BAUSCH & LOMB

February 12, 2007

Frank Sowers, P.E.
Division of Environmental Remediation
New York State Department of Environmental Conservation
Region 8
6274 East Avon-Lima Road
Avon, NY 14414-9519

Re: Additional Vapor Intrusion Evaluation
Former Bausch & Lomb Frame Center
Chili, New York

Dear Mr. Sowers:

This letter and associated attachments provide Bausch & Lomb's proposed Work Plan for additional vapor intrusion evaluation activities at the former Frame Center building located in Chili, New York (the Site) (Figure 1). As discussed with New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) during a January 19, 2007 site visit, additional sub-slab vapor, indoor air, and ambient air sampling locations are proposed at the Site. This letter presents a discussion of proposed additional sampling activities, followed by a summary of the anticipated schedule.

Proposed Sampling Program

As shown on Figures 1 and 2, eight sub-slab vapor samples (sampling locations SV-6 through SV-13) and five indoor air samples (sampling locations IA-1 through IA-5) are proposed for the former Frame Center building. In addition, a single ambient (outdoor) air sample will be collected upwind of the former Frame Center building, with the location determined based on wind conditions during the day of sampling.

The methods for collecting sub-slab vapor, indoor air, and ambient air samples are detailed in the Standard Operating Procedures (SOPs) provided in Attachments 1 through 3, respectively. The NYSDOH's October 2006 Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH Guidance Document) was considered in the development of these SOPs. Each sample will be collected using passivated stainless-steel canisters with attached pre-set flow regulators. The laboratory will provide batch-certified clean canisters and flow regulators pre-set to provide uniform sample collection over an approximate 2-hour sampling period.

Bausch & Lomb will request that the property owners heat the building to a temperature ranging from 65° to 75° Fahrenheit and close windows and doorways to the extent practicable for a 24-hour period prior to and during sample collection, as indicated in the NYSDOH Guidance Document.

Samples will be collected and analyzed in accordance with United States Environmental Protection Agency (USEPA) Compendium Method TO-15. Consistent with previous sub-slab sampling activities,

due to the current use/storage of significant volume and number of industrial chemicals in the building and the strong data set that documents volatile organic constituents (VOCs) detected below the floor slab prior to Bausch & Lomb's sale of the facility, the VOC analyte list will be limited to a list of constituents of interest (COI), representing the constituents detected below the floor slab in soil and/or groundwater during implementation of the 1999 *Environmental Site Assessments*. The COI list is provided as Table 1.

Analyses will be conducted by a laboratory with current New York Environmental Laboratory Approval Program (ELAP) certification in accordance with USEPA Compendium Method TO-15. The data report will be a Category B-equivalent data package to provide for the ability to complete a Data Usability Summary Report (DUSR) of the data, following receipt of the data package, if it is found to be necessary in the future. The turnaround time for analytical results will be approximately 3 weeks after the laboratory receives the samples.

Schedule and Reporting

Per our recent telephone conversations, Bausch & Lomb plans to install the temporary sub-slab sampling points upon submittal of this Work Plan. Bausch & Lomb anticipates initiating sampling activities within approximately two weeks of receipt of NYSDEC/NYSDOH approval of this Work Plan.

A summary letter report will be prepared following receipt of the analytical results. The letter report will include:

- a summary of work performed and the analytical results obtained;
- an evaluation of the data;
- data table(s) presenting analytical results; and
- figure(s) showing sampling locations and corresponding analytical results.

The summary letter report will be submitted to NYSDEC/NYSDOH approximately 1 month after receipt of the analytical data from the analytical laboratory.

Please do not hesitate to contact me at 585-338-5087 if you have any questions or require additional information.

