Dambrose Cleaners Site
SCHENECTADY, NEW YORK

Site Management Plan

NYSDEC Site Number: 447030

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Revision #	Submitted Date	Summary of Revision	DEC Approval Date

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1.0 Introduction and Description of Remedial Program

1.1 Introduction

This document is required as an element of the remedial program at the Dambrose Cleaners Site (Site) in Schenectady, New York (Site Number 447030) under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by the New York State Department of Environmental Conservation (NYSDEC or Department).

1.1.1 General

The NYSDEC's Division of Environmental Remediation (DER) has initiated remedial activities at the 0.11 acre Site located at 1517/1519 Van Vranken Avenue in the City of Schenectady in Schenectady County, New York. The remedial activities are being conducted in general accordance with the Record of Decision (ROD) for the Site, dated September 2007. The general Site location is depicted on Figure 1. The boundaries of the aforementioned properties, the record description of the 1517/1519 parcel boundaries and the reference points used in conducting the American Land Title Association/American Congress on Surveying and Mapping (ALTA/ACSM) - compliant post-construction land survey of the area are shown on Figure 2. The boundaries of the Site will be more fully described in the metes and bounds Site description that will be part of the Environmental Easement for the Site.

The remedial construction work to install a soil vapor extraction system (SVES) at the Site, which is shown and specified in the Dambrose Cleaners Remedial Design, prepared by Malcolm Pirnie, Inc. in September 2009, was completed by the NYSDEC's remedial construction contractor, Precision Environmental Services, Inc. (PES), in January 2011. At that time contamination was left in the subsurface at the Site, some of which is to be removed through the future operation of the SVES remedial system by the NYSDEC. Some contamination may remain following the potential discontinuation of remedial operations at the Site, which could occur at an undetermined time in the future, dependent upon the successful remediation of the contaminant source. Such subsurface contamination which remains at the Site is hereafter referred to as "remaining contamination." This Site Management Plan (SMP) was prepared to address the remedial activities, including the operation of the SVES and the management of the remaining contamination at the Site, until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. Reports associated with the Site can be

viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Malcolm Pirnie, Inc., on behalf of the NYSDEC, in accordance with the requirements in the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the institutional controls (ICs) and engineering controls (ECs) that are required by the ROD for the remediation of the Site and the Environmental Easement for the Site.

1.1.2 Purpose

The Site contains remaining contamination following completion of the construction of the SVES. Engineering controls have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Schenectady County Clerk, will require compliance with this SMP and all ECs and ICs placed on the Site. The ICs place restrictions on Site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the Site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. Revision of the SMP is subject to the approval of the NYSDEC, prior to implementation.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the Site after completion of the construction of the SVES, including: (1) implementation and management of engineering and institutional controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; and (3) an Operation and Maintenance Plan for the SVES. This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required. Failure to properly implement the SMP may be a violation of the environmental easement; and

- Failure to comply with this SMP is also a violation of Environmental Conservation Law and 6NYCRR Part 375, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's Project Manager. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a written notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 Site Background

Dambrose Cleaners was a dry cleaning establishment located at 1517/1519 Van Vranken Avenue in the City of Schenectady, New York in the block bounded by Nott Street, Van Vranken Avenue, and Hattie and Carrie Streets. Uncontrolled releases of dry cleaning fluids, allegedly from Dambrose Cleaners, resulted in it being listed by the New York State Department of Environmental Conservation as an Inactive Hazardous Waste Disposal Site. The Site is located in the County of Schenectady, New York and is surrounded by both private residences and commercial businesses. The general location of the Site is shown on the Project Location Map included as Figure 1.

1.2.1 Site Location and Description

The majority of the SVES lies on property identified as Lot 39.58-1-9 on the City of Schenectady Tax Maps, with the remainder on Lot 39.58-1-8.1. The SVES is situated in an approximately 0.04-acre area bounded by a residence at 1523 Van Vranken Avenue to the north, a residence at 1513/1515 Van Vranken Avenue to the south, a residential/commercial structure (a.k.a. the Dambrose Cleaners Building) at 1517/1519 Van Vranken Avenue to the east, and a garage and the backyard of 622 Hattie Street to the west. The boundaries of the aforementioned properties, the record description of the 1517/1519 parcel boundaries and the reference points used in conducting the American Land Title Association/American Congress on Surveying and Mapping (ALTA/ACSM) - compliant post-construction land survey of the area are shown on Figure 2.

1.2.2 Site History

Dry cleaning was done at this Site from approximately 1957 through 2001. Currently, it is operated as a drop-off location and no dry cleaning is done on the premises. The building on-site was used as a two-family residence from the early 1900s through at least

1954, when Albert and Mary Dambrosio purchased the property. In the late 1950s, the Dambrosios converted the first floor into a dry cleaning operation. In 1976, George and Dolores Hebert purchased the property from the Dambrosios. Mr. Hebert was an employee of Dambrose Cleaners prior to taking ownership of the business, and operated the business from 1976 to 1993, and again from 1995 to 2000 when dry cleaning operations ended on the Site. The building was sold to the current owners in 2001.

The former owner alleged that in about 1989, a small amount of the dry cleaning fluid tetrachloroethene (PCE) spilled on the ground near the rear of the building as a drum of PCE was being delivered to the business. It is also believed that poor operational practices over a period of more than 20 years caused additional and extensive on-site contamination by PCE.

Historically, the first floor of the building was used for dry cleaning operations and the second floor as an apartment residence. The first floor was the former location of the dry cleaning machine, distillation tank, air filter unit, and PCE storage tanks. An addition on the back of the building constructed in 1984 is currently used as an apartment. The present parking area behind the Dambrose Cleaners Building was the location of a garage in which solvents were stored. Clough, Harbour & Associates completed a Phase I Environmental Assessment in October 1997 as part of a proposed property ownership transfer. The use and storage of PCE was identified in this investigation. This initial investigation was followed up with a Phase II Site Assessment completed in December 1997 by Northeast Environmental Technologies Corporation for Mr. Hebert. This investigation identified concentrations of PCE and related degradation products above standards in soil and groundwater samples. A Preliminary Site Assessment was performed by Northeast Environmental Technologies Corporation for the property owner, George D. Herbert, under an Order of Consent with the New York State Department of Environmental Conservation signed on July 1, 1999. This investigation further defined a PCE groundwater plume; however, the horizontal extent of the contamination was not fully identified. Soil gas sampling done as part of the Preliminary Site Assessment revealed PCE concentrations as high as 6,565 parts per billion (ppb) next to the rear of the building in the area where the spill allegedly took place. Groundwater collected with a screened point sampler indicated PCE concentrations up to 15,000 ppb, well above the Part 703 New York State groundwater standard of 5 ppb. Contamination extends to neighboring properties, although area residents are served by a municipal water supply.

Indoor air samples were collected in an apartment located above the business in November 1999. PCE concentrations as high as 540 micrograms per cubic meter (µg/m3) were detected at that time. The New York State Department of Health (NYSDOH) ambient air quality guideline is 100 µg/m3. Subsequent air samples collected from the apartment have been lower, but still above 100 µg/m3. Further Site investigations, including soil, soil vapor, and groundwater sampling were conducted at the Site as part of the state-funded Remedial Investigation.

On May 5, 2000, Mr. Hebert entered into the Voluntary Clean-up Program to remediate the Site. However, he did not have the financial means to complete the clean-up, and the NYSDEC assumed responsibility for the Site in June 2001. The Site was added to the Registry of Inactive Hazardous Waste Disposal Sites on December 6, 2001 as Site #447030.

A sub-slab depressurization system (SSDS) was installed at the Dambrose Cleaners Building in 2005 as an Interim Remedial Measure. Follow-up sampling showed a significant decrease in the sub-slab PCE concentration. A State Superfund Remedial Investigation/Feasibility Study was completed for the Site in January 2007. A ROD was issued for the Site in October 2007. In May 2008, the Department retained Malcolm Pirnie, Inc. to conduct focused Pre-Design Studies of the Site soil and groundwater, and the indoor air of two adjacent residences. Malcolm Pirnie, Inc. was also retained to develop an engineering design for a SVES to be installed at the Site.

In September 2009, the Department approved the Final Design Contract Documents which had been prepared by Malcolm Pirnie, Inc. for the installation of the SVES at the Dambrose Cleaners Site. The Department retained Precision Environmental Services, Inc. of Ballston Spa, New York in 2009 to construct the SVES on a portion of the approximately 0.11-acre property located at 1517/1519 Van Vranken Avenue, and an approximately 0.02-acre portion of the property located at 1523 Van Vranken Avenue. Precision Environmental Services, Inc. conducted the installation of the SVES system at the Dambrose Cleaners Site during the period August 16, 2010 through January 10, 2011.

1.2.3 Geologic Conditions

The ROD for the Dambrose Cleaners Site contained the following description of the subsurface conditions:

- With the exception of fill, unconsolidated deposits of glacial origin overlie the bedrock throughout most of the Site. The unconsolidated deposits consist of fill material, silty clay deposits, and till. Based on soil borings, the total thickness of the unconsolidated deposits ranged from 11 to 16 feet. The discontinuous cultural fill layer observed throughout the majority of the Site predominantly consists of brown silt, sand, and gravel mixed with varying amounts of brick, cobbles, cinders, and coal. The fill layer ranged in thickness from 2.8 to 6.5 feet. The fill layer is underlain by a mottled, brown-gray unit, generally consisting of silt and clay fining downward to silty clay. A discontinuous layer of weathered till was observed below the silty clay. In some of the soil borings, weathered shale fragments were observed at depths ranging from 11 to 16 feet below ground surface (bgs). Drilling refusal was observed at several soil borings, which is assumed to represent the top of the shale bedrock. The Site overlies the upper Middle Ordovician Schenectady Formation, consisting of black and gray clayey shale interbedded with greywacke (clayey sandstone) and sandstones of variable texture.

- The primary groundwater unit at the Site is an unconfined aquifer located within the unconsolidated fill and the silty clay, extending downward to the interface between the silty clay or till of lower permeability. Monitoring wells at the Site are generally screened across both the unconsolidated fill and the underlying silty clay material, where present.

- The ROD also contained two geologic cross-sections depicting the subsurface conditions at the Site.

1.3 Summary of Remedial Investigation Findings

A Remedial Investigation (RI) was performed between September 2004 and April 2005 to characterize the nature and extent of contamination at the Site. The results of the RI are described in detail in the following report:

Remedial Investigation Report, Dambrose Cleaners Site, Schenectady, New York, by O'Brien & Gere Engineers, Inc., March 2006

A general summary of the results of the RI, as excerpted from the ROD, follows:

- Utilizing information from four existing monitoring wells, groundwater in the presumed downgradient direction was screened to look for dry cleaning solvents. This was followed up by installation of permanent groundwater monitoring wells. Soil vapor, sub-slab soil vapor, and indoor air samples were collected to evaluate vapor intrusion. Finally, soil samples were collected from beneath the slab of the former Dambrose structure.

- To determine whether the groundwater, soil, and indoor air contain contamination at levels of concern, data from the investigation were compared to the following Standards, Criteria and Guidance (values or requirements [SCGs]):

    - Groundwater and drinking water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

    - Soil SCGs are based on the Department's Remedial Program Soil Clean-up Objectives found in 6 NYCRR Part 375.

