
- Short-term effectiveness.
- Long-term effectiveness and performance.
- Reduction of toxicity, mobility, and volume.
- Feasibility.
- Community acceptance.

The alternatives will be analyzed against the first six criteria and then compared against one another to determine the most cost-effective, protective remedy. The seventh criterion is evaluated by the NYSDEC once the public comment period for the final RI/AA

report and PRAP has concluded.

5.0 UTILIZATION PLAN

5.1 MINORITY/WOMEN-OWNED BUSINESS ENTERPRISE (MBE/WBE)

This MBE/WBE Plan documents the good faith efforts to be undertaken to comply with the requirements of NYSDEC to subcontract with minority- and women-owned business enterprises and to employ minorities and women. The purpose of the MBE/WBE Plan is to demonstrate and document Malcolm Pirnie's intention to make a good faith effort to meet the goals of the NYSDEC. This goal is as follows:

- The Contractor agrees to make good faith efforts to subcontract percentages of the total contract value to New York State certified MBE and WBE firms.

5.1.1 Malcolm Pirnie Corporate Affirmative Action Statement

Malcolm Pirnie supports the NYSDECs commitment to minority- and women-owned business enterprises. The firm will make good faith efforts to meet or exceed the goals for this contract. Malcolm Pirnie is in compliance with Title VII of the Civil Rights Acts of 1964, as amended by the Equal Employment Opportunity Act of 1972.

5.1.2 Good Faith Efforts Undertaken To Ensure MBE/WBE Participation

5.1.2.1 General

As part of the 1996 Clean Water/ Clean Air Bond Act Environmental Restoration Project at the Arbor Hill Gateway Properties, the City of Albany has retained Malcolm Pirnie to perform the following Tasks:

- Perform a Remedial Investigation (RI).
- Prepare an RI/AA Report.

Subcontractors will be needed to assist or provide services listed below. Subcontractors will be selected in accordance with NYSDEC procurement guidelines.

- Geoprobe Soil Borings;
- Drilling/Monitoring Well Installation;
- Survey;
- Laboratory Analytical Services; and

- Data Usability Summary Report (DUSR).

5.1.2.2 MBE/WBE Work Assignment Participation

In accordance with the Assistance Agreement between the NYSDEC and the City, the MBE/WBE participation goals for this project are:

- MBE: 6 percent.
- WBE: 6 percent.

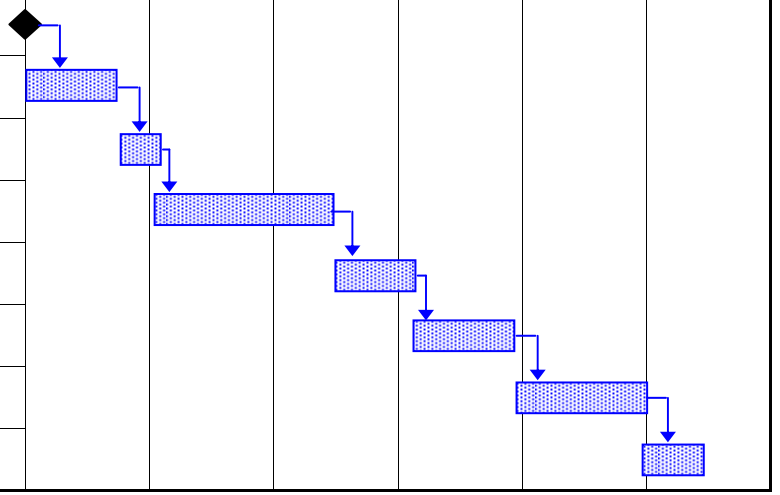
It is expected that MBE/WBE subcontractors will be utilized for laboratory analytical services, surveying services, and in the preparation of the DUSR.

6.0 SCHEDULE

The estimated Project Schedule is presented in Figure 6-1.

