# REMEDIAL INVESTIGATION WORK PLAN

## Former Albany Laboratories Site
## Albany, New York

*NYSDEC Site No. 401061*
*CHA Project Number: 21645*

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# 1.0 INTRODUCTION

The Former Albany Laboratories Site, referred to hereafter as the Site, consists of the northern portion of the 67 Howard Street parcel and a small portion of south end of the parcel at 140 State Street. Prior to demolition of adjacent buildings, completed in 2009, the Site was the southern portion of a courtyard created by adjacent buildings at 138 State Street, 140 State Street, 142 State Street, and 67 Howard Street.

In January of 2006, a Phase I Environmental Site Assessment (ESA) was performed by CHA which included the subject Site. The Phase I ESA indicated that an underground storage tank (UST) was present in the northern portion of the former courtyard (140 State Street parcel) and that the 67 Howard Street parcel was used historically by Albany Chemical Laboratories, who used portions of the courtyard area for storage of chemicals. Based on these findings, the Phase I ESA indicated the need for further investigation.

Since that time, several investigations have been completed at the Site which indicate that contamination including volatile organic compounds (VOCs) are present in the Site soils at levels which exceed New York State Part 375 unrestricted soil cleanup standards and also that there are no groundwater impacts at the Site. An IRM to remove the VOC impacted soils was undertaken in January and February 2011 and successfully removed the majority of the impacted soil present at the Site.

This Work Plan has been prepared to outline the procedures and protocols that will be utilized to conduct a Remedial Investigation (RI). Due to the findings of the previous investigations and the IRM that entailed source removal of impacted soils the RI will focus on the potential for soil vapor intrusion (SVI) into the adjacent structure located at 142 State Street and will provide the necessary field data to delineate the nature and extent of potential SVI impacts on the neighboring structure. This Work Plan was prepared in conformance with DER-10 *Technical Guidance for Site Investigation and Remediation* issued by the Division of Environmental Remediation (May 3, 2010).

The primary objectives of the RI include the following:

- Determine the potential for SVI at the building located at 142 State Street;
- Define the nature/extent of SVI issues, if present, at the building located at 142 State Street;

- Assess impacts; and
- Provide data necessary for a remedial recommendation.

The data derived from the RI will facilitate an evaluation of the potential migration or possible future migration of soil vapor into the building located at 142 State Street, and will provide the data necessary to develop recommendations for the Site.

To facilitate performance of the RI activities in a manner consistent with NYSDEC protocols, this Work Plan includes the following sections:

Section 2.0: Site Background
Section 3.0: Site Setting
Section 4.0: Proposed Site Investigation Summary
Section 5.0: Field Sampling Plan
Section 6.0: Quality Assurance Procedures
Section 7.0: Health and Safety Protocol
Section 8.0: Reporting
Section 7.0: Schedule

# 2.0 SITE BACKGROUND

## 2.1 SITE DESCRIPTION

The Site consists of the northern portion of the 67 Howard Street parcel and a small portion of south end of the 140 State Street parcel in the City of Albany, Albany County, New York. A site location map has been included as Figure 1.

The subject Site is located in an urban area near a mixed commercial area and residential neighborhood. The subject Site consists of the southern portion of the former courtyard that was located between 140 State Street to the north and 67 Howard Street to the south. The courtyard was previously bound on all four sides by buildings; however, the building to the south, located at 67 Howard Street, was demolished to enable access to the courtyard prior to the commencement of the soil removal activities. In addition, the remaining buildings located to the southeast (136 & 138 State Street) have also been demolished to make way for future development.

A Phase I Environmental Site Assessment (ESA) was performed on the subject Site in January

2006. The Phase I ESA indicated that the subject Site had been used historically by Albany Chemical Laboratories, who used the former courtyard area to the north of the building for storage of chemicals. Several investigations have been completed involving the subject Site. These investigations revealed the presence of contamination in both surface and subsurface soils. The previous investigations are discussed in detail in Section 2.3.

## 2.2 SITE HISTORY

The 67 Howard Street portion of the subject Site was at one time improved with a two-story wood and brick building which abutted the courtyard shared by 67 Howard Street and 140 State Street. The 140 State Street property was improved with a five-story brick building that was formerly known as the Berkshire Hotel. This structure also opened to the courtyard.

Based on a review of standard historical references such as aerial photographs, Sanborn Fire Insurance Maps, city directories, historical topographical maps, local governmental records, and/or previous environmental investigation reports, the general histories of the two properties are described as follows:

**67 Howard Street**

According to Sanborn Fire Insurance Maps, the 67 Howard Street property was improved with a shed that was associated with a dwelling at 140 State Street from at least 1892 to 1909. As early as 1934, the 67 Howard Street property is listed as having been a "Chemical Laboratory". The 1950 map indicates that the Courtyard was being used for "Thinner storage yard in metal drums". Beginning in 1989, the property at 67 Howard Street is listed as a vacant chemical laboratory.

According to city directories, the 67 Howard Street property was operated as "Albany Laboratories" from 1935 to 1985. Prior to that, it was operated as a dairy farm. The property has been vacant since 1985.

**140 State Street**

Sanborn Fire Insurance Maps dated 1892 and 1909 indicate that the 140 State Street property was a dwelling. Beginning with the 1934 and ending with the 1950 Sanborn Map, the property was used for "rooms". The 1989 and later maps all show the property as a vacant hotel.

According to city directories, the 140 State Street property was used as doctor's offices and

apartments in 1914. Beginning around 1935 and until at least 1979, the building was used as a hotel (Berkshire Hotel). A jeweler also operated in the building in 1979 and 1985. The 1990 and 1995 directories indicate that the building was vacant at those times.