    - Concentrations of volatile organic compounds (VOCs) in the air were evaluated using the air guidelines provided in the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006. Air Matrix 2 was referenced for PCE guidelines.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the Site require remediation. The following are the media which were investigated and a summary of the findings of the investigation:

Subsurface Soil

Soil samples were collected from beneath the building slab at three locations selected based on previous soil vapor sampling results. SS-1 was collected from the west end of the basement, where the sub-slab soil vapor sample was collected. SS-3 was collected from beneath the stairs along the north wall of the building. The 1997 Phase II Site Assessment identified high concentrations of VOCs in soil vapor outside the building at this location. SS-2 was collected from a location between the other two samples.

PCE and some of its breakdown products (chemicals formed by the partial degradation of PCE, such as trichloroethene [TCE], trans-1,2-dichloroethene [trans-DCE], and cis-1,2-dichloroethene [cis-DCE]) were detected in all three samples. Total VOC concentrations in the samples were as follows: SS-1- 0.225 milligrams per kilogram (mg/kg), SS-2 - 1.036 mg/kg, and SS-3 - 11.216 mg/kg. However, only PCE in sample SS-3 (11 mg/kg) was above the SCGs for unrestricted (1.3 mg/kg) and residential (5.5 mg/kg) use. Even though there was only one sample exceeding clean-up objectives, PCE is present beneath the slab and this could result in vapor intrusion in the Dambrose Cleaners Building.

Groundwater

Groundwater samples were collected from sixteen groundwater screening locations during the first part of the RI. VOCs were found in only three screening samples (GWS-8, GWS-10, and GWS-13), but this was enough to confirm the groundwater flow direction.

Based on the screening results, seven new groundwater monitoring wells were installed to supplement the four existing monitoring wells. Water samples were also collected from basement sumps in the Dambrose Cleaners Building and from one residence downgradient of the Site. The highest VOC concentrations were found in the sump of the Dambrose Cleaners Building (total VOCs just over 1,000 micrograms per liter [µg/l]). The water standards for each of the individual VOCs are 5 ppb, with the exception of vinyl chloride, which has a standard of 2 ppb. Site contamination has impacted the groundwater resource in the unconfined surficial aquifer. However, the affected area is served by municipal water and sewer.

Soil Vapor/Sub-Slab Vapor/Air

Sub-slab soil vapor and indoor air were sampled at the Dambrose Cleaners Building in September 2004. As directed by the NYSDOH's Air Matrix 2, comparison of the sub-slab PCE concentration with that in the basement air called for mitigation actions. Indoor air at the dry cleaner drop-off location is affected by the cleaned clothes brought in for pick-up; therefore, the contribution attributable to vapor intrusion could not be determined. However, the sub-slab PCE concentration was high enough (1,200,000 $\mu g/m^3$) that regardless of the source of PCE in indoor air, a sub-slab depressurization system was installed as an Interim Remedial Measure before the Feasibility Study was completed.

Additionally, soil vapor samples were collected from points adjacent to each of the groundwater monitoring wells in December 2004. The intent was to see if there was a correlation between the magnitude of the soil vapor and groundwater contaminant concentrations. Even though PCE was detected in some of the soil vapor samples, the analytical results did not reveal a good correlation.

Sub-slab and indoor air samples were collected from the two adjacent buildings and a building downgradient at Carrie Street. Low concentrations of VOCs were detected, but not at levels which would warrant mitigation.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

Based on the 2004 indoor air and sub-slab soil vapor samples, mitigation measures were taken at the Dambrose Cleaners Building in 2005 to address current and potential human exposures (via inhalation) to VOCs associated with soil vapor intrusion. A sub-slab depressurization system with three suction points was installed to create a negative pressure gradient between the basement and the area beneath the building slab. Additionally, cracks and seams in the slab were sealed, and the sump was capped and sealed. Vapor from beneath the slab is vented above the roofline of the Dambrose Cleaners Building.

Indoor air samples were collected from the Dambrose Cleaners Building again in February 2006, after the depressurization system had been operating for several months. The VOC concentrations in the indoor air samples were lower than in the samples collected in September 2004. A sample was also collected from the depressurization system's exhaust vent. The PCE concentration of the exhaust sample was 3,900 $\mu g/m^3$, significantly below the initial sub-slab concentration of 1,200,000 $\mu g/m^3$. These results could indicate that the depressurization system is

effectively lowering the indoor air and sub-slab VOC concentrations, but without additional sampling to verify any trend, these results could be attributable to seasonal variation or other factors.

1.4 Summary of Remedial Actions

The SVES was installed to facilitate the remediation of the Site in accordance with the remedy selected by the Department in the ROD dated September 2007 and signed on October 3, 2007. Among the factors considered during the selection of the remedy were those listed in the 6 NYCRR Part 375-1.8 regulations at the time of the preparation of the ROD. The following are the components of the selected remedy, as stated in the ROD:

1. "A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Prior to remedial design, pre-design sampling of soil and soil vapor will be undertaken adjacent to the Dambrose Cleaners Building to identify areas with high concentrations of VOCs. If any VOC sources are found, contaminated soil will be removed. Additionally, indoor air and sub-slab soil vapor in homes on adjacent streets will be sampled to ensure that soil vapor intrusion is not occurring. This includes monitoring and mitigation of structures as necessary."

2. "Soil vapor extraction wells will be installed in the area below ground surface but above the water table. At the Dambrose Cleaners Site, this zone extends to a depth of approximately six feet. A vacuum will be applied to the extraction wells to draw air through the contaminated soils. The VOCs will vaporize from the soil into the air, and the air containing the VOCs will be drawn into the extraction wells. If necessary, the contaminated air from the extraction wells may then be run through an activated carbon treatment system to remove volatile contaminants before the air is discharged to the ambient air."

3. "Imposition of an institutional control in the form of an Environmental Easement that will require (a) limiting the use and development of the property to restricted residential use, which would also permit commercial or industrial uses; (b) compliance with the approved Site Management Plan; (c) restricting the uses of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH; and (d) periodic certification of institutional and engineering controls."

4. "Development of a Site Management Plan which will include the following institutional and engineering controls: (a) continued evaluation of the potential for vapor intrusion for any buildings developed on the Site, including provision for mitigation of any impacts identified; (b) continued operation of the sub-slab depressurization system at the Dambrose Cleaners Building whenever it is occupied; (c) monitoring of groundwater and soil vapor; (d) identification of any use restrictions

on the Site; and (e) provisions for the continued proper operation and maintenance of the components of the remedy."

5. "The Department will periodically certify the institutional and engineering controls until the Department determines that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; and (b) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the Site Management Plan unless otherwise approved by the Department."

6. "The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible."

7. "Since the remedy results in untreated hazardous waste remaining at the Site, a long-term monitoring program will be instituted. This program will allow the effectiveness of the soil vapor extraction system to be monitored and will be a component of the long-term management for the Site."

The following is a summary of the Remedial Actions performed at the site:

- The technical elements of the remedial activities completed at the Site were conducted in general accordance with the NYSDEC-approved Final Design Contract Documents for the Dambrose Cleaners Site dated September 2009, the terms of the Standby Agreement between the Department and Precision Environmental Services, Inc., and the Department-approved project submittals. The work can generally be described as the installation of a SVES including:

    - One 33 foot long and two 25 foot long subsurface horizontal soil vapor extraction wells bedded in trenches of granular material;

    - Concrete and soil (with high-density polyethylene liner) surface caps over the extraction wells to minimize potential direct contact with subsurface soil and the short-circuiting of ambient air into the SVES collection system;

    - One SVES equipment enclosure, with utility connections, control panels, lighting, instrumentation, noise dampening devices and internal environmental controls; and

    - Blowers, variable frequency drive motors, collection and discharge vent piping, valves, water knockout equipment and appurtenances to allow the extraction and processing of approximately 100 cubic feet per minute of vapor from the

subsurface, while maintaining a minimum vacuum of approximately 6 inches of water, with flow basically equally distributed from each of the extraction wells.

Also, the power source, output signals and controls for the existing SSDS were modified to be integral with the new SVES.

Precision Environmental Services, Inc. conducted the installation of the SVES system at the Dambrose Site. Malcolm Pirnie, Inc. provided part-time construction-phase engineering oversight services. Following the removal of a large tree from the work zone on the 1523 Van Vranken Avenue property and the abandonment of MW-1 and MW-2 by Precision Environmental Services, Inc. in early 2010, the NYSDEC received and reviewed submittals for the SVES. Modifications to the mechanical system, data communications system and concrete surface slab were incorporated during this process. Subsequent to the approval of the revised mechanical system, the mechanical components and the SVES enclosure were ordered from the system fabricator, National Environmental Systems. The major on-site construction work began on August 16, 2010. Work continued during a series of short-term construction periods, as summarized below:

- August 16, 2010 through September 7, 2010 – Demolition, installation of the horizontal collection wells and other subsurface elements of the SVES, followed by construction of the concrete surface slab.

- November 22, 2010 – Installation of replacement monitoring wells MW-1R and MW-2R.

- December 6, 2010 through December 13, 2010 – Delivery and installation of the SVES mechanical components and the SVES enclosure. Connection of the telephone service to the SVES by Verizon was also conducted at this time.

- Late December 2010/Early January 2011- Connection of the power service to the SVES by National Grid. The power source, controls and data output location for the existing SSDS was switched to the new SVES during this period also.

- January 10, 2011 - Final testing of the SVES was completed.

1.4.1 Removal of Contaminated Materials from the Site

In order to install the three horizontal extraction wells of the SVES, Precision Environmental Services removed:

- The surface asphalt from the parking area behind and to the west of the Dambrose Cleaners Building;

- Remnants of the concrete foundation from the former structure located in the same area; and

- Surface and subsurface soil necessary to facilitate installation of the SVES collection system and appurtenant utilities.

Excavated materials were placed directly in rolloff containers for temporary storage. In accordance with the approved Transportation Plan, County Waste of Clifton Park, New York, a permitted 6 NYCRR Part 364 waste transporter (Permit Number 54-660), transported the materials to the Colonie Landfill in Colonie, New York for disposal. Nine loads, representing a total of 176.13 tons of material were disposed at the Colonie Landfill.

The materials excavated to enable installation of the SVES contained minor amounts of Site contaminants, rubble and debris from the subsurface fill. The quantity of remaining source contamination in the work zone soil was somewhat reduced by the remedial activities. This was considered a collateral benefit of the installation of the SVES, but was not the primary objective of the on-site excavation activities. Therefore, end point confirmation sampling was not conducted in the bottoms or walls of the excavations.

1.4.2 Site-Related Treatment Systems

It is the NYSDEC's responsibility to operate and maintain the SVES system in the future in a manner that is consistent with the manufacturer's recommendations and the Site Management Plan. During the operation of the system, periodic sampling and analysis of the influent and effluent air streams, Site groundwater, and, as necessary, Site soil vapor will be conducted to enable the NYSDEC to ascertain the performance characteristics of the remedial measure.

