

AMERICAN DRIVE-IN CLEANERS SITE
3801 HEMPSTEAD TURNPIKE
LEVITTOWN, NEW YORK

REVISED MONITORING PLAN
FOR THE
SITE MANAGEMENT PLAN

NYSDEC Site No: 130049

Prepared for:
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3.0 MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the implemented ECs in reducing or mitigating contamination at the Site. ECs at the Site have included a SSDS, a SVE system, and a monitoring network.

Since this Monitoring Plan was last updated in December 2012 the SSDS has been shut down for the adjoining Beverage Center building and decommissioned. Modification of the groundwater monitoring program was also requested in the Period Review Report for 2013-2014 reporting period and approved by the NYSDEC on June 30, 2015. This Monitoring Plan has been revised to address these changes and is subject to further revision by the NYSDEC. Although they are not applicable at this time, certain sections of this Monitoring Plan have been retained in the event that they are needed in the future; these sections are so noted. Revised figures and tables attached to this revised Monitoring Plan are indicated in **bold type**.

3.1.2 Purpose

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of appropriate media (e.g., groundwater, indoor air, ambient air, soil vapor);
- Evaluating Site information periodically to confirm that the remedy continues to be effective as per the design;
- Preparing the necessary reports for the various monitoring activities;
- Assessing compliance with NYSDEC TOGS groundwater standards and NYSDOH Guidance for indoor air and soil vapor; and
- Assessing achievement of the remedial performance criteria.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Design of monitoring systems;
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring points;

- Monitor point decommissioning procedures; and
- Annual inspection and certification.

Quarterly monitoring of the performance of the remedy and overall reduction in contamination on-Site and off-Site will be conducted for the first year. Frequency thereafter will be determined by NYSDEC. Trends in contaminant levels in air 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 revised **Table 9** and outlined in detail in Sections 3.2 through 3.3.

3.2 ENGINEERING CONTROL SYSTEM MONITORING

3.2.1 Sub-Slab Depressurization System Monitoring

In May 2001, an SSDS was installed beneath the OU-1 retail properties. The purpose of the SSDS was to eliminate any exposure to elevated VOC concentrations in indoor air due to vapor intrusion from the vadose zone. The system utilized six actively vented vapor depressurization wells. The wells were vented via inline fans. Figure 11 in the SMP depicted the locations of the vapor depressurization wells.

The SSDS was found to be shut down in March 2011 due to an act of vandalism. The SSDS was not placed back into service as the building was no longer occupied and was slated for demolition. The building was demolished in 2012. A new building is under consideration and will include an SSDS. Plans for the proposed SSDS will be submitted to the NYSDEC for review and approval.

An SSDS was installed in August 2011 to prevent vapor intrusion into the adjoining Beverage Center building and was placed into service in September 2011 in accordance with the NYSDEC-approved Demolition Plan. In April 2015 an evaluation of sub-slab soil vapor and indoor air was conducted at the adjoining Beverage Center building and determined that SVI was no longer a concern. This SSDS system was subsequently shutdown with NYSDEC approval and was decommissioned in October 2015. The SVI investigation and SSDS decommissioning were documented in May 2015 and January 2016 correspondence to the NYSDEC and will be included in the next Periodic Review Report (PRR). SSDS monitoring information is retained in this Monitoring Plan in the event that it is needed in the future.

3.2.1.1 SSDS Equipment and Monitoring Schedule

A visual inspection of the complete SSDS(s) will be conducted during the monitoring event. SSDS components to be monitored include, but are not limited to, the following:

- Fan blowers;
- General system piping; and,
- Effluent VOC concentrations exiting each stack.

A complete list of system components to be checked is provided in the Inspection Checklist, presented in Appendix E of the SMP. If any equipment readings are not within their typical

range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the SSDS is to be restarted.

Inspection frequency is subject to change by NYSDEC and NYSDOH. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system.

An annual monitoring event will be conducted to assess the influence of the SSDS(s). During this event any SVE system will be deactivated and only the SSDS(s) will be operational. Vacuum influence readings will be collected throughout the designated monitoring network. Monitoring deliverables for the SSDS(s) are specified later in this Plan.

3.2.2 Soil Vapor Extraction System Monitoring

EnviroTrac, under the direction of the NYSDEC, installed a SVE system beneath the on-Site building in February 2001. Figure 10 depicts the locations of the SVE wells. In June 2001, the EPA installed a new SVE blower and a 2,000 pound GAC to treat PCE and its breakdown products present in the extracted vapor stream.