## 2.3 PREVIOUS INVESTIGATIONS

As previously indicated, several investigations and remedial activities have been conducted at the Site and include the following:

- Phase 1 ESA Report (January 27, 2006)
- Investigation Related to an Identified Underground Storage Tank and Historic Soil Contamination Located in the Courtyard behind 140 State Street (August 1, 2007)
- Additional Soil Sampling in the Courtyard Located between 67 Howard Street and 140 State Street (November 8, 2007)
- Tank Closure Report for the Underground Storage Tank (UST) Located at 140 State Street, Albany, New York (April 7, 2009)
- Soil Removal and Supplementary Subsurface Investigation Report, 140 State Street, Albany New York (April 23, 2009)
- Site Characterization Report, 67 Howard Street Site, Albany, New York (August 2010)
- IRM Construction Completion Report, Former Albany Laboratories Site, Albany, New York (draft April 8, 2010)

Following the findings of the Phase I Report, in June of 2007, CHA installed six (6) shallow (maximum depth of two (2) ft) borings at the Site using hand-auger methods due to the limited access into the courtyard at the time. No field evidence of contamination was observed. Three (3) shallow (< 2 ft) soil samples collected from the borings contained detectable levels of VOCs, semi-volatile organic compounds (SVOCs), and metals, with the concentrations of several parameters exceeding New York State Department of Environmental Conservation (NYSDEC) Title 6, Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs). Based on the observations made during the investigation, it was suggested that the contamination in the courtyard was due to historic urban contamination and/or historic fill material, and that additional hand auger borings should be installed and sampled to better characterize the Site. A spill (#0704683) was reported to the NYSDEC on June 25, 2007. Removal of the UST was performed on October 21, 2008.

Additional sampling in the courtyard was completed in September 2007 to further delineate the

horizontal and vertical limits of contaminated soil, and to determine the management practices necessary for any impacts to the soil during construction. Analytical results from soil samples collected during the investigation indicated that several SVOCs and metals were detected at concentrations exceeding Part 375 Unrestricted Use SCOs. The results also indicated that the surface samples (0 to 0.5 ft) were generally more contaminated than the deeper samples (1.5 to 2 ft), further suggesting that the Site contamination was shallow and due to historic urban contamination. It was recommended that the top 2 feet of soil be removed from the entire courtyard to reduce restrictions on future use of the Site was made.

Following the demolition of the building on 67 Howard Street, between September 15 and September 18, 2008, approximately two (2) ft of surface soil was removed from the entire courtyard area and stockpiled. Field screening of the stockpiled soils indicated that they had no odor and no visual evidence of contamination. Upon completion of the excavation, five confirmatory soil samples were collected from the excavation. The analytical results from these samples indicated that again several SVOCs and three metals were detected in concentrations in exceedance of Part 375 Unrestricted Use SCOs. Because of these results, it was determined that an additional one (1) foot of soil should be removed from the entire courtyard area. An additional one (1) foot of soil was removed October 20, 2008. Four confirmatory soil samples from the bottom of the excavation were collected for analysis on October 27, 2008. The analytical results for these samples again indicated that there was contamination remaining in the soils beneath the three (3) feet that had been excavated. Three of the four samples contained VOCs and mercury at concentrations above the Part 375 Unrestricted Use SCOs, and one sample contained SVOCs at concentrations above Part 375 Unrestricted Use SCOs.

Based on the results of the soil removal, an additional ten (10) soil borings were installed using standard Geoprobe® drilling techniques to further delineate the nature and extent of contamination. The locations of these borings were based on the results from the previous soil sampling efforts and were advanced and sampled to a depth of four (4) ft bgs (seven (7) ft below the previous ground surface). Based on the previous results, five (5) of the borings installed in the northern portion of the Site were analyzed for mercury only, and the five (5) borings installed in the southern portion of the Site were analyzed for VOCs and SVOCs. Two of the borings contained mercury above Part 375 Unrestricted Use SCOs at shallow depths. Three (3) of the remaining five (5) borings sampled contained VOCs and SVOCs at concentrations in exceedance of Part 375 Unrestricted Use SCOs at various depths.

The analytical results from these borings suggested an area of shallow mercury contamination in

the northern end of the courtyard and VOC and SVOC contamination at the southern end of the courtyard, possibly extending to depths greater than four (4) ft bgs. CHA recommended further investigation to define the vertical limits of contamination in the southern portion of the courtyard following the demolition of the buildings that bounded the Site to the east.

In November 2009 the foundation walls of the former building at 138 State Street, which bordered the courtyard to the east, were removed. Soils were field screened during trenching along the east side of the eastern foundation wall. The top eight (8) ft of soil in the trench was coarse silty sand with gravel and brick fill overlying gray clay. Contamination with a slight odor and staining was observed at the base of the foundation, on top of the gray clay, with PID readings that ranged from approximately 30 to 147 parts per million (ppm). This contamination was observed starting about 30 ft northeast of Howard Street, and continuing northeast for another 25 ft. Contaminated soils derived from the foundation removal were stockpiled and sampled for laboratory analysis. The results from this sample indicated that the soils excavated from the area had several parameters exceeding Part 375 Unrestricted Use SCOs but were generally lower in concentration than previous samples collected at the Site.

Excavation in the courtyard areas determined to be contaminated by mercury (northern area) and volatile organics (southern) commenced on February 10, 2010. An excavation of 14 ft x 21 ft x 3-5 ft deep was completed in the mercury contaminated area. Analytical results of clearance samples collected from each sidewall and the bottom of the excavation. The sample results indicated that all samples were below Part 375 SCOs except for the southern sidewall. The soils were observed to be approximately one (1) to 1.5 feet of loose fill associated with recent demolition, underlain by a geotextile fabric which was laid after previous soil removal activities in 2008. Beneath the geotextile was gray clay, except for the eastern edge of the excavation, where exposed fill associated with the former foundation builder's trench was observed.

Following excavation of the mercury area, excavation began in the southern portion of the courtyard where VOC-impacted soils had been observed. Soils were similar to the northern excavation with gray clay overlain by a geotextile fabric and recent loose demolition debris. Starting at a depth of approximately four (4) ft below grade field screening indicated potential high levels of contamination. A significant odor was observed and PID readings were as high as 1123 ppm. Little staining was observed.

Excavation work continued, resulting in a final excavation of 31 ft x 20 ft x 10-11 ft deep. The soils below the geotextile consisted only of gray clay. The top four feet of clay was hard, with

some vertical fractures, and contained roots and small layers of silt and sand. This hard clay layer was underlain by a softer clay with no distinct layering. Some black staining was observed between these layers and within both the upper and lower clay units. The horizontal laminations and other layers that were still intact suggest that the clay is a native soil and not fill.