1.4.3 Remaining Contamination

With the exception of any contaminated soil which may have been excavated and disposed off-site to enable installation of the subsurface portions of the SVES, the soil and groundwater conditions remaining at the Site are unchanged since the remedial construction was initiated. The remedy selected in the ROD contemplates that the majority of the remedial benefit will be obtained through operation of the SVES. The future remedial success will be documented through the periodic sampling and analysis of Site media.

Since contaminated soil, groundwater and soil vapor remain at the Site as the operation of the SVES is initiated, institutional and engineering controls to protect human health and the environment will be implemented. The engineering and institutional controls (ECs/ICs) at the Dambrose Cleaners Site are described in the following sections. Long-term management of these EC/ICs and residual contamination will be performed under the SMP approved by the NYSDEC.

Direct exposure to remaining contamination in soil at the Site is minimized by a 10-inch thick concrete slab constructed as a parking area over the portion of the Site on the Dambrose Cleaners property. The balance of the SVES collection laterals were backfilled with on-site and imported soil with no contaminants above the 6 NYCRR Part 375 Recommended Soil Clean-up Objectives for Unrestricted Use. These areas were subsequently covered with topsoil. Thus, the concrete and soil serve as a physical barrier to minimize the potential for dermal contact by human and other animal receptors.

2.0 Engineering and Institutional Control Plan

2.1 Introduction

Since contaminated soil, groundwater and soil vapor remain at the Site as the operation of the SVES is initiated, institutional and engineering controls to protect human health and the environment will be implemented by the NYSDEC. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of EC/ICs at the Site.

2.1.1 General

The engineering and institutional controls at the Dambrose Cleaners Site are described in the following sections. Long-term management of these EC/ICs and residual contamination will be performed under this SMP. The EC/IC Plan is subject to revision by the NYSDEC, should future conditions warrant such action.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the Site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the development and implementation of an Excavation Work Plan for the proper handling of remaining contamination on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

2.2 Engineering Controls

2.2.1 Engineering Control Systems

2.2.1.1 Soil Cover and Concrete Cap

Direct exposure to remaining contamination in soil at the Site is minimized by a 10- inch thick concrete slab constructed as a parking area over the portion of the Site on the Dambrose Cleaners property. This concrete slab is shown on Figure 2. The balance of the SVES collection laterals were backfilled with imported soil with no contaminants above the 6 NYCRR Part 375 Recommended Soil Clean-up Objectives for Unrestricted Use. Thus, the concrete and soil serve as a physical barrier to minimize the potential for dermal contact by human and other animal receptors with the remaining contamination.

Due to the limited extent of the areas in which the SVES is located, and the need to protect the underlying soil vapor collection system components while the remedy is being implemented, no excavation shall be allowed within the metes and bounds limits which are defined in the Environmental Easement. Thus, an Excavation Work Plan, which typically is included in the SMP to outline the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed, is not included in this SMP. Once the SVES is no longer necessary for remediation and is removed, if contaminated soil remains at the Site and excavation of any area beneath the slab is contemplated for any reason, an Excavation Work Plan would be required to be prepared and included in a revised SMP. Procedures for the inspection and maintenance of the cover are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.1.2 Sub-slab Depressurization System

The existing SSDS for the Dambrose Cleaners Building was modified so that its power supply, controls and data output are now integral with the SVES. The SSDS will continue to operate and be periodically monitored by the NYSDEC in accordance with this SMP.

2.2.1.3 SVES

An Operation and Maintenance (O&M) Manual for the SVES was prepared by the manufacturer and submitted to the NYSDEC for use during the active operational period of the remedy. Procedures for monitoring the system are included in the Monitoring Plan located in Section 3 of this SMP. Procedures for operating and maintaining the SVES are provided in the O&M Manual, which is addressed further in Section 4 of this SMP.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

2.2.2.1 Soil Cover and Concrete Cap System

The soil cover and concrete cap system is a temporary control during the period of remedial operation of the SVES at the Site. The quality and integrity of the concrete cap and soil cover will be inspected by the NYSDEC in conjunction with each soil vapor and groundwater monitoring event. Such visual inspection of these components will continue until it can be documented that no soil or groundwater contamination remains at the site above the appropriate cleanup objectives, or one of the other conditions identified herein.

2.2.2.2 Soil Vapor Extraction System

Operation of the SVES will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that operation of the SVES is no longer required, a proposal to discontinue operation of the SVES will be prepared by the NYSDEC DER O&M Site Representative for review by the NYSDEC management. Conditions that warrant discontinuing the operation of the SVES include contaminant concentrations: (1) in on-site groundwater that attain levels that are consistently at or below ambient water quality standards and, (2) in on-site groundwater and soil vapors that have become asymptotic to a reasonably low level over an extended period of time as accepted by the NYSDEC, or (3) the NYSDEC has determined that the SVES has reached the limit of its effectiveness. This assessment will be based in part on contaminant levels in groundwater collected from monitoring wells located on the Site and air samples collected from the influent to the SVES. Partial discontinuation of operations through the closing of valves to one or two of the collection laterals in the SVES collection system may be allowed by the NYSDEC depending upon the review of monitoring data collected during the operational phase of the remediation. The SVES will remain in place and operational until permission to discontinue use is granted in writing by the NYSDEC.

2.2.2.3 Sub-slab Depressurization System (SSDS)

Operation of the active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH. In the event that monitoring data indicates that operation of the SSDS is no longer required, a proposal to discontinue the SSDS will be prepared by the NYSDEC DER O&M Site Representative for review by the NYSDEC and the NYSDOH management.

2.3 Institutional Controls

The remedy identified in the ROD for the Dambrose Cleaners Site requires that an Environmental Easement be placed on the property to:

- Limit the use and development of the property to restricted residential use, which would also permit commercial or industrial uses;
- Require compliance with the approved Site Management Plan;
- Restrict the uses of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH; and
- Facilitate periodic certification of institutional and engineering controls.

The Environmental Easement for the Site will be prepared and obtained by the NYSDEC. Adherence to the institutional controls on the Site will be required by the Environmental Easement and will be implemented under this Site Management Plan. The institutional and engineering controls include:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- Engineering controls must be operated and maintained by the NYSDEC as specified in this SMP;
- Engineering controls on the controlled property must be inspected by the NYSDEC at a frequency and in a manner defined in the SMP;
- Environmental monitoring must be performed by the NYSDEC as defined in this SMP; and
- Data and information pertinent to Site management of the controlled property must be reported at the frequency and in a manner defined in this SMP.

Institutional controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The NYSDEC shall provide the necessary data and documentation and recommend to extinguish the Environmental Easement if appropriate.

2.3.1 Excavation Work Plan

The Site will be remediated for restricted residential use. Future intrusive work that could penetrate the soil cover or concrete cap or encounter or disturb the remaining contamination, including any modifications to the existing cover system, will not be permitted without prior approval from the NYSDEC. Any requests would require an

accompanying Soil Management Plan, task-specific Health and Safety Plan and Dust Monitoring Plan.

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination, or modification to a foundation that would breach the integrity of an existing structure, a Soil Vapor Intrusion (SVI) evaluation would be required to be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors. However, due to the limited areal extent of the Site, and the fact that it is almost entirely covered by existing structures and the SVES collection, treatment and barrier components, development of any new structure that would be contemplated for construction in these areas while operation of the SVES continues shall be prohibited.

2.4 Inspections and Notifications

2.4.1 Inspections

Inspections of all remedial components installed at the Site will be conducted by the NYSDEC at the frequency specified in the SMP Monitoring/Inspection Schedule. A comprehensive Site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether engineering controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Site will be conducted within five days of the event to verify

the effectiveness of the EC/ICs implemented at the Site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in Site use;
- Notice within 48-hours of any damage to the SVES or other components that reduces, or has the potential to reduce, the effectiveness of the remedial system or the engineering controls; and
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of engineering controls in place at the Site.

Any change in the ownership of the Site will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of approved work plans and reports, including this SMP; and
- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

2.5 Contingency Plan

Emergencies resulting from an incident at the Dambrose Cleaners Site may include injury to on-site maintenance personnel, fire, damage to the SVES components, or damage or loss of power due to serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any incident or unplanned occurrence requiring assistance, the NYSDEC's representative should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. This emergency contact list should be maintained in an easily accessible location at the Site.

Organization	Contact Number
Medical, Fire, and Police:	911

National Response Center	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

2.5.2 Directions to Nearest Health Facility

Site Location:

- Union Cleaners, 1517/1519 Van Vranken Avenue, Schenectady, NY 12308

Nearest Hospital Name:

- Ellis Hospital

Hospital Location:

- 1101 Nott Street, Schenectady, NY 12308

Hospital Telephone:

- (518) 243-4000

Directions to the Hospital:

1. Go south on Van Vranken Avenue to Nott Street (200 feet)

2. At Nott Street turn left (east) and proceed to 1101 Nott Street (0.5 miles)

Total Distance:

0.54 miles

Total Estimated Time:

2 minutes

2.5.3 Response Procedures

As appropriate, the fire department and other emergency responders will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan. The list will also be posted prominently at the Site and made readily available to on-site personnel.

3.0 Site Monitoring Plan[1]

3.1 Introduction

3.1.1 General

The Site Monitoring Plan describes the measures for evaluating the performance and effectiveness of the:

- SVES to reduce contamination at the Site;
- SSDS to control concentrations of Site contaminants in indoor air;
- Soil cover and concrete cap to function as a barrier to receptor exposure to the remaining contamination; and
- Entire remedy for green remediation principles. These principles must be considered during each periodic review and any remedial system optimization (RSO) review conducted during the Site Management Phase.

This Site Monitoring Plan may only be revised through the review and approval of the NYSDEC.

3.1.2 Purpose and Schedule

This Site Monitoring Plan describes the methods to be used for:

- Sampling and analysis of groundwater, indoor air and soil vapor;
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards;
- Assessing achievement of the remedial performance criteria;
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;
- Preparing the necessary reports for the various monitoring activities; and
- To adequately address these issues, this Site Monitoring Plan provides information on:

[1] The NYSDEC acknowledges that pursuant to the settlement/order of June 18, 2001, the property owner is not required to provide the monitoring, inspections, certifications, or reports set forth in Section 3 of the Site Management Plan. Rather, the NYSDEC and its contractors shall, if required, prepare and submit such reports at no cost to the property owner.

- Sampling locations, protocol, and frequency;
- Information on designed monitoring systems;
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells; and
- Periodic inspection and certification.

Following the initial monitoring event to collect baseline data regarding the Site conditions, the NYSDEC may review the data to assess whether the entire monitoring well network must be monitored during subsequent monitoring events. It is possible, based upon the analytical results of the baseline monitoring, that collection and analysis of samples from some of the 11 monitoring wells may be discontinued. Groundwater levels in the entire monitoring well network will continue to be monitored at each sampling event. Subsequently, semi-annual monitoring of the performance of the remedy and overall reduction in contamination on-site and off-site will be conducted for the first year. The frequency of monitoring thereafter will be reduced, but may be reviewed and adjusted by NYSDEC, as determined to be appropriate. Trends in contaminant levels and other physical parameters in air, soil, and/or groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 3-1 and outlined in detail in Sections 3.2 and 3.3 below.