The SVE system was shut down in August 2011 following damage to the electrical service. The SVE system was removed prior to demolition of the Site building in 2012. Source soil removal was conducted as an IRM in 2012 following building demolition. The need to reinstall an SVE system at the Site is being evaluated following source soil removal. SVE system monitoring information is retained in this Monitoring Plan in the event that it is needed in the future.

3.2.2.1 SVE Equipment and Monitoring Schedule

In the event that an SVE system is reinstalled, inspection of the complete system will be conducted during the monitoring event. SVE system components to be monitored include, but are not limited to the following:

- System vacuum, flow, temperature and pressure;
- Individual well head vacuum and flow;
- Major system components (Vacuum blower, Phase separator);
- System Controls;
- Extraction wells;
- Process piping;
- Effluent VOC concentrations exiting the SVE system; and
- Effluent VOC concentrations exiting the treatment system, if installed.

A complete list of components to be checked is provided in the Inspection Checklist, presented in Appendix F. If any equipment readings are not within their typical range, any equipment is

observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the SVE system is to be restarted.

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

The VOC concentrations from the individual SVE well heads will be reviewed, at a minimum, on an annual basis and the system wells will be throttled accordingly to maximize VOC recovery for the system. During these events VOC concentrations from all extraction wells will be assessed regardless of whether the well has been active over the last monitoring period. An extraction well throttling proposal will be submitted for review and approval by the NYSDEC prior to any changes in SVE well throttling.

3.2.2.2 System Monitoring Devices and Alarms

An SVE system is operated by a master control panel. The control panel provides system monitoring for SVE vacuum blower failure and high-high water level in the moisture separator. The control panel has corresponding alarm lights to indicate when the system is not operating properly. In the event that an alarm light is illuminated, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the SVE system is to be restarted. Operational problems will be noted in the PRR.

3.2.2.3 Sampling Event Protocol

The SVE system effluent (or treatment system influent and effluent) shall be monitored during the system monitoring events. The influent and effluent VOC concentrations will be monitored by a PID. Any detections in the effluent that would result in an excess of 90% the NYSDEC AGC or SGC for PCE in the effluent to the atmosphere shall dictate addition of an effluent treatment system, or maintenance of the treatment system.

If the effluent treatment system influent VOC concentrations remain below a level representing 90% of the NYSDEC AGC and SGC for PCE for a minimum of two monthly monitoring events, then it may be possible to remove the treatment system from the SVE process. A scope of work to confirm the effluent concentrations via laboratory analysis and proposed SVE system modifications will be prepared and submitted to the NYSDEC for approval. Treatment system(s) will not be removed without NYSDEC approval.

3.3 GROUNDWATER AND VAPOR MONITORING PROGRAMS

3.3.1 Groundwater Monitoring Program

Groundwater monitoring will be performed on a regular basis to assess the performance of the remedy.

3.3.1.1 Monitoring System Design

The network of monitoring wells is designed to monitor both upgradient and downgradient

groundwater conditions at the Site. The network of on-Site and off-Site wells has been located based on the following criteria:

- Proximity to the source area;
- Groundwater flow direction; and,
- Chemical nature of the contaminants.

The locations of the individual monitoring wells are seen on **Figure 7**. Well survey data is included as Table 6 and groundwater gradient maps are included as Figures 3, 5, and 6. A table of monitoring wells is included as **revised Table 7**; this table has been revised to include the current sampling frequency and testing methods.

3.3.1.2 Groundwater Well Construction

Twenty-one monitoring wells have been installed at the Site and are designated as monitoring wells 1S, 1I, 2S, 3S, 4S, 4I, 5S, 6S, 6I, 7S, 7I, 7D, 8S, 8I, 9S, 9I, 9D, 10S, 10I, 11S, and 12S. Monitoring well 2S has not been located since the Site transitioned from the EPA to the NYSDEC in June 2007. A summary of the monitoring well construction and survey data is included as Table 6.

3.3.1.3 Monitoring Schedule

Groundwater monitoring was initially conducted according to the schedule shown in Table 7 in the original SMP and included the monitoring wells as specified in that table. In the July 2012 and the April 2015 PRR changes in the groundwater monitoring program were requested to eliminate certain wells and also adjust the frequency of sampling, the NYSDEC approved the requested modification with conditions on August 10, 2012 and June 30, 2015. Revised Table 7 (attached) shows the currently-approved groundwater monitoring program.

Any VOC detection at the MW-9 cluster in excess of NYSDEC TOGS Standards shall warrant the collection of a confirmatory sample to validate the results. In the event that VOCs are confirmed to be present at the MW-9 cluster in excess of NYSDEC TOGS Standards appropriate actions will be required by the NYSDEC. These actions may include, increasing or modifying monitoring events, adding additional monitoring wells, or performing a subsurface investigation. The scope of work will be presented in a work plan to be reviewed and approved by the NYSDEC.