Sincerely,

George M. Thomas, ARCADIS BBL for

Frank Chiappone
Manager of Environmental Affairs

Attachments

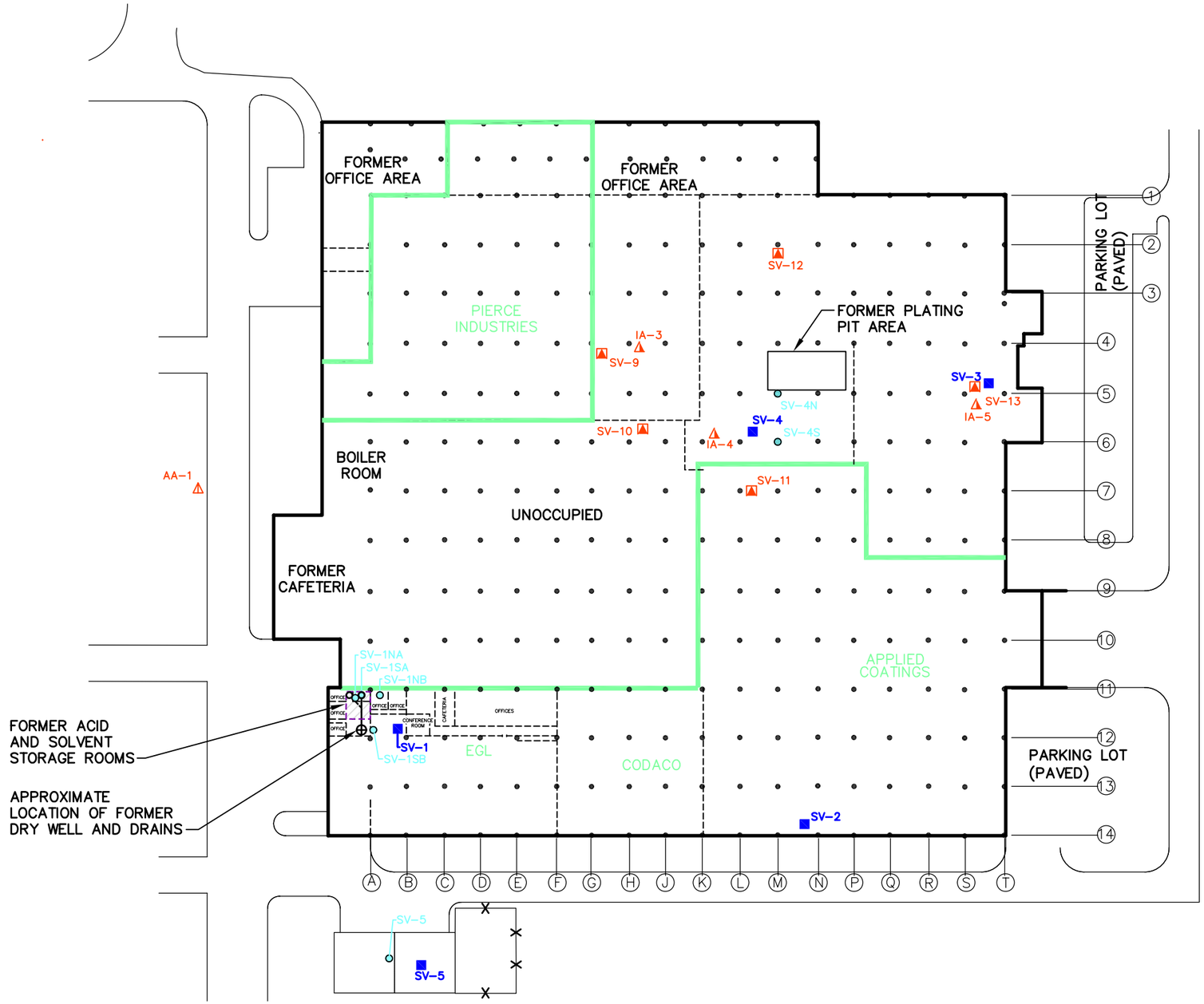
cc: D. McNaughton (NYSDOH)
J. Albert (Monroe County Health Department)
G. Thomas (ARCADIS BBL)

Table

Table 1. Analyte List
Bausch & Lomb, Former Frame Center - Building 40, Rochester, New York