Table 3-1: Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
SVES	Initial baseline monitoring, followed by semi-annual monitoring for one year and annual monitoring thereafter	1. Contaminant concentrations in soil vapor as represented by samples of influent to the SVES 2. Vacuum maintained in each leg of the SVES collection system	1. VOCs in air by TO-15 2. Measurement of vacuum in each leg of the collection system using electronic system data
SSDS	Initial baseline monitoring, followed by semi-annual monitoring for one year and annual monitoring thereafter	Vacuum maintained under the basement slab of 1517/1519 Van Vranken Avenue	Measurement of SSDS vacuum, using the SSDS system output readings
Groundwater	Initial baseline monitoring, followed by semi-annual monitoring for one year and one monitoring event every fifth quarter thereafter	Groundwater in the monitoring wells shown on Figure 3, (subject to adjustment by the	VOCs by EPA Method 8260B and groundwater elevations

		NYSDEC)	
Soil Cover and Concrete Cap	Inspection at each monitoring event conducted for other media as identified herein	Soil Cover and Concrete Cap	Visual inspection

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH.

3.2 Soil Cover and Concrete Cap Monitoring

At the time of each monitoring event identified in this SMP for other media, a visual inspection of the soil cover and concrete cap, which were installed on portions of 1517/1519 and 1523 Van Vranken Avenue above the subsurface collection network of the SVES, shall be conducted. The purpose of the visual inspection is to identify any changes, such as damage, to the surficial media which could compromise the functionality of the soil cover and/or concrete cap. Since such changes could potentially increase the likelihood of receptor exposure to remaining contamination at the Site, the specific nature of the change shall be documented and reported to the NYSDEC in accordance with the reporting requirements contained in this SMP. An inspection form for the soil cover and concrete cap is included in Appendix A.

3.3 Media Monitoring Program

3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed on a periodic basis to assess the performance of the remedy. Monitoring wells MW-1 and MW-2 were abandoned in place prior to the initiation of construction activities. They were replaced with new monitoring wells, MW-1R and MW-2R, respectively during November 2010. The replacement wells were designed to be similar to and serve a similar function as those which they replaced. These wells, and the balance of the existing monitoring well network in the vicinity of the Dambrose Cleaners Site, will be periodically monitored in the future in accordance with the provisions of this SMP. The locations of the monitoring wells are shown on Figure 3. The drilling logs, including boring and well construction information for the replacement wells, are included in Appendix B. The balance of the network of monitoring wells was previously installed to monitor both up-gradient and down-gradient groundwater conditions at the Site. Well construction data for these monitoring wells may be found in other previously-referenced reports documenting the history of investigatory work at this Site.

The sampling frequency for the monitoring wells may be modified by the NYSDEC. In the event that this occurs, the SMP will be modified to reflect changes in sampling plans made by the NYSDEC. Deliverables for the groundwater monitoring program are specified herein.

3.3.1.1 Sampling Protocol

The NYSDEC will retain qualified environmental sampling personnel and an analytical laboratory for the collection and analysis of groundwater samples. The monitoring program is designed to periodically evaluate Site groundwater quality during the remedial and post-remedial periods, and will assist in evaluating the long-term effectiveness of remedial activities. Furthermore, the groundwater monitoring network will enable the assessment of upgradient and downgradient groundwater quality. The following section details the monitoring locations and procedures that will be used to evaluate groundwater quality.

Groundwater Level Measurements

Prior to groundwater sampling, the depth to groundwater will be measured in each well and the groundwater elevation above mean sea level will be evaluated for each monitoring point. Water level measurements will be used in conjunction with horizontal and vertical ground survey data to evaluate horizontal and vertical components of groundwater flow. Water level measurements will also be used to determine the volume of standing water in wells for purging activities.

The following equipment will be used for the measurement of water levels:

- Electronic water level indicator;
- Field log book and pen; and
- Photoionization Detector (PID).

At each monitoring well, the cap and internal riser cover will be removed. The headspace and breathing zone air quality will be monitored with a PID. This step may be omitted in subsequent rounds of water level measurements in those wells that yielded no detectable amounts of vapors or gases from prior sampling rounds.

The battery of the electronic water level indicator will be checked in accordance with the manufacturer's instructions for operation of the equipment. The water level indicator will be decontaminated before use in each well by using an Alconox wash and deionized water rinse. The instrument will then be turned on and the probe will be slowly lowered into the well, until the audible signal is heard or the instrument light goes on, indicating that the sensor in the probe has made contact with the water surface in the well.

The depth to water will be recorded to the nearest one-hundredth of a foot, from the top of the measuring mark on the well riser. The date, time, well number, and depth to water will be recorded in the field logbook in indelible ink.

Monitoring Well Inspection

Prior to collecting groundwater samples, each monitoring well will be inspected for the following:

- Damage to the cover or protective casing, if visible above the ground surface;
- Erosion of soil in the area immediately surrounding the casing;
- Operable lock, if appropriate; and
- Damage to the monitoring well surface seal.

The results of these inspections will be recorded on the Site Monitoring Well Inspection Sheet, included in Appendix C.

Groundwater Sampling

Groundwater samples will be collected from the monitoring wells by the NYSDEC on a periodic basis as indicated in Table 3-1 beginning upon start-up of the SVES. NYSDEC will have the flexibility to complete the sampling 30 days before or after the scheduled event to adjust for weather conditions or contingency monitoring sampling events.

The sampling procedures described in this plan are designed to collect representative samples for VOC analysis using either disposable polyethylene bailers or passive diffusion bags (PDB) in accordance with approved NYSDEC and USEPA sampling protocols. Groundwater samples will be analyzed for VOCs using the United States Environmental Protection Agency (USEPA) Method 8260B.

If submersible bailers are used to collect the groundwater samples, they shall be clean and new. Each monitoring well shall be sampled with a dedicated bailer, which shall be disposed following use. An initial PID reading of the headspace shall be obtained from the well prior to purging. The PID will be calibrated before the start of each sampling event. To remove stagnant water from the monitoring well, it shall be purged by removing, through repetitive bailing, a volume of water equivalent to a minimum of three and a maximum of five times the volume of the standing water in the monitoring well. The temperature, pH, turbidity and specific conductance of the water in the well shall be measured during purging and recorded in the field log book. Upon stabilization of these water quality parameters (i.e., the specific conductance varies by less than 10 percent and three consecutive readings result in the same or similar temperatures), a representative sample of water may be collected from the well. The bailer shall be lowered slowly and

gently into the well, taking care to avoid scarping or banging the sides of the well. The bailer shall be lowered to a depth consistent with that of the well screen. The sample shall be withdrawn from the well and transferred directly into the appropriate sample container. The temperature, pH, turbidity, and specific conductance of the water in the sample shall be measured and recorded in the field log book.

If passive diffusion bags are used to obtain groundwater samples, the PDB will be installed and groundwater in the monitoring well will be collected by diffusion into the PDB over an approximately 14 day period. At the time of PDB installation, the expansion cap for each well will be removed, and the headspace at the top of the monitoring well will be measured with a PID. This step may be omitted in later sampling events for those monitoring wells which have already demonstrated in the previous rounds of water level measurement that they contain no or insignificant amounts of vapors or gases. The PID will be calibrated before the start of each sampling event.

The groundwater samples to be sent to the laboratory will be collected directly from the bailer or the PDB through transfer to the appropriate sample containers. The two 40 milliliter (ml) vials for volatile organic analysis will be filled first, without leaving any head space. The sample bottles will be pre-preserved by the laboratory. The sample bottles will be immediately placed in a cooler held at 4ºC. Disposable gloves will be worn by the sampling personnel and changed between sampling points.

Data to be recorded in the field logbook will include the sample identification information, date and time of sample collection, sampling method, depth to water and PID readings.

Decontamination of Sampling Equipment

Cross contamination of samples from any source is to be avoided. All sampling equipment must be clean and free from the residue of any previous samples. All non-dedicated sampling equipment must be cleaned initially and prior to being reused. The following is the procedure for decontamination:

- Wash and scrub with low phosphate detergent;
- Rinse with tap water;
- Rinse with isopropanol (pesticide grade);
- Rinse thoroughly with analyte-free deionized water;
- Air dry; and
- Wrap in aluminum foil for transport.

Some equipment, such as disposable polyethylene bailers and the wetted portion of the bailer rope, shall be disposed rather than decontaminated or reused. Field measurement equipment will be rinsed prior to and after each use with analyte-free deionized water.

Sampling Equipment

The following equipment may be needed to collect groundwater samples for laboratory analysis and to perform field analyses:

- Electronic water level indicator;
- Bailers and rope;
- Passive diffusion bags;
- Photoionization Detector (PID);
- Field log book and field logs;
- Laboratory prepared sample containers;
- Roll of polyethylene sheeting; and
- Decontamination equipment.

Field Quality Control Samples

Quality control procedures will be employed to check that sampling, transportation and laboratory activities do not bias sample analytical quality. Trip blanks and duplicate samples will provide a quantitative basis for reviewing the quality of the analytical data.

Trip Blanks

The trip blanks will be prepared by the laboratory by filling 40 ml vials with a Teflon-lined septum with deionized, analyte-free water. The trip blank will accompany the day's sample containers at all times. One trip blank will be returned to the laboratory with each cooler containing aqueous samples for VOC analysis. The trip blank will be analyzed for VOCs.

Field Duplicates

A field duplicate sample will be collected at a rate of one sample per 20 environmental samples. The duplicate sample is collected at the same location as the environmental sample. The field duplicate sample is identified using the sample designation system described herein. The identity of the field duplicate is not revealed to the laboratory. The

analytical results of the environmental sample will be compared to the field duplicate sample, to evaluate field-sampling precision.

Sample Designation

A sample numbering system will be used to identify each sample. This system will provide a tracking procedure to allow retrieval of information about a particular sample, and will assure that each sample is uniquely numbered. The sample identification will consist of at least three components as described below:

- Project Identification: The first component consists of a two letter designation that identifies the project Site. For this project, the two letter designation will be DC;
- Sample type: The second component, which identifies the sample type, will consist of a letter code as follows:
  - MW - Monitoring Well
- Sample Location: The third component identifies the sample location using a two-digit number; and
- Quality Assurance/Quality Control Samples will be labeled with the following suffixes:
  - TB - Trip Blank

Duplicate samples will be numbered uniquely as if they were samples. A record of identification for duplicate samples will be maintained. Examples of identification numbers are given below:

- DC-MW-02: Duplicate groundwater sample 02.

Field Documentation

Records and notes generated in the field shall be considered controlled evidentiary documents and may be subject to scrutiny in litigation. Consequently, it is essential that personnel thoroughly detail and document the aspects of the sampling event. Field documentation shall provide sufficient information and data to enable reconstruction of field activities. Numerically serialized field log books provide the basic means for documenting field activities. The following information shall be provided on the inside front cover of each field log book:

- Project Name (Site Name);
- Site Location;

- Site Manager for monitoring event; and
- Date of Issue.

Control and maintenance of field log books is the responsibility of the Field Team Leader.