Based on the field screening, the southern end of the excavation appeared to be more heavily contaminated than the northern end, with PID readings in the upper four feet as high as or in excess of 9,999 ppm (the upper limit of the PID). The excavation activities ceased after the Colonie Landfill, where the excavated soils were being disposed of, would no longer accept the soil due to the clay content, as they have difficulty handling and placing the clay. Furthermore, with input from NYSDEC, it was determined that due to the high PID readings, further characterization of this material was needed in order to determine how to proceed. Confirmatory samples were collected from the northeastern and northwestern sidewalls of the excavation at depths of approximately 8 to 10 ft bgs. In addition, a sample for analysis using the Toxicity Characteristic Leaching Procedure (TCLP) was collected from the stockpiled soil for the purposes of waste characterization.

All samples contained VOC parameters at concentrations in exceedance of Part 375 Unrestricted Use SCOs, although concentrations were generally lower than in samples previously collected during the soil boring program. Furthermore, the TCLP sample indicated that some of the soils removed would need to be classified as hazardous waste due to the leachable levels of trichloroethene and tetrachloroethene detected.

As a result of a meeting held at the New York State Department of Environmental Conservation (NYSDEC) Region 4 Headquarters on March 17, 2010, it was determined that additional investigation and characterization would be performed to determine the full nature and extent of contamination at the subject Site.

The additional investigation and characterization was completed in May of 2010 and the findings of this investigation are detailed in the Site Characterization (SC) Report completed by CHA dated August 2010. The SC Report confirmed and delineated the horizontal and vertical extent of the soils contaminated with VOCs. It was also found that groundwater was not present within 50 feet of the ground surface and that the contamination only extended to approximately 16 bgs, and therefore, no groundwater impacts are anticipated.

Due to the nature and concentrations of the compounds detected, the Site was entered the New

York State Department of Environmental Conservation (NYSDEC) Superfund Program. Under the oversight of the Superfund program, an Interim Remedial Measure (IRM) was undertaken in January and February of 2011 to complete a source removal of the soils impacted with VOCs. The IRM activities were successful in removing the impacted soils and the activities are detailed in the IRM Construction Completion Report completed by CHA and dated draft on April 8, 2011. However, due to residual VOC contamination remaining at the Site, further Site investigation is required to evaluate the potential for soil vapor intrusion into the 142 State Street building.

# 3.0 SITE SETTING

## 3.1 SURFACE FEATURES

In general, the subject Site has an elevation of approximately 102 feet above mean sea level (AMSL) based upon the USGS topographic mapping of the area. Topography on-site is relatively flat with a rather significant slope to the east towards the Hudson River. According to the Federal Emergency Management Agency, the Property is not located in an area of 100- or 500-year flooding.

## 3.2 SITE FEATURES

The subject Site is a portion of the former courtyard area which was approximately 26 feet wide by 142 feet long. Currently, the subject Site is vacant with no buildings remaining.

At the time the previous Phase I ESA site inspection was conducted, the property was improved with a two-story wood and brick building that had been used by Albany Laboratories. No hazardous substances were noted in the building at the time of the inspection.

## 3.3 SITE GEOLOGY

The USDA Soil Survey for Albany County indicates that the soils of the subject Site are classified as Urban Land. The Urban Land designation is assigned to areas where 85% or greater of the surfaces are covered by impervious materials. Surficial and bedrock geologic maps compiled by the USGS, Hudson Mohawk Sheets, indicate that the surficial soils of the subject Site consist of lacustrine silt and clay which are underlain by bedrock of Normanskill Shale with minor mudstone and sandstone.

Based on topographic information and previous investigations, groundwater is estimated to be at

a depth of greater than 50 feet bgs. The direction of groundwater flow beneath the subject Site has not been physically verified; however, based on regional topography, local groundwater flow beneath the Site is inferred to be in an east/southeasterly direction towards the Hudson River. Surface flow is also in an east/southeasterly direction towards the Hudson River with stormwater runoff directed in a southeasterly direction to storm drains along bordering streets.

NYSDEC and National Wetland Inventory mapping for the area of the subject Site indicate that there are no State of Federal delineated wetlands located on or adjacent to the subject Site.

# 4.0 PROPOSED INVESTIGATION SUMMARY

To investigate the potential for SVI at the neighboring building located at 142 State Street, CHA will install three (3) subslab soil vapor probes in the basement of the 142 State Street structure. The proposed locations of the subslab soil vapor probes, corresponding indoor air samples, and the ambient sample are presented on Figure 2 and are also summarized below. The samples will be analyzed for VOCs via EPA Method TO-15.

The laboratory analyses will be performed by a laboratory certified in accordance with the New York State Department of Health's (NYSDOH) Environmental Laboratory Approval Program (ELAP) to perform the requested analyses. The laboratory analyses will be performed in accordance with the most recent version of NYSDEC ASP with a Category B deliverable package. The laboratory analyses will be performed based upon a standard deliverable schedule in accordance with ASP requirements.

The proposed field sampling plan is described in detail in Section 5.0.

# 5.0 FIELD SAMPLING PLAN

The sampling objectives, procedures, and protocols associated with this project are presented below. Quality Assurance/Quality Control (QA/QC) issues are addressed in Section 6.0.

## 5.1 SAMPLING OBJECTIVES

The sampling to be performed at the subject Site will entail soil vapor sampling to characterize the subslab conditions at 142 State Street. Previous investigations indicated that VOCs, in particular trichloroethene and tetrachloroethene, were detected in soil vapor probes that were installed along the exterior of the east/southeast foundation wall of 142 State Street. These soil

vapor probes were located in the area of VOC impacted soil that has since been removed under an IRM, as discussed above in Section 2.3. The proposed subslab soil vapor sampling in the basement of 142 State Street will allow for the confirmation of the presence of elevated VOCs of concern in the subslab soils.

## 5.2 SAMPLING PROCEDURES & PROTOCOLS

### 5.2.1 Soil Vapor Sampling

CHA will conduct a soil vapor investigation at the Site to include the installation of three (3) interior subslab soil vapor probes installed in the basement floor slab of 142 State Street. The location of the probes will be adjacent to the area of contaminated soil removed under the recent IRM completed in February of 2011. Proposed sub-slab soil vapor sampling points are shown on Figure 2. Soil vapor samples will be collected in accordance with the NYSDOH Center for Environmental Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (October 2006).