Analyte	Detection Limit (ug/m3)
Analyte List I	
1,1,1-Trichloroethane	0.540
1,1-Dichloroethane	0.401
1,1-Dichloroethene	0.393
1,2,4-Trimethylbenzene	0.491
2-Butanone	0.294
2-Hexanone	0.409
Acetone	0.237
Benzene	0.319
Carbon Disulfide	0.311
Chloroethane	0.262
Chloroform	0.483
cis-1,2-Dichloroethene	0.393
Freon 113	0.761
Methylene Chloride	0.344
Tetrachloroethene	0.671
Toluene	0.376
trans-1,2-Dichloroethene	0.393
Trichloroethene	0.250
Vinyl Chloride	0.254

Figures



LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- (10) BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SYSTEM LOCATION
- SV-2 SUB-SLAB VAPOR SAMPLING LOCATIONS (APRIL 2006)
- PROPOSED SUB SLAB SAMPLE LOCATION
- PROPOSED INDOOR AIR SAMPLE LOCATION
- AMBIENT AIR SAMPLE LOCATION

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.
3. AMBIENT AIR SAMPLE LOCATION TO BE DETERMINED AT TIME OF SAMPLING BASED ON WIND DIRECTION.

0 100' 200'

GRAPHIC SCALE

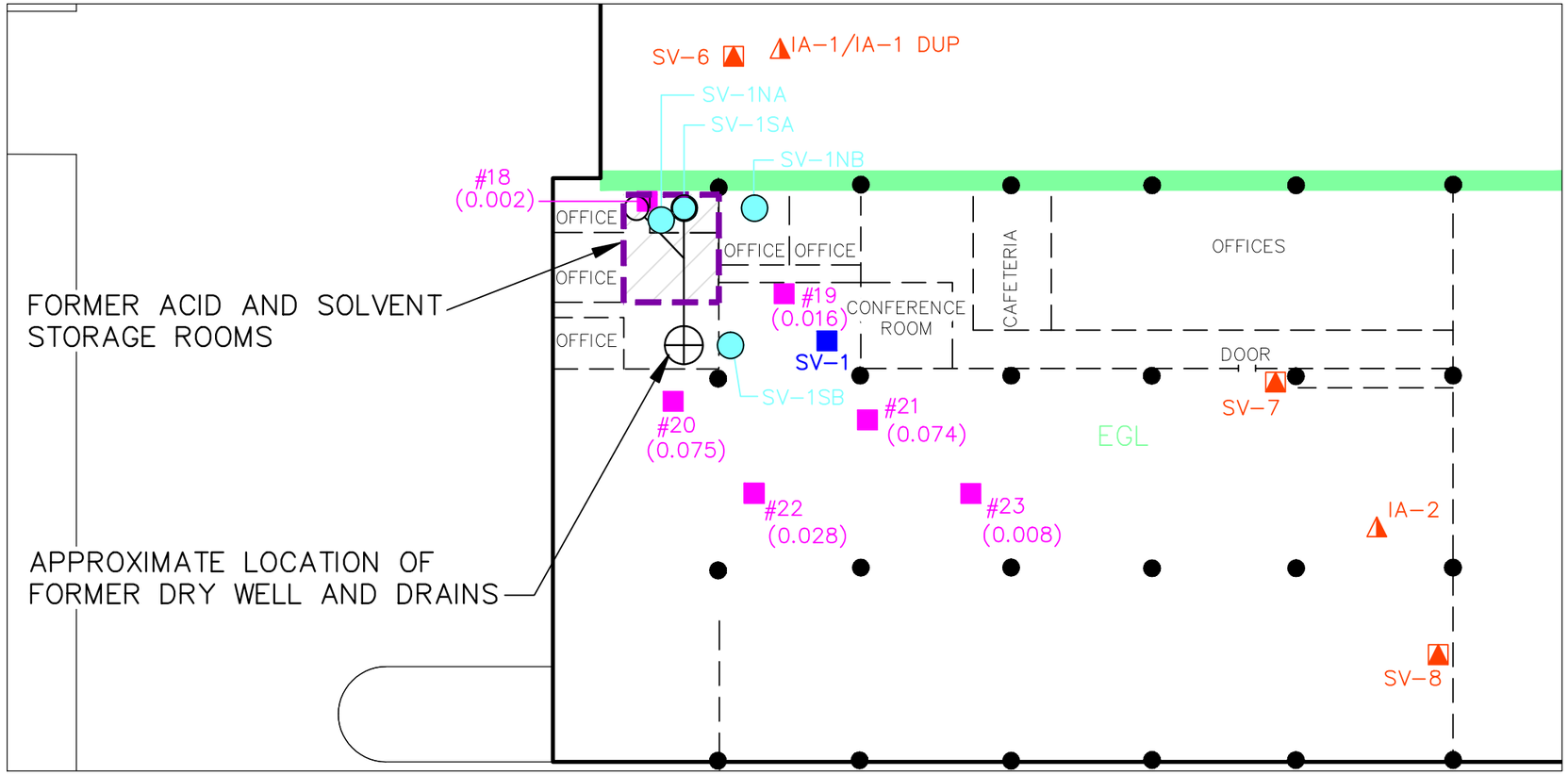
BAUSCH & LOMB
FORMER FRAME CENTER
CHILI, NEW YORK

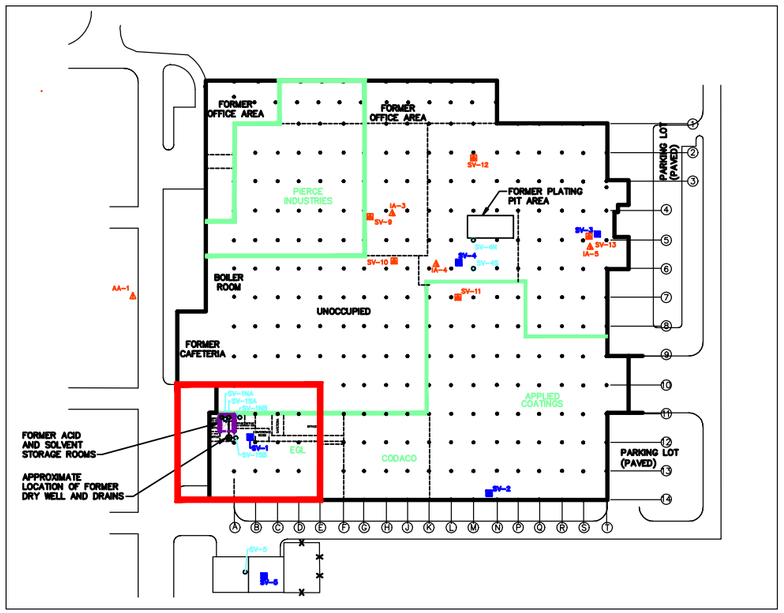
ADDITIONAL VAPOR INTRUSION EVALUATION

PROPOSED SAMPLING LOCATIONS

ARCADIS BBL
infrastructure, environment, facilities

FIGURE 1





FORMER DRY WELL AREA

NOT TO SCALE

0 30' 60'

GRAPHIC SCALE

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SYSTEM LOCATION
- SV-2 SUB-SLAB VAPOR SAMPLING LOCATIONS (APRIL 2006)
- #23 PRESSURE TEST LOCATION
- (0.074) PRESSURE (NEGATIVE INCHES OF WATER)
- (NA) NOT AVAILABLE
- PROPOSED SUB SLAB SAMPLE LOCATION
- PROPOSED INDOOR AIR SAMPLE LOCATION

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.
3. DEPRESSURIZATION SYSTEMS INSTALLED IN OCTOBER–NOVEMBER, 2006. PRESSURE FIELD EXTENSION TESTS CONDUCTED IN NOVEMBER, 2006. DATA FROM #9 NOT USED DUE TO LOCATION ON A SEAM.