Documentation of Field Activities

Field log book entries shall be legibly written and provide an unbiased, concise, detailed description of field activities. Use of preformatted data reporting forms shall be identifiable and referenced to field log book entries. Step-by-step instructions and procedures for documenting field activities are provided below and in the following sections. Instruction and procedures relating to the format and technique in which field log book entries are made are as follows:

- Leave the first two pages blank. They will provide space for a table of contents to be added when the field log book is complete;
- The first written page for each day identifies the date, time, Site name, location, personnel and their responsibilities, other non-personnel and observed weather conditions. Additionally, during the course of Site activities, deviations must also be documented;
- It is recommended that entries be made on a new page at the start of each day's field activities;
- All photos taken must be traceable to field log book entries. It is recommended to reference photo locations on the Site sketch or map;
- All entries must be made in ink. Waterproof ink is recommended;
- All entries must be accompanied by the appropriate military time (such as 1530 instead of 3:30);
- Errors must be lined through and initialed. No erroneous notes are to be made illegible;
- The person documenting must sign and date each page as it is completed;
- Isolated log book entries made by a team member other than the team member designated responsible for field documentation, must be signed and dated by the person making the entry; and
- Additions, clarifications, or corrections made after completion of field activities must be dated and signed.

General Site Information

General Site characteristics shall be recorded. Information may include:

- Type of access;
- Anything that is unexpected on-site (e.g., appearance of drums that have not been previously recorded);
- Information obtained from interview with Site personnel (if applicable), or other interested party contacted on-site;
- Names of any community contacts on-site; and
- A Site map or sketch may be provided. It can be sketched into the log book or attached to the log book. If it is attached, make sure that the project name is on the map.

Sample Activities

A chronological record of each sampling activity must be kept, including:

- Explanation of sampling at the location identified in the SMP;
- Exact sample location, using permanent recognizable landmarks and reproducible measurements;
- Sample matrix;
- Sample descriptions, i.e., color, texture, odor (e.g., soil type, murky water) and any other important distinguishing features; and
- Decontamination procedures used.

As part of chain-of-custody procedures, recorded on-site sampling information shall include sample number, date, time, sampling personnel, sample type, designation of sample as a grab or composite, and any preservative used. Sample locations should be referenced by sample number on the Site sketch or map. The offer and/or act of providing sample splits to a third party (e.g., the responsible party representative; state, county, or municipal, environmental and/or health agency, etc.) shall be documented.

Sample Dispatch Information

When sampling is complete, all sample documentation, such as chain-of-custody forms, shall be copied and copies placed in the project files. A notation of numbers of coolers

shipped, carrier and time delivered to pick-up point should be made in one field log book, preferably that of the Field Team Leader.

3.3.1.2 Monitoring Well Repairs, Replacement and Decommissioning

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will review and approve any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.4 Site-wide Inspection

Site-wide inspections will be performed by the NYSDEC on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect engineering controls or monitoring devices. During these inspections, an inspection form will be completed. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that Site records are up to date.

3.5 Monitoring Quality Assurance/Quality Control

Not applicable to the monitoring phase at the Dambrose Cleaners Site.

3.6 Monitoring Reporting Requirements

Monitoring reports will be prepared which will document each monitoring event. Each report will include a summary of the most recent Site water quality information presented with specific evaluations of any changes in water quality that have occurred. Unless more-rapid reporting is required to address an imminent environmental or public health concern, the report will be prepared within 60 days of receipt of the analytical data from each sampling event. A summary of the monitoring results obtained during the certifying period will be reported to the NYSDEC on a periodic basis in a Periodic Review Report (PRR). Information required to be included in a PRR is outlined in Section 5.3 of this SMP. The monitoring report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, groundwater, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations;
- A determination as to whether groundwater conditions have changed since the last reporting event;
- Results of groundwater sample analyses in summary tables showing the sample collection date, NYSDEC Class GA standards, and USEPA MCLs;
- Potentiometric contour maps for the water table;
- A discussion of the inspection of the monitoring wells, including a description of repairs required, if applicable; and
- Analytical Quality Assurance/Quality Control (QA/QC) documentation, including data quality assessment reports.

Forms and any other information generated during regular monitoring events and inspections will be kept on file by the NYSDEC. A summary of the information in each monitoring report will be included as part of the PRR. Requests for changes to the forms or reporting format used during the monitoring events will be:

1. Subject to the approval of the NYSDEC; and

2. Submitted as part of the PRR, as specified in the reporting requirements of this SMP.

4.0 Operation and Maintenance Plan[2]

4.1 Introduction

This Operation and Maintenance Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the SVES installed at the Dambrose Cleaners Site. The Operation and Maintenance Manual (O & M Manual) for the mechanical, electrical, and process control components of the SVES is incorporated into this SMP as Appendix D. A summary of the measures necessary to operate, monitor and maintain the SSDS has been previously provided to the NYSDEC.

This Operation and Maintenance Plan:

- Includes the information necessary to allow individuals unfamiliar with the Site to operate and maintain the SVES; and
- May be updated periodically to reflect changes in Site conditions or the manner in which the SVES is operated and maintained.

Information on non-mechanical engineering controls (i.e. soil cover and concrete cap) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the Site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 Engineering Control System Operation and Maintenance for the Soil Vapor Extraction System

The major components of the SVES installed at the Dambrose Cleaners Site include:

- One 33 foot long and two 25 foot long subsurface horizontal soil vapor extraction wells bedded in trenches of granular material;
- Concrete and soil (with high-density polyethylene liner) surface caps over the extraction wells to minimize potential direct contact with subsurface soil and the short-circuiting of ambient air into the SVES collection system;
- One SVES equipment enclosure, with utility connections, control panels, lighting, instrumentation, noise dampening devices and internal environmental controls; and

[2] The NYSDEC acknowledges that pursuant to the settlement/order of June 18, 2001, the property owner is not required to implement the Operation and Maintenance Plan set forth in Section 4 of the Site Management Plan. Rather, the NYSDEC and its contractors shall, if required, implement such plan at no cost to the property owner.

- Blowers, variable frequency drive motors, collection and discharge vent piping, valves, water knockout equipment and appurtenances to allow the extraction and processing of approximately 100 cubic feet per minute of vapor from the subsurface, while maintaining a minimum vacuum of approximately 6 inches of water, with flow basically equally distributed from each of the extraction wells.

The power source, output signals and controls for the existing SSDS were modified to be integral with the new SVES.

The SVES was installed by Precision Environmental Services, Inc. during the period August 16, 2010 through January 10, 2011.

4.2.1 Scope of Operation and Maintenance Requirements for the SVES

National Environmental Systems (NES), the SVES manufacturer, produced the O&M Manual for the mechanical, electrical and process control components of the SVES. Following start-up, Precision Environmental Services, Inc. submitted an electronic copy of the O&M Manual to the NYSDEC and placed a hard-copy of the document in the SVES enclosure at the Site. The contents of the O&M Manual include:

- Installation Guidelines and Warranty;
- Mechanical Drawings;
- Electrical Drawings and Control Panel Components;
- SVES Components; and
- Enclosure Components.

An electronic copy of the O&M Manual is included in Appendix D of this SMP.

4.2.2 SVES Start-Up and Testing

On January 10, 2011, Precision Environmental Services, Inc. and its subcontractor, National Environmental Systems, initiated system operations and conducted operational testing on the components of the SVES. Each system component was examined and successful tests were conducted on the following:

- Emergency Shutoff;
- Outlet Pressure Shutoff;
- Variable Frequency Drive (VFD) on the Blower Motor;
- Enclosure Interior Lights;

- Ambient Vent Fan; and
- Enclosure Heater.

The SVES was energized, and the vacuum in each collection lateral stabilized at approximately 6 ½ - 7 inches of water at approximately 100 cubic feet per minute of flow. These readings were relatively close to the design operating parameters for the system. Field testing at startup indicated concentrations of total VOCs in the SVES effluent of approximately 550 -650 parts per billion. The SVES testing described above may be repeated, if, in the course of the SVES operations, significant changes are made to the system, and the system must be restarted.

4.2.3 SVES Operation: Routine Operation Procedures

The routine operating procedures for the SVES are included in the NES O&M Manual included as Appendix D.

4.2.4 SVES Operation: Routine Equipment Maintenance

The routine equipment maintenance requirements for the SVES are included in the NES O& M Manual included as Appendix D.

4.2.5 SVES Operation: Non-Routine Equipment Maintenance

The non-routine equipment maintenance requirements for the SVES are either included in the NES O&M Manual in Appendix D or will be addressed on a case-by-case basis dependent upon the nature of the event causing the demand for such maintenance.

4.3 Engineering Control System Performance Monitoring

During the operation of the system, periodic sampling and analysis of the influent and effluent air streams, Site groundwater, and, as necessary, Site soil vapor will be conducted to enable the NYSDEC to ascertain the performance of the remedial measure.

4.3.1 Monitoring Schedule

The SVES at the Dambrose Cleaners Site shall be monitored to gather data to evaluate performance in accordance with the following:

- Baseline monitoring at the time of initial system start-up or concurrent with the baseline environmental monitoring event;
- Semi-annually for the first year following initial system start-up concurrent with the semi-annual environmental monitoring events;

- Annually following the first year of operation concurrent with the annual environmental monitoring events; and

- More frequently, as recommended by the manufacturer, or as deemed necessary by the NYSDEC in the event that system operations are disrupted by an unforeseen event.

Data from the SVES telemetry shall be obtained remotely (downloaded) at regular intervals of no less than twice per month during normal operations, and at the time of any warning message, shut-off, or emergency condition.

Inspection frequency is subject to change based upon the discretion of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the SVES has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the SVES are specified later in this Plan.

4.3.2 General Equipment Monitoring

A visual inspection of the remedial systems will be conducted during each on-site monitoring event. System components and parameters to be monitored include, but are not limited to, the following:

- SSDS:
  - Blower for vacuum; and,
  - General system piping for integrity.
- SVES:
  - Blower for discharge pressure, flow, and temperature;
  - Blower for vacuum, flow, and temperature;
  - Individual extraction wells for vacuum;
  - Effluent piping for integrity and airstream contaminant concentration; and
  - Other equipment, as recommended by the manufacturer and included in the O & M Manual.

If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the systems are not performing within specifications, maintenance and repair in accordance with the O&M Manual shall be conducted. Following repairs or maintenance, the SSDS or SVES shall be restarted.

4.3.3 System Monitoring Devices and Alarms

The SVES has warning devices to indicate that the system is potentially not operating properly. These are shown or described in the O&M Manual. In the event that any warning device is activated, applicable maintenance and repairs will be conducted, as specified in the O&M Manual. Subsequent to the completion of repairs the SVES shall be restarted. Problems will be noted in the subsequent Periodic Review Report.

4.3.4 Sampling Event Protocol

Sampling of the influent soil vapor to the SVES shall be conducted in accordance with the protocol established for collecting samples to measure VOCs in air using United States Environmental Protection Agency (USEPA) Method TO-15. An active approach utilizing Tedlar Bags or a passive approach using laboratory-certified Summa canisters will be used to evaluate air quality. Sampling shall include the following:

- Initial baseline monitoring;
- Semi-annual monitoring for one year; and
- Annual monitoring thereafter.