Three permanent sub-slab probes will be installed in the soil or aggregate two inches below the slab-on-grade inside the basement of the building located at 142 State Street adjacent to the Site. A corresponding indoor air sample 3-5 feet above the floor surface will be collected adjacent to each of the sub-slab samples. It is proposed that the first sub-slab soil vapor sample (SSV-1) be installed within 10 feet of the southeast basement/foundation wall and in the approximate center of the area of contaminated soil removed under the IRM at the Site. The second and third sub-slab soil vapor samples would also be within 10 feet of the southeast basement/foundation wall at the north and south limits of the area of contaminated soil removed under the IRM at the Site. It should be noted, however, that the locations of these sampling probes may vary slightly due to the field conditions encountered at the time of installation.

Prior to installation of the each permanent sub-grade probe, the building floor slabs will be inspected for penetrations. The probes will be installed at a location where the potential for ambient air infiltration is minimized.

The sub-slab probes will be installed by an environmental engineer or scientist employed by CHA. A one-inch diameter hole will be drilled into the concrete and the four sub-slab probes shall be set at a depth no further than two inches into the sub-slab material. A 3/8-inch outside diameter by 1/4 inch inside diameter stainless or metal pipe will be inserted into the hole and coarse sand will be added to cover about one inch of the probe tip. Finally, cement will be used

to create a surface seal.

At the time that the sub-slab sample probes are installed and before the soil vapor samples are collected, CHA will complete a chemical inventory of the immediate vicinity of the sample points. If materials that likely contain volatile organics are in use or storage at the time when the probes are installed, their presence will be documented in writing and photographed, and CHA will request that the materials be temporarily removed from the premises so as to reduce the potential for cross-contamination. The inventory will be reported using the NYSDOH Indoor Air Quality Questionnaire and Building Inventory template.

Twenty-four to seventy two hours after the installation and sealing of the sub-slab vapor probes, a tracer gas study will be completed to verify the integrity of the sub-slab vapor probe seal. In order to facilitate the use of a tracer gas (helium) in the field, a bentonite slurry will be spread on the concrete surface in a 2-foot diameter circle around the vapor probe and a 2-foot x 2-foot square section of plastic sheeting will be placed over the bentonite slurry creating an enclosure. Next, a hole will be opened in the plastic sheeting to insert the sampling tube and the plastic sheeting/tube interface will be sealed with a small amount of plumber's putty. An additional hole will be made in the enclosure in order to introduce the tracer gas to the enclosure. Next, the tracer gas will be released in the enclosure for the duration of the sampling event to displace any ambient air within the enclosure to provide positive pressure. Finally, a helium detector will be utilized on-site to detect potential leaks prior to sample collection by purging vapor through the sample tube. If helium is detected at 10 percent or greater, this will provide an opportunity to re-seal the implant prior to sample collection. CHA will also ensure that the selected analytical laboratory will utilize instrumentation that will be capable of detecting the tracer gas.

After the tracer gas study is performed and before the samples are collected, one to three implant volumes (volume of the sample probe and tube) will be purged. This will ensure the samples collected are representative of the soil vapor conditions. Said samples will be collected in six liter SUMMA canisters that are individually certified clean by the laboratory and the sample flow rates will be controlled so that they do not exceed 0.2 liters per minute for both purging and collecting to minimize outdoor air infiltration during sampling. The duration of the sampling event will be roughly eight hours. The actually duration of the sampling period for each sample will be provided to the laboratory.

In addition to the sub-slab samples, indoor air samples will be collected during the course of this project in order to quantify the actual indoor air quality relative to subsurface conditions. The

indoor sample will be collected using six liter SUMMA canisters that are individually certified clean that are calibrated with sampling flow rates that do not exceed 0.2 liters per minute. The duration of the indoor air sampling event will not exceed eight hours, and the height of the inlet sampling tube will be positioned within the breathing zone roughly three to five feet above the floor.

In addition to the three sub-slab and three indoor air quality samples, one ambient air sample will be collected from the exterior east side of the building at 142 State Street within the Site area at 67 Howard Street. The elevation of the sampling probe for the exterior sample will be three to five feet above the ground surface. The results derived from the analysis of this sample will be used to evaluate the data derived from the sub-slab and indoor air quality data.

After sample collection, canisters will be properly packed and shipped under chain-of-custody to a qualified laboratory certified by the New York State Department of Health's Environmental Laboratory Approval Program (ELAP) for analysis of VOCs via USEPA Method TO-15

## 5.3 PROPOSED SAMPLING AND ANALYSIS

Table 5-1 on the following page presents a summary of the proposed sampling and analysis plan. QA/QC samples will be collected according to Section 6.0. Proposed sample locations are presented on Figure 2.

## 5.4 DECONTAMINATION PROCEDURE

For the investigation the work planned, there is no sampling equipment that will come in contact with subslab soil or materials. For any non-dedicated equipment that is used (i.e. drill bit), if visible contamination is encountered beneath the floor slab during drilling operations the decontamination procedure for the drill bit is as follows:

1. Disassemble equipment, as required.
2. Remove gross contamination from the equipment by brushing and then rinsing with tap water.
3. Wash and scrub with low phosphate detergent;
4. Tap water rinse;
5. Rinse with 10 percent nitric acid ($HNO_3$) solution;
6. Distilled water rinse;

7. Acetone or Methanol rinse;
8. Thoroughly rinse with distilled water; and
9. Air dry.

All decontaminated equipment will be placed on polyethylene sheeting or aluminum foil in order to avoid contacting a contaminated surface prior to use. Field personnel will use a new pair of outer gloves before handling sample equipment after it is cleaned. During periods of transportation and non-use, all decontaminated sampling equipment will be wrapped in aluminum foil.