The sampling frequency may be modified by NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater-monitoring program are specified below.

3.3.1.4 Sampling Event Protocol

All well sampling activities will be recorded in a field book and a monitoring well sampling log presented in Appendix G. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

Groundwater samples will be collected from each of the OU-1 and OU-2 monitoring wells in accordance with **revised Table 7**. The monitoring wells will first be gauged for depth to water and depth to bottom of the well. Immediately prior to collection of the samples, the monitoring well will be purged of at least three well volumes based on the well gauging data. The samples will be collected in accordance with SW-846. The samples will be cooled to below four degrees Celsius and shipped to a New York State certified laboratory for analysis of TCL VOCs via EPA Method 8260.

3.3.2 Soil Vapor Monitoring Program

A soil vapor monitoring program was conducted for the Site building during the time that the Site SSDS was in operation. The SSDS was found to be shut down in March 2011 due to an act of vandalism. The SSDS was not placed back into service as the building was no longer occupied and was slated for demolition. Therefore, the soil vapor monitoring program was no longer applicable. The Site building was demolished in 2012. A new building is under consideration and will include a SSDS. Plans for the proposed SSDS will be submitted to the NYSDEC for review and approval. A soil vapor monitoring program will be proposed to the NYSDEC, as necessary, for the new SSDS. Soil vapor monitoring information is retained in this Monitoring Plan in the event that it is needed in the future.

3.3.2.1 Monitoring System Design

The network of soil vapor monitoring points was designed to monitor sub-slab soil vapor concentrations and SSDS influence for the OU-1 retail properties. The former locations of the individual monitoring points are seen on Figure 8. A table of monitoring points is included as Table 8 which indicates the former sampling frequency and testing methods.

No soil vapor monitoring system is currently present on the Site.

3.3.2.2 Sub-Slab Vapor Monitoring Point Construction

Five sub-slab vapor monitoring points were formerly installed at the Site and were designated vapor points SS-1, SS-2, SS-3, SS-4, and SS-5. Two sub-slab slab monitoring points were also formerly located at the adjoining Beverage Center. A summary of the monitoring point construction is included as Appendix H. The former onsite monitoring points were removed during building demolition and are no longer present on the Site. The Beverage Center monitoring points were sealed as part of SSDS decommissioning activities in 2015.

3.3.2.3 Monitoring Schedule

Sub-slab soil vapor monitoring was formerly conducted in accordance with Table 8 and included the entire monitoring point network as specified in Section 3.3.2.2. Sub-slab vapor monitoring is not presently conducted as there is no building present onsite.

The sampling frequency may be modified by NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the former sub-slab vapor monitoring program are specified below.

3.3.2.4 Sampling Event Protocol

All monitoring point sampling activities were recorded in a field book and a sub-slab sampling log presented in Appendix I. Other observations (e.g., monitoring point integrity, etc.) were noted on the sampling log. The sampling log served as the inspection form for the sub-slab vapor monitoring point network.

Sub-slab vapor samples were collected from the permanently installed sub-slab vapor monitoring points while the SSDS was operational. The samples were collected in accordance with NYSDOH protocol. The samples were shipped to a New York State certified laboratory for analysis of chlorinated VOCs via EPA Method TO-15.

3.3.3 **Indoor Air/Ambient Air Monitoring Program**

Indoor air and ambient air monitoring were performed on a regular basis while a building remained present onsite to assess the performance of the remedy. The onsite SVE system was shut down in 2011 and the building was demolished in 2012. At present there is no air monitoring program. Air monitoring information is retained in this Monitoring Plan in the event that air monitoring is needed in the future.

3.3.3.1 Monitoring System Design

The sampling locations for the collection of indoor air and ambient air samples were intended to monitor indoor air vapor concentrations for the OU-1 retail properties relative to ambient air conditions. The locations of the former individual indoor air monitoring locations are provided on Figure 9. The ambient air sampling location will be determined for each sampling event based on NYSDOH protocol. A table of the former monitoring locations is included as Table 8 and indicates the sampling frequency and testing methods.

3.3.3.2 Indoor Air/Ambient Air Monitoring Locations

Five monitoring locations were formerly utilized at the Site and were designated sampling points IA-1, IA-2, IA-3, IA-4, and IA-5. The ambient air sampling location will be determined for each sampling event based on NYSDOH protocol.