Each soil vapor sample will be collected from a port on the influent side of the SVES blower. Samples collected in Tedlar bags shall be obtained using an extraction pump suitable for the application and Teflon connective tubing. These samples shall be collected at a pump rate of 50-200 milliliters/minute. Samples collected in Summa canisters shall be obtained over an approximately 1/2-hour period using Teflon sampling tubing and a controller flow rate of 200 milliliters/minute. Field notes describing sampling activities shall be recorded on a sample form.

Air Sampling Procedures

Soil vapor samples will be collected in accordance with the following procedures:

1. Purge the sample port and, following connection, the sample tubing. Place the sample tubing and the extraction pump with the Tedlar Bag or the Summa canister in the desired sampling location. The Tedlar Bags and sample tubing shall be new and the sample extraction pump shall be new or fully decontaminated with certified air following the previous use. The Tedlar Bag shall have a volume of 3 or 5 Liters (L). The Summa canister shall be a 6 L canister with a vacuum gauge and flow controller. The canister must be batch certified clean (in accordance with EPA Method TO-15) and under a vacuum of more than 25 inches of mercury (in. Hg).

2. Ensure that all fittings, tubing, valves, gauges, and filters are properly attached.

3. For samples collected using the Tedlar Bags, open the valve on the Tedlar Bag, set the extraction pump to the appropriate flow rate and turn the pump on. For samples collected in Summa canisters, open the valve one-half turn or as indicated in the laboratory specifications. Manufacturer or laboratory protocols shall be followed when operating the extraction pump or the valve on the canisters.

4. For the Summa canisters, record the initial vacuum. For all samples, record the start time and date on the chain of custody (COC) and in the field log book/sample form. Take a digital photograph of the sampling equipment setup and the surrounding area.

5. Record the sample bag's reference number or the canister's serial number on the COC and field log book/sample form. Assign sample identification numbers and record them on the bag or canister ID tag, the COC and the field log book/sample form.

Termination of Sample Collection

1. Terminate sample collection in the Tedlar Bags when the bag is approximately two-thirds full. For the Summa canisters, terminate at the designated time and record the final gauge pressure. Upon termination, close the Summa canister valve or the valve on the Tedlar Bag. Record the time of sample collection termination on the COC and in the field log book/sample form.

2. If the Summa canister pressure gauge does not read negative at the end of the sampling period, the NYSDEC Project Manager should be notified before the air sample is analyzed to determine whether the sample should be discarded and the flow resampled.

3. Disconnect the sample tubing, the extraction pump from the Tedlar Bag and the pressure gauge/flow controller from the canister.

4. For the Summa canister sample, install the plug on canister inlet fitting and place the sample container in the original box.

5. Complete the sample collection form with the appropriate information and log each sample on the COC form.

6. All Tedlar Bags or canisters will be returned at the completion of the field sampling to the laboratory by overnight shipment or courier and in accordance with any laboratory specifications (i.e. holding time requirements).

The NYSDEC may alter the sampling protocol, analytical parameters, analytical method or frequency of the sampling events at its discretion.

4.4 Maintenance and Performance Monitoring Reporting Requirements[3]

Maintenance reports and any other information generated during regular operations at the Site will be kept on-file at the NYSDEC. All reports, forms, and other relevant information generated will be compiled as part of the Periodic Review Report, as specified in the Section 5 of this SMP and will be available for review upon request to the NYSDEC.

4.4.1 Routine Maintenance Reports

Reports will be completed during each routine maintenance event. The reports will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Identification of modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted; and
- Other documentation, such as copies of invoices for maintenance work, receipts for replacement equipment, etc., attached to the report.

4.4.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a report will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents; and

[3] The NYSDEC acknowledges that pursuant to the settlement/order of June 18, 2001, the property owner is not required to provide the reports set forth in Section 4.4 of the Site Management Plan. Rather, the NYSDEC and its contractors shall, if required, prepare and submit such reports.

- Other documentation, such as copies of invoices for repair work, receipts for replacement equipment, etc., attached to the report.

5.0 Inspections, Reporting and Certifications[4]

5.1 Site Inspections

5.1.1 Inspection Frequency

Inspections will be conducted by the NYSDEC at the frequency specified in the schedule provided in Section 3-Monitoring Plan and Section 4-Operation and Maintenance Plan of this SMP. At a minimum, a Site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

Inspections and monitoring events will be recorded on the appropriate forms. Additionally, a general Site-wide inspection form will be completed during the Site-wide inspection. These forms are subject to NYSDEC revision.

Applicable inspection forms and other records, including all media sampling data and system maintenance reports generated for the Site during the reporting period, will be provided in electronic format in the Periodic Review Report. Sampling data will be submitted in accordance with the NYSDEC's reporting requirements.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and Site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items; and
- The Site remedy continues to be protective of public health and the environment and is performing as intended.

[4] The NYSDEC acknowledges that pursuant to the settlement/order of June 18, 2001, the property owner is not required to provide the inspections, reports, or certifications set forth in Section 5 of the Site Management Plan. Rather, the NYSDEC and its contractors shall, if required, prepare and submit such reports at no cost to the property owner.

5.2 Certification of Engineering and Institutional Controls

After the last inspection of the reporting period, a Professional Engineer licensed to practice in New York will prepare the following certification:

For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional and/or engineering controls employed at this Site are unchanged from the date the controls were put in place, or last approved by the NYSDEC;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for the controls;
- Access to the Site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of the controls. Site access shall be pursuant to Section III of the Consent Order;
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the Site is compliant with the Environmental Easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices;
- The information presented in this report is accurate and complete; and
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, _____, of _____, am certifying as the NYSDEC's Designated Site Representative for the Site.

The signed certification will be included in the Periodic Review Report described below.

5.3 Periodic Review Report

A Periodic Review Report will be prepared by the NYSDEC periodically, beginning twelve months after the construction of the SVES is complete. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site. The report will be prepared in accordance with NYSDEC DER-10 and DER-31 and submitted within 45 days of the end of each certification period. Media sampling results will also be summarized in the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site;
- Results of the required periodic Site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the Site, that were not previously submitted in a monitoring report during the reporting period, in electronic format;
- A summary of any monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- A summary of the contraventions of water quality standards, discussion of results, and any proposed modifications to the sampling and analysis schedule necessary to meet the groundwater monitoring requirements;
- If not previously submitted as part of a monitoring report or an electronic data deliverable, results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period electronically in a NYSDEC-approved format;
- A Site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the Site-specific ROD;
    - An assessment of the operation and the effectiveness of the SVES and SSDS, including identification of any needed repairs or modifications;

- Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
- Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan;
- A discussion of the green remediation principles employed during the reporting period, with an identification of any associated quantitative or qualitative reductions in impacts to the environment;
- Recommendations that may be implemented during the next reporting period to facilitate the green remediation principles; and
- An assessment of the overall performance and effectiveness of the remedy.

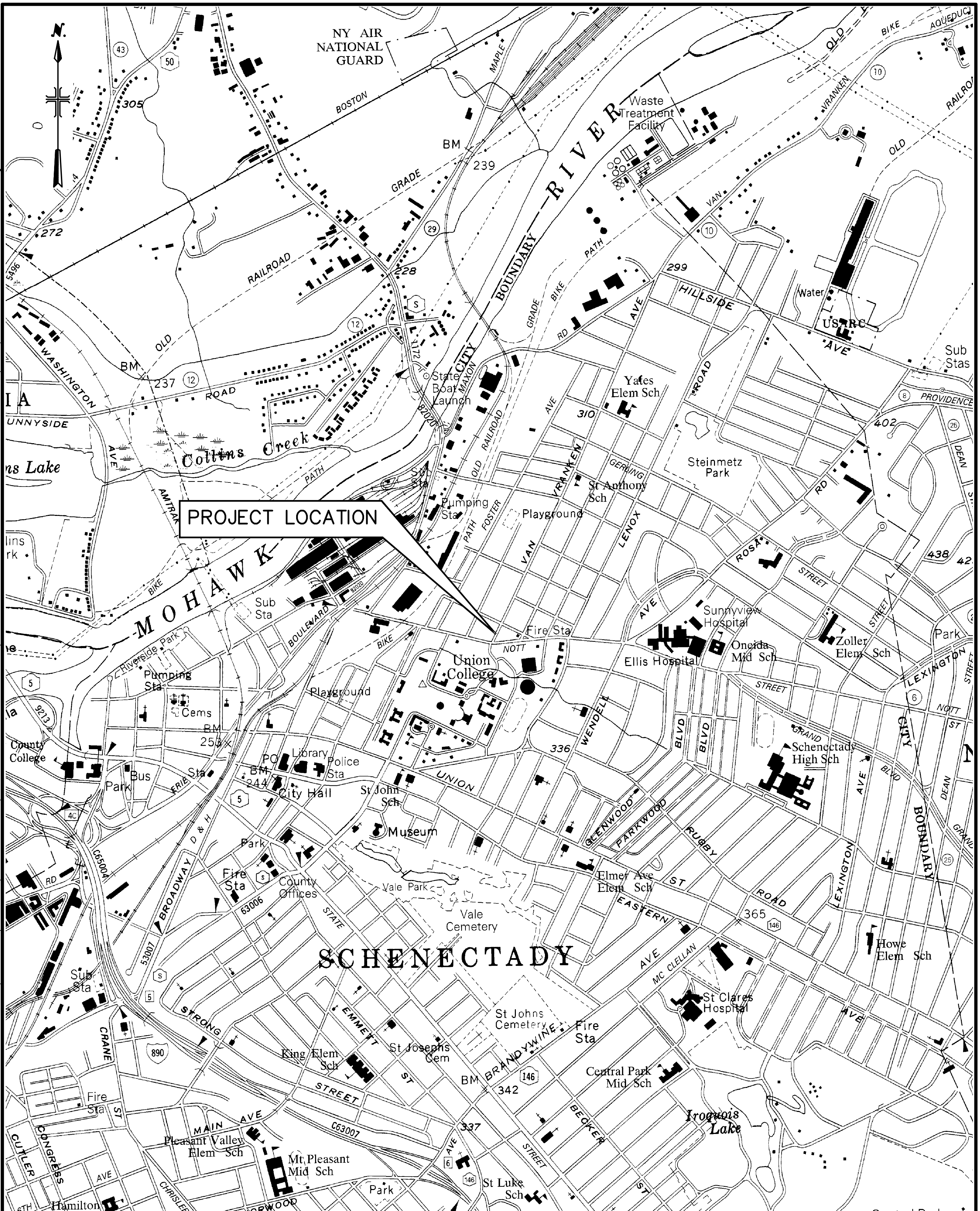
- A performance and cost summary for the SVES and SSDS at the Site during the calendar year, including information such as:
  - The number of days the system was run for the reporting period;
  - The average, high, and low flows per day for the SVES;
  - The contaminant mass removed;
  - A description of breakdowns and/or repairs, along with an explanation for any significant downtime;
  - A description of the resolution of performance problems;
  - A summary of the performance, effluent and/or effectiveness monitoring; and
  - Comments, conclusions, and recommendations based on data evaluation.

5.4 Corrective Measures Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an IC or EC, a corrective measures plan will be prepared. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved.