BAUSCH & LOMB
FORMER FRAME CENTER
CHILI, NEW YORK

ADDITIONAL VAPOR INTRUSION EVALUATION

PROPOSED SAMPLING LOCATIONS - FORMER DRY WELL AREA

ARCADIS BBL

FIGURE 2

Attachment 1

Standard Operating Procedure: Sub-Slab Vapor Sampling and Analysis Using USEPA Method TO-15

Standard Operating Procedure: Sub-Slab Vapor Sampling and Analysis Using USEPA Method TO-15

I. Scope and Application

This document describes the procedures to install a sub-slab sampling port and collect sub-slab vapor samples for the analysis of volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method TO-15 (TO-15). The TO-15 method uses a passivated stainless steel canister to collect a whole-air sample that is then analyzed for VOCs using a quadrupole or ion-trap gas chromatograph/mass spectrometer (GS/MS).

The following sections list the necessary equipment and detailed instructions for installing sub-slab vapor probes and collecting samples for VOC analysis.

II. Equipment List

The equipment required to install a temporary sub-slab vapor probe is presented below:

- Electric impact drill.
- 5/8-inch-diameter concrete drill bit for impact drill.
- 3/8-inch tubing (Teflon®, polyethylene, or similar).
- PID.
- Hydrated bentonite.
- Teflon® tape.

The equipment required for vapor sample collection is presented below:

- Stainless steel lab-certified clean sampling canisters (order at least one extra, if feasible).
- Flow controllers with in-line particulate filters and vacuum gauges; flow controllers are pre-calibrated to specified sample duration (e.g., 30 minutes, 8 hours, 24 hours) or flow rate (e.g., 200 milliliters per minute [mL/min]); confirm with the laboratory that the flow controller comes with an in-line particulate filter and pressure gauge (order at least one extra, if feasible).
- 1/4-inch ID tubing (Teflon®, polyethylene, or similar).
- Twist-to-lock fittings.
- T-connection equipped with a valve (for purging).

- Stainless steel “T” fitting, if collecting duplicate (i.e., split) samples.
- Portable vacuum pump capable of producing very low flow rates (e.g., 100 to 200 mL/min), an evacuated sacrificial canister, or hand vacuum pump to be used to evacuate tubing air prior to sampling.
- Rotameter or an electric flow sensor if vacuum pump does not have a flow gauge.
- PID.
- Appropriate-sized open-end wrench (typically 9/16-inch).
- Chain-of-custody (COC) form.
- Sample collection log (attached).
- Lock and chain (optional).
- Field notebook.

III. Cautions

Care must be taken to minimize the potential for introducing interferences during the sampling event. As such, care must be taken to keep the canister away from heavy pedestrian traffic areas (e.g., main entranceways, walkways). If the canister is not to be overseen for the entire sample duration, precautions should be taken to maintain the security of the sample (e.g., do not place in areas regularly accessed by the public, fasten the sampling device to a secure object using lock and chain, label the canister to indicate it is part of a scientific project, place the canister in secure housing that does not disrupt the integrity/validity of the sampling event). Sampling personnel should not handle hazardous substances (such as gasoline), permanent marking pens, wear/apply fragrances, or smoke cigarettes before and/or during the sampling event.

Care should also be taken to ensure that the flow controller is pre-calibrated to the proper sample collection time (confirm with laboratory). Sample integrity is maintained if the sampling event is shorter than the target duration, but sample integrity can be compromised if the event is extended to the point that the canister reaches atmospheric pressure.

Care must be taken to properly seal around the vapor probe at slab surface to prevent leakage of atmosphere into the soil vapor probe during purging and sampling. Temporary and permanent points are fit snug into the pre-drilled hole using Teflon® tape and sealed with hydrated bentonite at the surface, permanent points are sealed using quick-setting hydraulic cement powder.

IV. Health and Safety Considerations

Field sampling equipment must be carefully handled to minimize the potential for injury and the spread of hazardous substances. For sub-slab vapor probe installation, drilling with an electric concrete impact drill should be done only by personnel with prior experience using such a piece of equipment.

V. Procedures

Temporary Vapor Probe Installation

Temporary sub-slab soil vapor probes are installed using an electric drill and manual placement of tubing. The drill will be advanced to approximately 3 inches beneath the bottom of the slab. A 3/8-inch ID hole is installed through the slab. The tubing, wrapped in Teflon® tape, is inserted into the hole. The tubing is purged prior to collection of a vapor sample. Probe locations are resealed after sampling is complete.