## Table 5-1: Sampling Rationale

| Sample ID | Matrix | Sample Depth | Sample Location | Analytical Parameters | Rationale |
|---|---|---|---|---|---|
| SSV-1 | Soil Vapor | <2" below basement floor slab | Basement of Building at 142 State Street | VOCs | SSV-1 will be located within the basement of 142 State Street within 10 feet of the southeast basement/foundation wall and in the approximate center of the area of contaminated soil removed under the IRM at the Site. The monitoring point serves to assess the presence of soil vapor beneath the building. |
| SSV-2 | Soil Vapor | <2" below basement floor slab | Basement of Building at 142 State Street | VOCs | SSV-2 will be located within the basement of 142 State Street within 10 feet of the southeast basement/foundation wall and at the southern limits of the area of contaminated soil removed under the IRM at the Site. The monitoring point serves to assess the presence of soil vapor beneath the building. |
| SSV-3 | Soil Vapor | <2" below basement floor slab | Basement of Building at 142 State Street | VOCs | SSV-2 will be located within the basement of 142 State Street within 10 feet of the southeast basement/foundation wall and at the northern limits of the area of contaminated soil removed under the IRM at the Site. The monitoring point serves to assess the presence of soil vapor beneath the building. |
| IA-1 | Indoor Air | 3'-5' above floor surface | Basement of Building at 142 State Street | VOCs | IA-1 will be located within 10 feet of SSV-1 and will be collected for comparison of the indoor air in relation to the sub-slab vapor conditions. |
| IA-2 | Indoor Air | 3'-5' above floor surface | Basement of Building at 142 State Street | VOCs | IA-2 will be located within 10 feet of SSV-2 and will be collected for comparison of the indoor air in relation to the sub-slab vapor conditions. |
| IA-3 | Indoor Air | 3'-5' above floor surface | Basement of Building at 142 State Street | VOCs | IA-3 will be located within 10 feet of SSV-3 and will be collected for comparison of the indoor air in relation to the sub-slab vapor conditions. |
| AM-1 | Ambient Air | 3'-5' above ground surface | Exterior of Building at 142 State Street | VOCs | AM-1 will be collected at street level within 15 feet of Howard Street (the upwind side of the Site) on the south east side of 142 State Street and will be used for comparison of the outdoor air to the indoor air and sub-slab vapor samples. |

### 5.5 INVESTIGATION DERIVED WASTE

There is not anticipated to be any Investigation Derived Waste (IDW) generated during the investigation. The only intrusive activities will be the installation of the sub-slab soil vapor sampling probes; however, drilling for installation of the probes will be through the floor slab only which will generate minimal concrete debris. The drill bit is not anticipated to extend into the subgrade to the extent to which significant cuttings would be produced. All gloves, PPE, sampling materials, and other project-related wastes will be collected daily and disposed of as solid waste.

## 6.0 QUALITY ASSURANCE PROCEDURES

### 6.1 QUALITY ASSURANCE OBJECTIVES

The overall quality assurance objective is to develop and implement procedures for sample preparation and handling, sample chain-of-custody, laboratory analyses and reporting to ensure the accuracy and integrity of the data generated during the investigation. Specific procedures to be followed during implementation of this Work Plan are presented in Sections 4.0 through 8.0.

### 6.2 SAMPLING PROCEDURES

The procedures for collecting samples and for performing all related field activities are described in detail in Section 5.0. Sample preservation methods and maximum sample holding times are summarized below for soil vapor and air samples.

**Table 6-1: Container, Preservation, and Packaging Requirements**

| Analysis | Recommended Volume and Container | Preservation | Max. Holding Times | Shipping Means | Packaging |
|---|---|---|---|---|---|
| *Sub-Slab Soil Vapor/Indoor Air/Ambient Air Samples* | | | | | |
| **VOCs** via EPA TO-15 | Summa Canister | N/A | 14 days from sample collection | Hand Delivery/ FedEx Priority | Cooler with Bubble Pack |

A Chain-of-Custody will be maintained to document the transfer of all samples. Each sample container will be properly sealed. Sample container labels will include sample number, place of collection and date and time of collection. Sample containers will be shipped to the Contract Laboratory at 4°C (±2°C) in sealed coolers.

### 6.3 ANALYTICAL METHODS AND REPORTING

All soil vapor, indoor air, and ambient air samples will be analyzed for VOCs via EPA Method TO-15. All QA/QC samples will be analyzed for the same parameters as the site-specific samples.

The method detection limits (MDLs) for the contaminants of concern, specifically tetrachloroethene (PCE) and trichloroethene (TCE) will be at or below the detection limits set forth in the NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October of 2006. Specifically, the MDL will be at or below <0.25 micrograms per cubic meter (mcg/$m^3$) for Matrix 1 compounds and <3.0 mcg/$m^3$ for Matrix 2 compounds.

All reporting and deliverables will be in accordance with the NYSDEC September 1989 ASP (12/91 Revision), Category B. All reports will be received by CHA within 20 business days of the last day of sampling. The laboratory will also be required to provide the data as an electronic data deliverable (EDD).

### 6.4 DATA VALIDATION

A qualified third party will conduct an independent evaluation of data reduction and reporting by the laboratory. The data validation will be performed in accordance with the following documents: "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA 540/R-94-012, February 1994; and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", EPA 540/R-013, February 1994. Data analyzed using methods not covered in these documents will be validated using the general principles used in these documents.

## 7.0 HEALTH AND SAFETY PROTOCOL

### 7.1 GENERAL

The assignments associated with this project require CHA employees to perform tasks where personal safety could be compromised due to chemical, physical, and biological hazards. While conducting fieldwork, CHA employees may be exposed to chemical contaminants including a wide variety of organic compound. Additionally, CHA employees may be exposed to physical hazards, including but not limited to, hammer drill use, bending/lifting, and trip/fall hazards.

A Site Health & Safety Plan (HASP) (Appendix A) has been prepared for the use of CHA and their employees. The requirements and guidelines in the HASP are based on a review of available information and an evaluation of potential on-site hazards from previous studies and information available to date.

This HASP will be discussed with site personnel and will be available on-site for review while work is underway. All personnel conducting site activities must be familiar with the procedures, requirements and provision of this plan, and in the event of conflicting plans/requirements, personnel must implement those safety practices which afford the highest level of protection. CHA's Field Team Leader will also serve as CHA's Health and Safety Coordinator and is responsible for implementation of this HASP into daily site activities. A copy of the Site Health and Safety Plan is included in Appendix A.

### 7.2 COMMUNITY AIR MONITORING PLAN

Due to the extremely minimal and limited subsurface (sub-slab) impacts associated with this project, there are no anticipated impacts to building occupants or the downwind community. Therefore,
a Community Air Monitoring Plan (CAMP) will not be necessary for this phase of the investigation.

## 8.0 REPORTING

A Remedial Investigation Report (RI Report) will be prepared summarizing the information generated during implementation of this Work Plan. The report will be prepared in accordance with DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010.

The report will also include the following information and data pertaining to the Site:

- Field logs, including but not limited to: sub-slab soil vapor sample point construction, soil vapor sampling logs.
- Analytical data tables presenting the analytical results for the soil vapor, indoor air, and ambient air samples including comparisons to appropriate standards, criteria, and guidance. New York State currently does not publish any standards, criteria, or guidance values for concentrations of volatile chemicals in subsurface vapors.