FIGURE 1

Project Location Map



MALCOLM PIRNIE

NYSDEC SITE NO. 447030
SCHENECTADY, NEW YORK
DAMBROSE CLEANERS
SITE MANAGEMENT PLAN

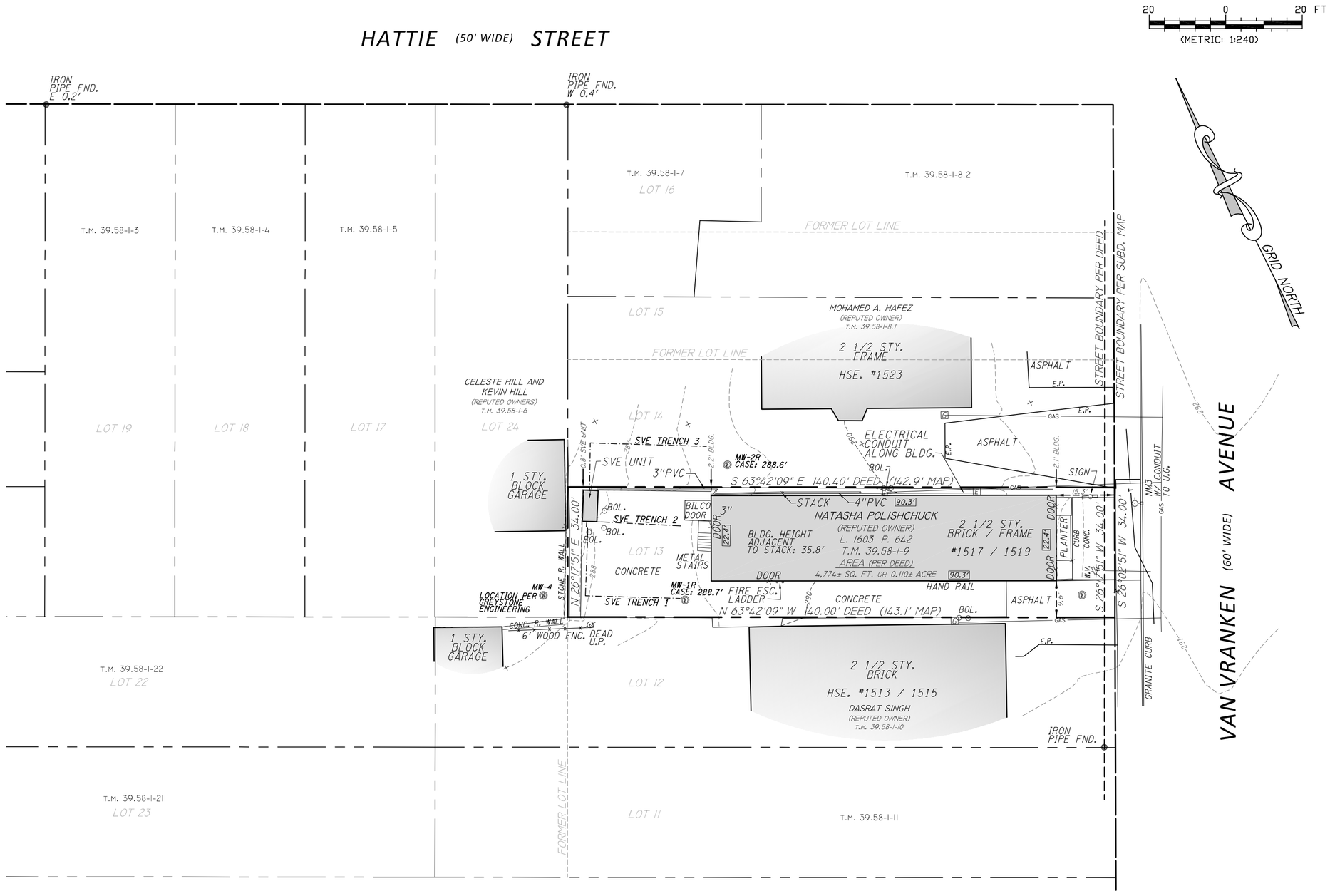
PROJECT
LOCATION MAP
SCALE: AS SHOWN

MALCOLM PIRNIE, INC.
JULY 2011
FIGURE 1

XREFS: IMAGES:I:\ACAD\PROJ\0266385\IMAGE\r47plan.tif
User:Hausmann Spec:PIRNIE STANDARD File:I:\ACAD\PROJ\0266385\SITE MGMT PLAN\FIGURE 1.DWG Scale:1:1 Date:07/15/2011 Time:08:51 Layout:Blank

FIGURE 2

ALTA/ACSM Land Title Survey



SURVEY NOTES

1. COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (CORS) - NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE.
2. ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF1988.
3. MAPPING UNITS ARE SHOWN IN U.S. SURVEY FEET.
4. THE CONTOUR INTERVAL IS 1 FOOT.
5. ALL UTILITIES SHOWN ARE CONSIDERED APPROXIMATE. PRIOR TO EXCAVATION, DIG SAFE NEW YORK SHOULD BE CONTACTED AT 1-800-962-7962.
6. THE SURVEY WAS COMPLETED IN THE FIELD JANUARY 11, 2011.

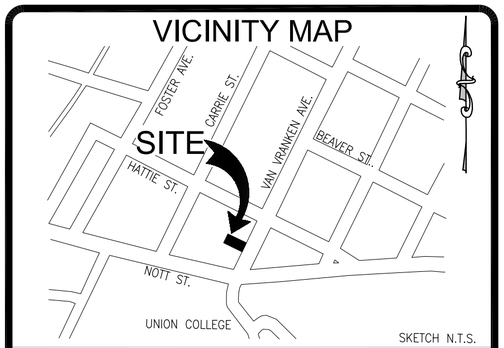
RECORD DESCRIPTION

All that parcel of land, situated, lying and being in the City of Schenectady, County of Schenectady, New York, on the westerly side of Van Vranken Avenue in the Second Ward (Formerly a portion of the Third Ward) of the city of Schenectady, New York known and distinguished on Map of Lots owned by Richard Corl, Schenectady, New York made by J. Leland Fitzgerald, Sanitary Engineer, and filed November 19, 1903 a Lot 13, bounded and described as follows: Easterly and in front by Van Vranken Avenue as designated on said map, 34 feet along the same; Southerly by Lot No. 12 as designated on said map, 140.4 feet along the same; Westerly by Lot No. 24, 34 feet along the same; Northerly by Lot No. 14 as designated on said map, 140.4 feet along the same.

REFERENCES

1. LAST OWNER SEARCH NO. 58171, PREPARED BY FOUR CORNERS ABSTRACT, DATED JULY 14, 2010.
2. DEED, FILED IN LIBER 1603, PAGE 642.
3. DEED, FILED IN LIBER 1775, PAGE 397.
4. DEED, FILED IN LIBER 1669, PAGE 982.
5. DEED, FILED IN LIBER 1725, PAGE 396.
6. MAP ENTITLED, " MAP OF LOTS OWNED BY RICHARD CORL, SCHENECTADY, NEW YORK MADE BY J. LELAND FITZGERALD, SANITARY ENGINEER", DATED NOVEMBER 19, 1903, FILED IN BOOK 34 OF MAPS, PAGE 276.

VICINITY MAP



LEGEND

BOL.	BOLLARD
W.V.	WATER VALVE
	MONITORING WELL
G	GAS METER
E	ELECTRIC METER
	UTILITY LIGHT POLE
22.4'	BUILDING DIMENSION

CERTIFICATION

To the People of the State of New York acting through its commissioner of the Department of Environmental Conservation:

This is to certify that this map or plat and the survey on which it is based were made in accordance with the "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys", jointly established and adopted by ALTA and NSPS in 2005, and includes Items 2, 4, 5, 7(a), 7(c), 8, 9, 11(a), 12, 13, and 16 of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA and NSPS and in effect on the date of this certification, undersigned further certifies that in my professional opinion, as a land surveyor registered in the State of New York, the maximum Relative Positional Accuracy of this survey does not exceed that which is specified therein.

STATE OF NEW YORK
MICHAEL ANTHONY VENTURO
50079
LICENSED LAND SURVEYOR

2/15/2011

MICHAEL A. VENTURO, L.S. 50079
FOR: POPLI DESIGN GROUP
PHONE: 585-388-2060

SURVEY BY:	PREPARED FOR:	
POPLI DESIGN GROUP ARCHITECTURE + ENGINEERING 555 Penbrooke Drive Penfield NY 14526	MALCOLM PIRNIE	
	SURVEYOR JOB NUMBER:	SU4017.01
	SURVEY CREW:	J. PHILLIPS, W. STRATTON
	DRAWN BY:	J. PHILLIPS
	CHECKED BY:	M. VENTURO