3.3.3.3 Monitoring Schedule

Indoor air and ambient air vapor monitoring were conducted in accordance with Table 8, in conjunction with sub-slab vapor monitoring (section 3.3.2), and included the entire monitoring network as specified in Section 3.3.3.2.

The sampling frequency may be modified by NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the indoor air/ambient air monitoring program are specified below.

3.3.3.4 Sampling Event Protocol

All monitoring location sampling activities will be recorded in a field book and an indoor air sampling log presented in Appendix I. Other observations (e.g., ambient temperature, etc.) will

be noted on the sampling log. The sampling log will serve as the inspection form for the indoor air monitoring location network.

Indoor air samples will be collected directly adjacent to their respective sub-slab monitoring points and in accordance with NYSDOH protocol. The samples will be shipped to a New York State certified laboratory for analysis of chlorinated VOCs via EPA Method TO-15.

3.4 WELL/MONITORING POINT REPLACEMENT/REPAIRS AND DECOMMISSIONING

Repairs and/or replacement of wells/monitoring points in the monitoring networks will be performed based on assessments of structural integrity and overall performance. Well/monitoring point decommissioning, for the purpose of replacement, should be reported to NYSDEC prior to performance and in the PRR. Well/monitoring point decommissioning without replacement must receive prior approval by NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells and points that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC and NYSDOH.

3.5 SITE-WIDE INSPECTION

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

- Compliance with all implemented ICs;
- 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 including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that Site records are up to date.

3.6 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the Site (Appendix K). The main components of the QAPP include:

- QA/QC Objectives for data measurement;
- Sampling program:

- Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
- Sample holding times will be in accordance with the NYSDEC ASP requirements.
- Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample tracking and custody;
- Calibration procedures:
 - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
 - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical procedures;
- Data reduction;
- Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:
 - Verification of 100% of all QC sample results (both qualitative and quantitative);
 - Verification of the identification of 100% of all sample results (both positive hits and non-detects);
 - Recalculation of 10% of all investigative sample results; and
 - A Data Usability Summary Report (DUSR) that will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation, and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and checks;
- QA performance and system audits;
- Preventative maintenance procedures and schedules; and
- Corrective action measures.

3.7 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file with the environmental professional. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be subject to approval by NYSDEC, and submitted at the time of the Periodic Review Report (PRR), as specified in the Reporting Plan of the SMP.

All monitoring results will be reported to NYSDEC in the PRR. An informal quarterly monitoring letter report will also be prepared for submission each quarter. The letter 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, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- 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 (also to be submitted electronically in the NYSDEC-identified format);
- A copy of the laboratory certification;
- Any observations, conclusions, or recommendations; and
- A determination as to whether Site conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program reporting requirements is presented in Table 10.

3.8 CERTIFICATIONS

Site inspections and sampling activities will take place as outlined above. Frequency of inspection is subject to change by NYSDEC. Inspection certification for all implemented ICs and ECs will be submitted to NYSDEC periodically on a date specified by the NYSDEC. A qualified environmental professional, as determined by NYSDEC, will perform inspection and certification. Further information on the certification requirements are outlined in the Reporting Plan of the SMP.

Attachments: Figure 7 and revised Tables 7 and 9.