- Figures showing the sample location points and summarizing the VOC concentrations detected (if present). The figures will include a sketch of the basement floor of the subject building and note the use of the specific areas of the basement and first floor to the extent known.
- A narrative that summarizes the results of the investigation including a discussion of the physical and analytical results along with recommendations based on the findings.

# 9.0 SCHEDULE

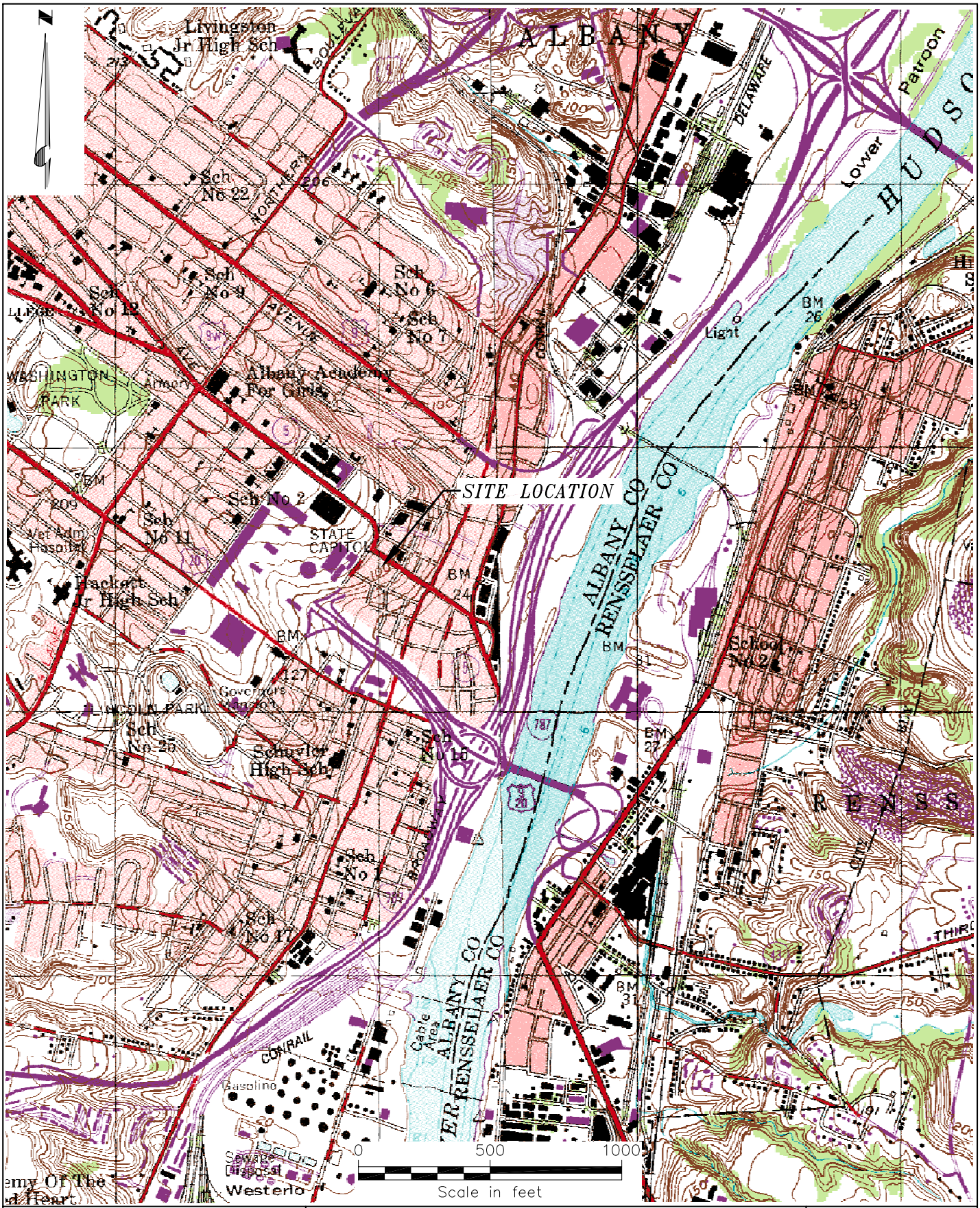
The following schedule has been developed.

**Table 9-1: Project Schedule**

| Task | Start Date | Completion Date | Notes |
|---|---|---|---|
| Remedial Investigation Work Plan | April 8, 2011 | June 13, 2011 | |
| NYSDEC/NYSDOH Review/Approval of Work Plan | June 13, 2011 | July 15, 2011 | |
| Field Investigation | November 16, 2011 | November 18, 2011 | |
| Analytical Results | November 18, 2011 | December 16, 2011 | |
| Prepare RI Report | November 21, 2011 | December 23, 2011 | |
| Submit Draft RI Report to NYSDEC/NYSDOH | | December 23, 2011 | |
| Submit Final RI Report to NYSDEC/NYSDOH | | Within 5 days of receipt of Draft Comments from NYSDEC/NYSDOH | |

The schedule provided above is based upon assumed durations of field investigation activities and may be extended or abbreviated based upon actual conditions encountered.

# FIGURES






CHA
III Winners Circle, PO Box 5269 · Albany, NY 12205-0269
Main: (518) 453-4500 · www.chacompanies.com

# SITE LOCATION MAP

67 HOWARD STREET SITE
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 07/09/10

FIGURE 1

EAGLE STREET

HOWARD STREET

WALK

142
STATE STREET

11 STORY
BRICK AND STONE
BUILDING

IA-1

IA-2

IA-3

SSV-1

SSV-2

SSV-3

BASEMENT
CORRIDOR

BASEMENT
CORRIDOR

AM-1

67
HOWARD STREET

140
STATE STREET

FORMER BRICK AND CONCRETE FOUNDATION

138
STATE STREET

136
STATE STREET

## LEGEND

AREA OF CONTAMINATED SOIL – REMOVED UNDER IRM (CCR DRAFT DATED APRIL 8, 2011)

IA-1 – INDOOR AIR SAMPLE

SSV-1 – PROPOSED SUB-SLAB SOIL VAPOR SAMPLING POINT

AM-1 – AMBIENT AIR SAMPLE LOCATION

0 15 30
Scale in feet
(APPROXIMATE)



CHA
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# PROPOSED SOIL VAPOR SAMPLING LOCATIONS

FORMER ALBANY CHEMICAL
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 04/15/11