Figure 6-1
Anticipated Project Schedule
Remedial Investigation/Alternatives Analysis
Henry Johnson Boulevard Properties, Albany, New York

ID	Task Name	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1	**Final Work Plan Approval**						
2	**Bidding**						
3	**Award of Contract**						
5	**Remedial Investigation**						
6	**RI/AA Reporting**						
7	**NYSDEC Review and PRAP Development**						
8	**Public Comment**						
9	**ROD**						



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APPENDIX A

Interim Remedial Measures

APPENDIX A: INTERIM REMEDIAL MEASURES

IRM OBJECTIVE

An Interim Remedial Measure (IRM) may be initiated at the site to remove and properly dispose of soil containing volatile organic compounds (VOCs). The presence of VOCs in the soil and groundwater creates the potential for subsurface soil vapors to enter buildings located adjacent to source areas. The IRM will be conducted in accordance with the NYSDEC Draft Department of Environmental Restoration (DER)-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, 2002).

EXCAVATION

Excavation of VOC-affected soil will be based on results of the field observations and analytical results from soil samples in addition to analytical data obtained from the Phase II ESA conducted at the site in 2004. Real-time monitoring for VOCs and particulate concentrations will be conducted at the downwind perimeter of the each work area during all ground intrusive activities as described in the site-specific Health and Safety Plan (HASP). Soil removed from the excavation area will be stockpiled on, and covered with, 6 millimeter (mil) polyethylene. After the removal of the impacted soils, the soil from the side walls of the excavations will be screened visually and with a PID.

POST-EXCAVATION SAMPLING

Confirmation sampling will be conducted to verify compliance with NYSDEC TAGM 4046 soil clean up objectives. Soil samples will be collected by the on-site geologist with the assistance of the contractor, if necessary. Confirmation sampling will be performed in accordance with the NYSDEC Draft (DER)-10 and in consultation with an on-site NYSDEC representative. In general, sampling would include one sample from the bottom of each side wall for every 30 linear feet of side wall and one from the bottom of the excavation. A laboratory accredited by the New York State Department of Health

(NYSDOH), under the Environmental Laboratory Approval Program (ELAP) and certified to perform NYSDEC Analytical Services Protocol (ASP) will analyze all confirmation samples for TCL +30 VOCs.

Work will be conducted in a manner that takes into account laboratory turnaround times and allows for additional excavation, if necessary. If the analytical results for side wall and/or bottom confirmation samples indicate that VOC contaminants are present in the soil at concentrations greater than the TAGM 4046 soil cleanup objectives after the initial excavation, additional soil will be excavated either until confirmation sample results show no TAGM 4046 soil cleanup objectives exceedances, or until the excavation extends to the location of previous samples that did not contain VOCs at concentrations greater than the TAGM 4046 soil cleanup objectives. If additional excavation is required, soil will initially be removed to a depth equal to the known vertical extent of soil containing VOCs at concentrations greater than the TAGM 4046 soil cleanup objectives based on the results of previous soil samples collected at the site during the Phase II ESA. The maximum depth of the additional excavation will be to the water table at the time of the excavation. If the additional excavation is extends to a depth above the water table, confirmation samples will be collected from the bottom of the excavation to verify compliance with the cleanup objectives.

If unanticipated conditions are encountered during the excavation of soil, such as unknown pipes, tanks, drums, or other wastes, NYSDEC will be notified. Any unanticipated material will be sampled for characterization by an off-site analytical laboratory. The analytical protocol and analyte list will be developed in consultation with NYSDEC. Photographs and field notes will be used to document any unanticipated material or conditions.

The soil excavation will be backfilled with clean off-site backfill, graded and compacted, and seeded with grass.