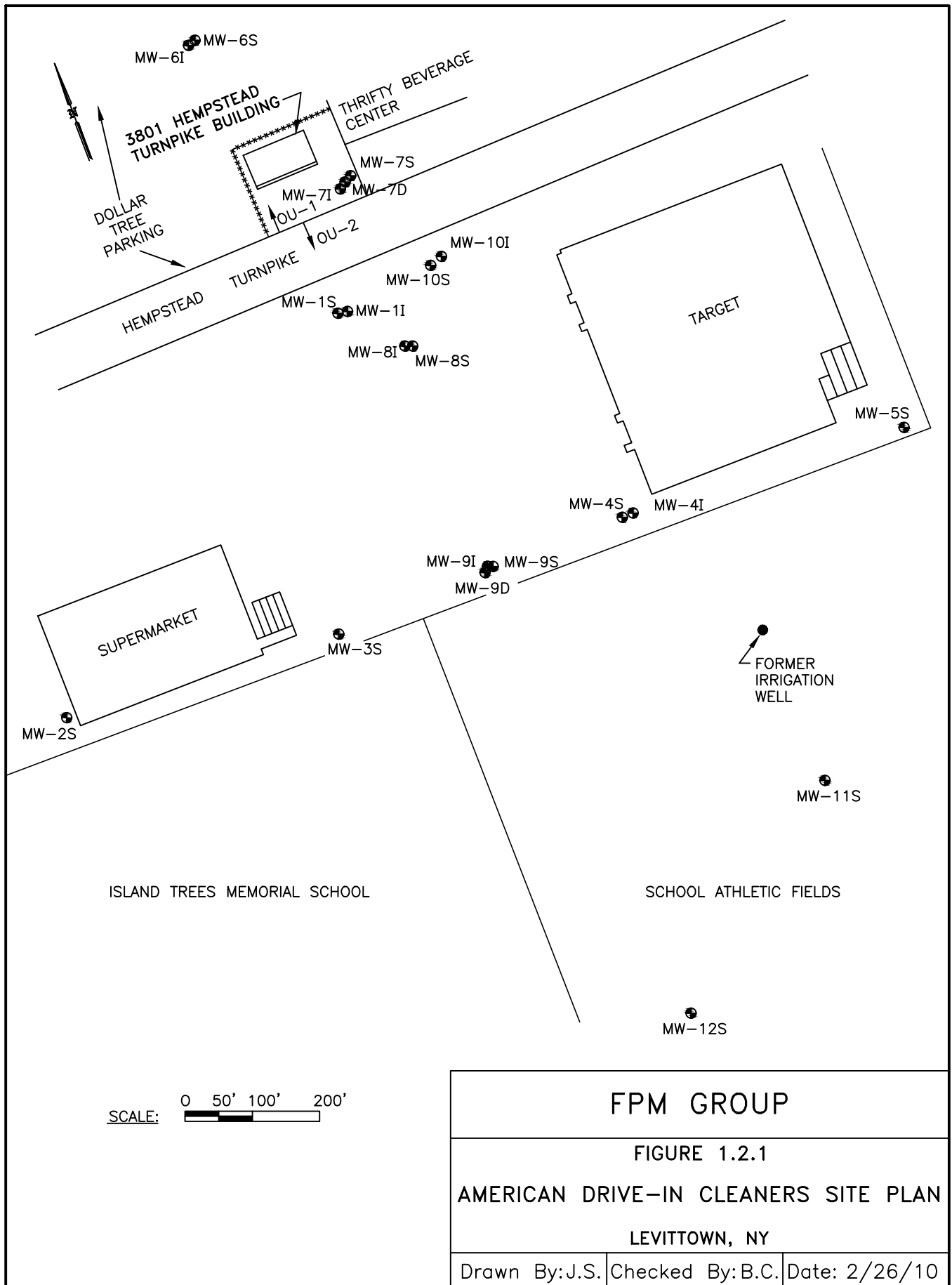


Table 7
Revised (February 2016)

Monitoring Well Sampling Frequency & Test Methods

NYSDEC Site Number: 130049

American Drive-In Cleaners

3801 Hempstead Turnpike, Levittown, New York

Well	Sampling Frequency	Test Method
MW-1S	Omitted	TCL VOCs via 8260
MW-1I	Omitted	TCL VOCs via 8260
MW-2S	Omitted	NA
MW-3S	Omitted	TCL VOCs via 8260
MW-4S	5 th Quarterly	TCL VOCs via 8260
MW-4I	Omitted	TCL VOCs via 8260
MW-5S	Omitted	TCL VOCs via 8260
MW-6S	5 th Quarterly	TCL VOCs via 8260
MW-6I	5 th Quarterly	TCL VOCs via 8260
MW-7S	Omitted	TCL VOCs via 8260
MW-7I	5 th Quarterly	TCL VOCs via 8260
MW-7D	5 th Quarterly	TCL VOCs via 8260
MW-8S	Omitted	TCL VOCs via 8260
MW-8I	5 th Quarterly	TCL VOCs via 8260
MW-9S	Omitted	TCL VOCs via 8260
MW-9I	Omitted	TCL VOCs via 8260
MW-9I	5 th Quarterly	TCL VOCs via 8260
MW-9D	5 th Quarterly	TCL VOCs via 8260
MW-10S	Omitted	TCL VOCs via 8260
MW-10I	5 th Quarterly	TCL VOCs via 8260
MW-11S	Omitted	TCL VOCs via 8260
MW-11I	Omitted	TCL VOCs via 8260

NA = Not Available

Table 9
Revised (February 2016)

Monitoring and Inspection Schedule

NYSDEC Site Number: 130049

American Drive-In Cleaners

3801 Hempstead Turnpike, Levittown, New York

Monitoring Program	Frequency*	Matrix	Analysis
SSDS	Suspended	Air	PID
SVE	Suspended	Air	PID
Vapor	Suspended	Indoor/Air Ambient Air Soil Vapor	Chlorinated VOCs via TO-15
Groundwater	5 th Quarterly/ Select Wells	Groundwater	TCL VOCs via 8260