FIGURE 2

File: V:\PROJECTS\ANY\K2\21645\CADD\ACAD\FIGURES\SUBSURFACE INVESTIGATION\FIGURE 2 – PROPOSED VAPOR SOIL SAMPLING LOCATIONS.DWG Saved: 4/15/2011 10:40:24 AM PLotted: 4/15/2011 10:44:28 AM User: Harden, Jason

# APPENDIX A

# Health and Safety Plan

CLOUGH HARBOUR & ASSOCIATES LLP

# SITE HEALTH AND SAFETY PLAN

## PROJECT INFORMATION

| | |
|---|---|
| **Project Name:** Former Albany Laboratories RI | **CHA Project No.** 21645 |
| **Project Start Date:** 11/16/11 **Completion Date:** 11/18/11 | **Weather:** |
| **Project Location:** 67 Howard Street and 142 State Street, Albany, NY | **Project Task:** RI - SVI Sampling |
| **Description of Work:** Installation and Sampling of 3 Sub-slab soil vapor points as well as the collection of 3 indoor air samples and 1 ambient air sample. *Be Specific:* | |

| **Key Personnel:** *Responsibilities:* | Seth Fowler *Project Manager* | Seth Fowler *Field Team Leader* | Scott Rosecrans *Site Safety Officer* |
|---|---|---|---|

**Description of Hazards:** The hazards associated with this work are largely limited to the installation of the sub-slab sampling points which require drilling of the floor slab. The hazards associated with this are electrical due to the electric drill, mechanical due to the active drill bit and potential for flying debris, and the generation of dust.

| TASK HAZARDS | | | | TASK SAFETY MEASURES & PPE | |
|---|---|---|---|---|---|
| **Eye** | Chemical Exposure | Yes ☐ | No ☒ | ☒ Safety Glasses | |
| | High Heat/Cold | Yes ☐ | No ☒ | ☐ Safety Goggles | |
| | Dust/Flying Debris | Yes ☒ | No ☐ | ☐ Face Shield | |
| | Impact | Yes ☐ | No ☒ | ☐ Shaded Lenses | |
| | Light/Radiation | Yes ☐ | No ☒ | | |
| **Head** | Impact | Yes ☐ | No ☒ | ☐ Hard Hat: ☐ Orange or ☐ White or ☐ Blue | |
| | Electrical Shock | Yes ☐ | No ☒ | ☐ Reflector Tape (Required for night operations) | |
| | Lack of Visibility | Yes ☐ | No ☒ | | |
| **Foot** | Chemical Exposure | Yes ☐ | No ☒ | ☒ Work Boots | ☐ Steel Toed Boots |
| | High Heat/Cold | Yes ☐ | No ☒ | ☐ Ankle Protection | ☐ I/75 C/75 (Impact/Compression) |
| | Impact/Compression | Yes ☐ | No ☒ | ☐ Rubber Boots | ☐ Cd Type 1 or 2 (Conductive) |
| | Slips/Trips | Yes ☒ | No ☐ | ☐ Insulated Boots | ☐ PR (Puncture Resistant) |
| | Puncture | Yes ☒ | No ☐ | ☐ Non-slip Soles | ☐ Mt/70 or 50 or 30 (Metatarsal) |
| | Slippery/Wet Surface | Yes ☐ | No ☒ | ☐ Chemical resistant | ☐ EH (Electrical Hazard) |
| | Explosive/Flammable Atmospheres | Yes ☐ | No ☒ | | ☐ SD Type I or II (Static Dissipative) |
| | Electrical | Yes ☒ | No ☐ | | |
| **Hand** | Chemical Exposure | Yes ☐ | No ☒ | ☒ Work Gloves | ☐ Rubber Gloves |
| | High Heat or Cold | Yes ☒ | No ☐ | ☒ Leather Gloves | ☐ Nitrile Gloves |
| | Cuts/Abrasion | Yes ☒ | No ☐ | ☒ Latex Gloves | ☐ Insulated Gloves |
| | Puncture | Yes ☒ | No ☐ | ☐ Vinyl Gloves | ☐ Metal Mesh Gloves |
| | Electrical Shock | Yes ☒ | No ☐ | ☐ Neoprene Gloves | |
| | Bloodborne Pathogen | Yes ☐ | No ☒ | ☐ Butyl Gloves | |
| **Body/Torso** | Chemical Exposure | Yes ☐ | No ☒ | ☐ Tyvek Suits: ☐ White or ☐ Yellow | |
| | Extreme Heat/Cold | Yes ☐ | No ☒ | ☐ UV Protection | ☒ First Aid Kit |
| | Abrasion | Yes ☒ | No ☐ | ☐ Coveralls | ☐ Traffic Cones |
| | Impact | Yes ☐ | No ☒ | ☐ Reflective Vest | ☐ Signage |
| | Electrical Arc | Yes ☒ | No ☐ | ☐ Insect Repellent | ☐ 2- Way Radios |
| | Biological Hazards | Yes ☐ | No ☒ | ☐ Tick Removal Kit | ☒ Flashlight |
| **Fall** | Fall Hazard | Yes ☐ | No ☒ | ☐ Harness | ☐ Fall Protection Lanyard |
| **Noise** | Noise Hazard | Yes ☒ | No ☐ | ☒ Ear Plugs | ☐ Ear Muffs |
| **Respiratory** | Chemical Exposure | Yes ☐ | No ☒ | ☐ Respirator: ☐ ½ Face or ☐ Full Face | |
| | Confined Spaces | Yes ☐ | No ☒ | ☐ Cartridge: ☐ P or ☐ OV or ☐ C | |
| | Particulate Exposure | Yes ☐ | No ☒ | | |
| | Welding Hazard | Yes ☐ | No ☒ | | |

| SITE CONTROL | | |
|---|---|---|
| **Site Control/Site Security[1]:** ***Describe Measures*** | The work is mainly in the basement of an occupied, controlled building, so access to the work area is limited | M & PT: ☐ Y ☒ N *If yes, sketch information on separate sheet* |
| **Confined Space Entry:** *If Yes, Attach Permit* | ☐ Y ☒ N | |
| **Decontamination:** *If Yes, Describe Procedures* | ☒ Y ☐ N Decontamination of equipment only, as necessary | |
| **Site Monitoring[2]:** *If Yes, Describe Procedures* | ☐ Y ☒ N | |