APPENDIX B

NYSDOH Questionnaire

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

_____

_____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify_____

d. Has the building ever had a fire? Y / N When?_____

e. Is a kerosene or unvented gas space heater present? Y / N Where? _____

f. Is there a workshop or hobby/craft area? Y / N Where & Type? _____

g. Is there smoking in the building? Y / N How frequently? _____

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

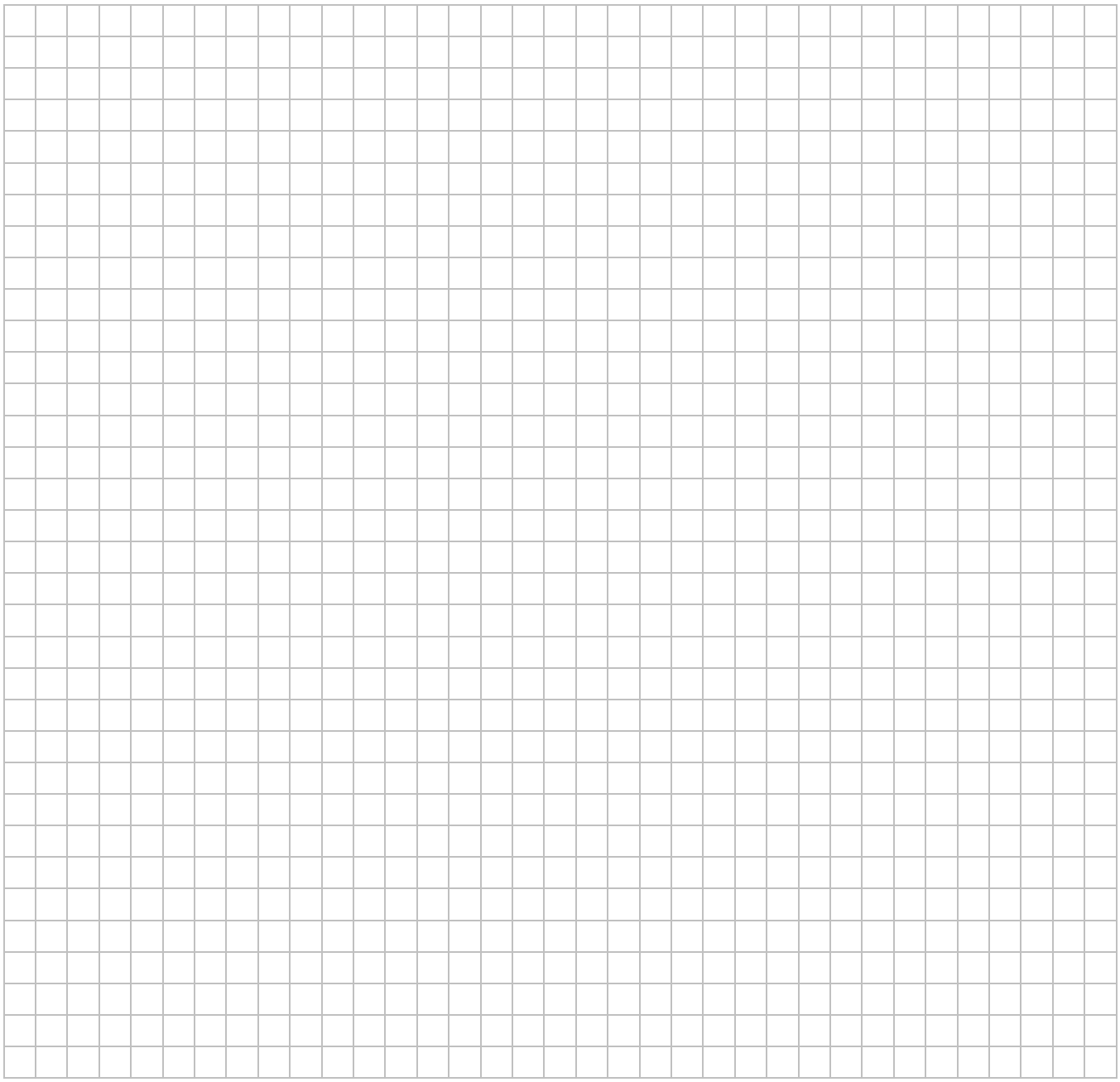
Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.