REVISIONS

2/15/2011	ADDED SVE TRENCH LOCATIONS, M.W. CASE ELEV.'S & MW-4

ALTA / ACSM LAND TITLE SURVEY

FOR

DAMBROSE CLEANERS SITE -

AN INACTIVE HAZARDOUS WASTE SITE,
NYSDEC REGISTRY SITE NO. 447030
AT
1517 / 1519 VAN VRANKEN AVENUE

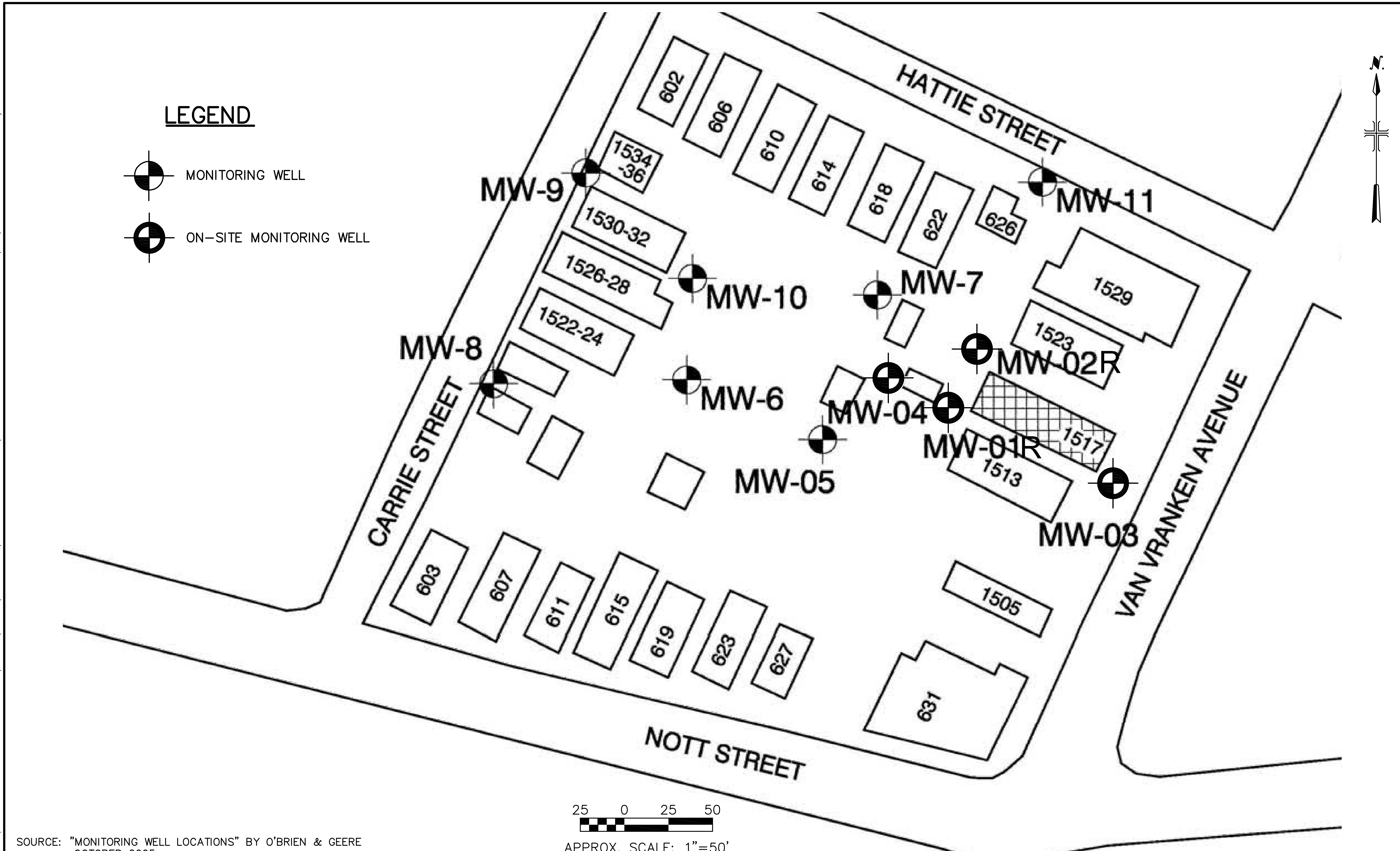
TAX PARCEL NO. 39.58-1-9

City of Schenectady, County of Schenectady, State of New York

DATE: FEBRUARY 2, 2011 SCALE: 1" = 20'

FIGURE 3

Monitoring Locations



SOURCE: "MONITORING WELL LOCATIONS" BY O'BRIEN & GEERE OCTOBER 2005

User: Hausmann Spec: PIRNIE STANDARD File: I:\ACAD\PROJ\0266385\SITE MGMT PLAN\FIGURE 3.DWG Scale: 1:1 Date: 07/15/2011 Time: 08:52 Layout: Blank

MALCOLM PIRNIE	NYSDEC SITE NO. 447030 SCHENECTADY, NEW YORK DAMBROSE CLEANERS SITE MANAGEMENT PLAN	MONITORING LOCATIONS SCALE: AS SHOWN	MALCOLM PIRNIE, INC. JULY 2011 FIGURE 3

APPENDIX A

Soil Cover and Concrete Cap Inspection Form

Dambrose Cleaners Site
Schenectady, New York
NYSDEC Site Number 447030
Soil Cover and Concrete Cap Inspection Form

Time: _____

Date: _____

Weather Conditions: _____

Inspection Checklist:

A. Soil Cover:

The Soil Cover shall be inspected by traversing the area and examining it for the following items:

		Yes	No
1.	Is there bare ground, or dead or damaged grass?	___	___
2.	Are there cracks in, or subsidence of the ground surface?	___	___
3.	Is there evidence of burrowing by animals?	___	___
4.	Is there deep-rooted vegetation present?	___	___
5.	Is there any erosion damage to grassed areas?	___	___
6.	Is there discoloration or evidence of spills on the surface?	___	___
7.	Is there other evidence of disturbance to the area?	___	___

Comments *(Explanation required for each Yes answer in Section A):*

B. Concrete Cap:

The Concrete Cap shall be inspected by traversing the area and examining it for the following items:

		Yes	No
1.	Are there visible cracks or breaks in the concrete?	___	___
2.	Is the surface uneven or is there evidence of settlement?	___	___
3.	Is there evidence of burrowing by animals under the Cap edges?	___	___
4.	Is there vegetation at the Cap interface with the stone wall?	___	___
5.	Is there damage to the Cap's northern face or edge?	___	___
6.	Is there discoloration or evidence of spills on the Cap surface?	___	___
7.	Is there other evidence of disturbance to the Cap area?	___	___

Comments (*Explanation required for each Yes answer in Section B):*

C. Site Drainage

The Site shall be inspected by traversing the area and examining it for the following:

		Yes	No
1.	Is there any erosion damage?	___	___
2.	Is there debris blocking drainage pathways?	___	___
3.	Is there evidence of ponding or puddling of water?	___	___

Comments *(Explanation required for each Yes answer in Section C):*

D. Stone Retaining Wall

The Stone Retaining Wall shall be inspected by examining the following items:

		Yes	No
1.	Are there any loose stones or stones missing from the wall?	___	___
2.	Is the grout between the stones cracked, spalling or missing?	___	___

Comments *(Explanation required for each Yes answer in Section D):*

Additional Comments:

Signature:

_____	_____	_____
Inspector	Date	Organization

APPENDIX B

Replacement Well Drilling Logs

PRECISION
ENVIRONMENTAL SERVICES, INC.
831 RT. 67, LOT 38 A
BALLSTON SPA, NY 12020
TEL: 518-885-4399
FAX: 518-885-4416
CERTIFIED WOMEN-OWNED BUSINESS ENTERPRISE

DRILLING LOG

Well/ Boring No.: MW-1R

Project: Dambrose Dry Cleaners Client: NYS DEC

Project No: 10-001-D4 Location: 1517-1519 Van Vranken Ave, Schdy, NY

Driller: Rich Comfort Logged by: Brian Baulsir

Drilling Contractor: Aquifer Drilling Drilling Method: Hollow Stem Auger

Date Drilled: 11/22/2010 Date Developed: 11/24/2010

TOC Elevation: 200.07 Total Depth of Hole: 16'

Boring Diameter: 6.25" Screen Diameter: 2" Length: 7'

Slot Size: 0.01 Riser Diameter: 2" Length: 9'

Type: PVC Sand Pack: 7' - 16' Bentonite Seal: 4.5' - 7'

Protective Casing: Flush Roadbox

See Site Map

Depth (ft.)	Well Construction	Recovery & Blow Counts	Sample Type / No.	Max PID (ppm)	Description / Soil Classification
0					
1					
2					
3					
4					
5					
6		50% 2/3/4/5	SS-1	ND	Brown to dark brown silt with some gravel, fine to coarse sand, and clay.
7					
8					
9					
10					
11		50% 2/3/3/3	SS-2	ND	Dark gray silt with fine to coarse sand and trace clay.
12					
13		50% 2/3/3/3	SS-3	ND	Dark gray silt with fine to coarse sand and trace clay. Wet at 13'.
14					
15		50% 1/3/4/4	SS-4	ND	Dark gray silt with fine to coarse sand and trace clay.
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					

ND = Not Detected by PID Analysis

PRECISION
ENVIRONMENTAL SERVICES, INC.
831 RT. 67, LOT 38 A
BALLSTON SPA, NY 12020
TEL: 518-885-4399
FAX: 518-885-4416
CERTIFIED WOMEN-OWNED BUSINESS ENTERPRISE

DRILLING LOG

Well/ Boring No.: MW-2R

Project: Dambrose Dry Cleaners Client: NYS DEC

Project No: 10-001-D4 Location: 1517-1519 Van Vranken Ave, Schdy, NY

Driller: Rich Comfort Logged by: Brian Baulsir

Drilling Contractor: Aquifer Drilling Drilling Method: Hollow Stem Auger

Date Drilled: 11/22/2010 Date Developed: 11/24/2010

TOC Elevation: 199.56 Total Depth of Hole: 15'

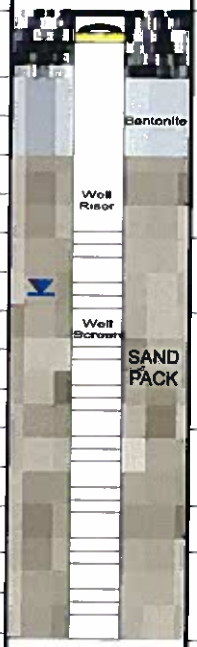
Boring Diameter: 6.25" Screen Diameter: 2" Length: 10'

Slot Size: 0.01 Riser Diameter: 2" Length: 5'

Type: PVC Sand Pack: 3' - 15' Bentonite Seal: 1' - 3'

Protective Casing: Flush Roadbox

See Site Map

Depth (ft.)	Well Construction	Recovery & Blow Counts	Sample Type / No.	Max PID (ppm)	Description / Soil Classification
0					
1					
2					
3					
4					
5					
6		60% 2/3/2/2	SS-1	ND	Brown to dark brown fine to coarse sand and silt with trace gravel.
7					
8					
9					
10					
11		50% 2/1/1/2	SS-2	ND	Brown to dark brown fine to coarse sand with urban fill (concrete, glass, ash, etc.). Wet at 11.5'.
12					
13					
14		33% 2/4/12/12	SS-3	ND	Brown and gray silt with some fine to coarse sand and rock fragments.
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					

ND = Not Detected by PID Analysis

APPENDIX C

Site Monitoring Well Inspection Sheet

GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: _____ PROJECT NUMBER: _____

DATE OF INSPECTION: _____ INSPECTOR: _____

WELL DESIGNATION: _____

WELL LOCATION: _____

Outward Appearance

Flushmount Diameter	_____ inches	N/A [ ]	
Approximate Stickup Height	_____ feet	N/A [ ]	
Integrity of Protective Casing	Describe: _____		
Protective Casing Material	Steel [ ]	Stainless Steel [ ]	Other _____
Protective Casing Width or Dia.	_____ inches		
Weep Hole in Protective Casing	Yes [ ]	No [ ]	
Surface Seal/Apron Material	Cement [ ]	Bentonite [ ]	Not apparent [ ] Other _____
Integrity of Surface Seal/Apron	Describe: _____		
Surface Drainage	Away from Wellhead [ ]	Toward Wellhead [ ]	
Bollards Present?	Yes [ ]	No [ ]	Describe: _____
Well ID. Visible?	Yes [ ]	No [ ]	Describe: _____
Lock Present and Functional?	Yes [ ]	No [ ]	Describe: _____
Photograph Taken? Photo #	Yes [ ]	No [ ]	Describe: _____

Inner Appearance

Integrity of Well Casing	Describe: _____		
Integrity of Cap Seal	Describe: _____		
Surface Water in Casing?	Yes [ ]	No [ ]	Describe: _____
Well Casing Diameter	_____ inches		
Well Casing Material	PVC [ ]	Steel [ ]	Stainless Steel [ ]
Inner Cap	Threaded [ ]	Slip [ ]	Expansion Plug [ ] None [ ]
Reference/Measuring Point	Groove [ ]	Indelible Mark [ ]	None [ ]
Evidence of Double Casing?	Yes [ ]	No [ ]	Describe: _____

Downhole

Odor	Yes [ ]	No [ ]	Describe: _____
PID Reading	_____ ppm		
Depth to Water (to top of casing)	_____ feet (nearest 0.01)	Depth to LNAPL	_____ feet (nearest 0.01) N/A [ ]
Total Well Depth (to top of casing)	_____ feet (nearest 0.1)		
Sediment (Hard/Soft Bottom)	Describe: _____		

Additional Comments:

_____

_____

_____

_____

_____

_____

APPENDIX D

SVES Operation & Maintenance Manual

On Disc Provided Separately