| CONTINGENCY PLAN | | |
|---|---|---|
| **Emergency Contacts:** *Provide Telephone Numbers* | Police: 911<br>Ambulance: 911<br>Fire: 911<br>Hospital: 518-262-1200 | Client Contact: Michael Arcangel<br>Client Phone #: 518-862-9133<br>CHA PM Phone #: 518-453-4547<br>Poison Control: 800 336-6997 |
| **Route to Hospital:** | See Attached | |
| **Communication:** | ☒ Cell Phone ☐ Nearest Pay Phone ☐ Pager | |
| **Comments:** | | |

| PLAN SIGN-OFF | | | |
|---|---|---|---|
| Name: | Name: | Name: | Name: |
| X: | X: | X: | X: |
| Date: | Date: | Date: | Date: |
| Name: | Name: | Name: | Name: |
| X: | X: | X: | X: |
| Date: | Date: | Date: | Date: |
| **SAFETY TRAINING/MEDICAL MONITORING** | | | |
| Type: | Type: | Type: | Type: |
| Date: | Date: | Date: | Date: |
| Type: | Type: | Type: | Type: |
| Date: | Date: | Date: | Date: |

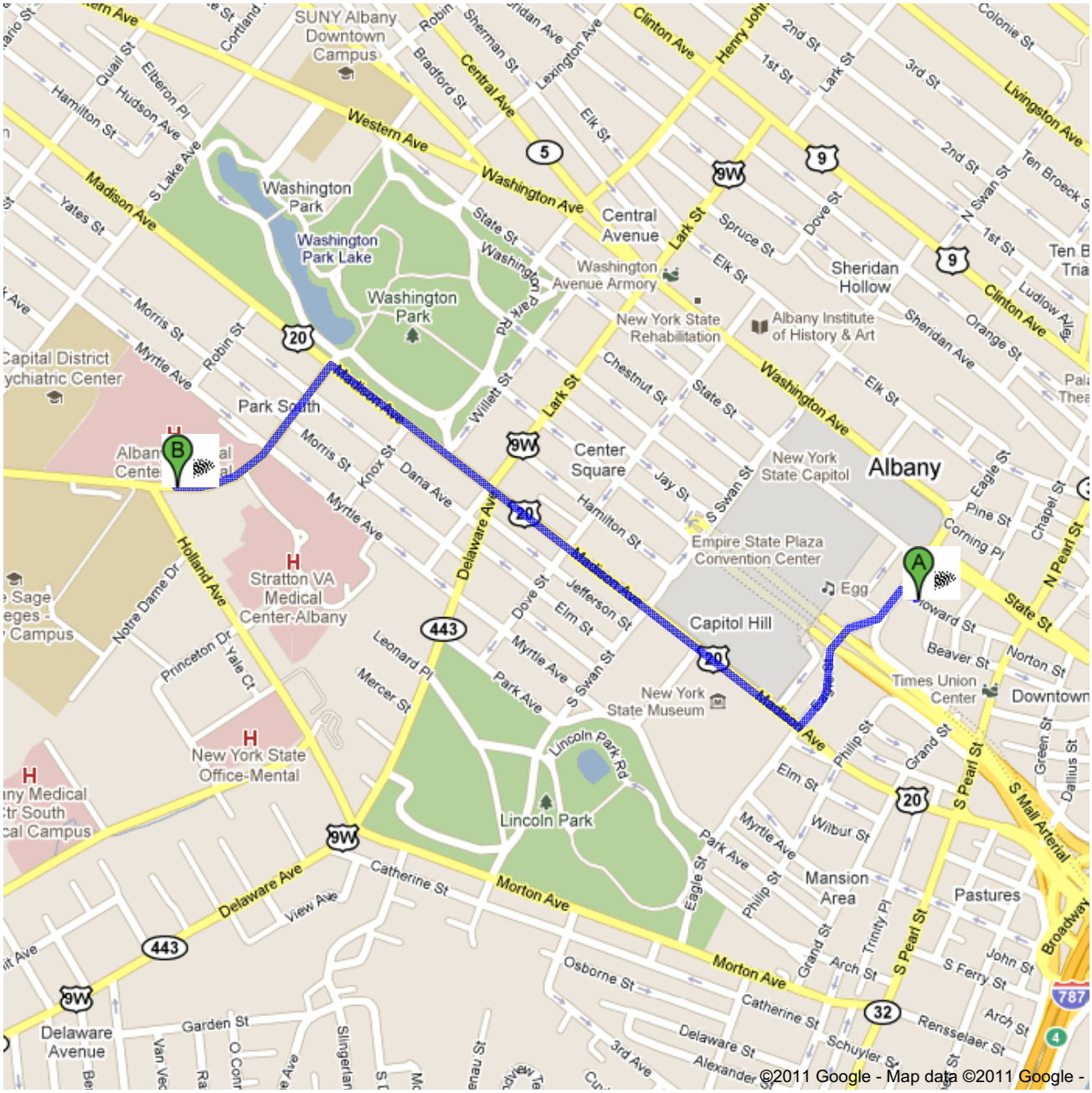
1 Who is providing site control/site security, if any, for this task? Examples of Site Control/Site Security include police, client representative(s), owner(s), CHA or client supervisors

2 What are you monitoring on site, if any, for this task? Examples of Site Monitoring include air monitoring, like carbon monoxide or oxygen levels or wet bulb temperatures

Google maps

**Directions to Albany Medical Center Hospital**
43 New Scotland Avenue, Albany, NY 12208 - (518) 262-3125
**1.4 mi** – about **5 mins**





67 Howard St, Albany, NY 12207

| | | |
|---|---|---|
| | 1. Head **northwest** on **Howard St** toward **Eagle St** | go 135 ft<br>total 135 ft |
| | 2. Turn left at **Eagle St**<br>About 1 min | go 0.3 mi<br>total 0.3 mi |
| | 3. Take the 2nd right onto **US-20 W/Madison Ave**<br>Continue to follow US-20 W<br>About 3 mins | go 0.8 mi<br>total 1.1 mi |
| | 4. Turn left at **New Scotland Ave**<br>Destination will be on the right<br>About 1 min | go 0.3 mi<br>total 1.4 mi |

**Albany Medical Center Hospital**
43 New Scotland Avenue, Albany, NY 12208 - (518) 262-3125

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.



Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.