1. Remove, only to the extent necessary, any covering on top of the slab (e.g., carpet).

2. Drill a 3/8-inch-diameter hole through the concrete slab using the electric drill.

3. Advance the drill bit approximately 3 inches into the sub-slab material to create an open cavity.

4. Wrap the tubing with Teflon® tape, to the extent necessary, for a snug fit of tubing and hole.

5. Insert the tubing approximately 1.5 inches into the sub-slab material.

6. Prepare a hydrated bentonite mixture and apply bentonite at slab surface around the tubing.

7. Proceed to vapor sample collection.

8. When the sub-slab vapor sampling is complete, remove the tubing and grout the hole in the slab with quick-setting hydraulic cement powder or other material similar to the slab.

Sub-Slab Vapor Sample Collection

Preparation of Stainless Steel Canister and Collection of Sample

1. Record the following information in the field notebook, if appropriate (contact the local airport or other suitable information source [e.g., site-specific measurements, weatherunderground.com] to obtain the information):

    a. wind speed and direction
    b. ambient temperature
    c. barometric pressure
    d. relative humidity

2. Remove the brass plug from the sampling canister and connect the flow controller with in-line particulate filter and vacuum gauge to the canister. Do not open the valve on the canister. Record in the field notebook and on the COC form the flow controller number with the appropriate canister number.

3. Connect the flow controller, sample collection tubing, and purge pump to a T-connection equipped with a valve. Be sure the purge pump is connected to the valved opening of the T-connection. Open the valve on the T-connection and purge 1 to 2 (target 1.5) volumes of air from the vapor probe and sampling line using the purge pump [purge volume = 1.5 Pi r^2h] at a rate of approximately 100 mL/min. Close the valve on the T-connection following purging.

4. Open the valve on the sampling canister. Record the initial canister vacuum pressure in the field notebook and COC form. If the initial vacuum pressure does not register less than -28 inches of Hg, then the canister is not appropriate for use and another canister should be used (if this occurs, return to Step 2).

5. Record in the field notebook the time sampling began and take a photograph of the canister and surrounding area.

Termination of Sample Collection

1. Arrive at the canister location at least 10 to 15 minutes prior to the end of the required sampling interval.

2. Stop collecting the sample by closing the canister valve. Record the final vacuum pressure. The canister should have a minimum amount of vacuum (approximately 2 inches of Hg or slightly greater).

3. Record the date and local time (24-hour basis) of valve closing in the field notebook, sample collection log (attached), and COC form.

4. Remove the particulate filter and flow controller from the canister, re-install the brass plug on the canister fitting, and tighten with the appropriate wrench.

5. Package the canister and flow controller in the shipping container supplied by the laboratory for return shipment to the laboratory. The canister does not require preservation with ice or refrigeration during shipment.

6. Complete the appropriate forms and sample labels as directed by the laboratory (e.g., affix card with a string).

7. Complete the COC form and place the requisite copies in a shipping container. If shipping by courier service (e.g. FedEx) close the shipping container and affix a custody seal to the container closure. Ship the container to the laboratory via overnight carrier for analysis. If transporting directly to laboratory or for laboratory sample pick up, follow standard Chain of Custody procedures.

Vapor Monitoring Point Abandonment

Once the vapor samples have been collected, a temporary vapor monitoring point will be abandoned by removing the sampling materials and filling the resulting hole with concrete. Replace the surface covering (e.g., carpet) to the extent practicable.

VI. Waste Management

No specific waste management procedures are required.

VII. Data Recording and Management

Measurements will be recorded in the field notebook at the time of measurement with notations of the project name, sample date, sample start and finish time, sample location (e.g., GPS coordinates, distance from permanent structure [e.g., two building columns or two room corners]), canister serial number, flow controller serial number,

initial vacuum reading, and final pressure reading. Field sampling logs and COC records will be transmitted to the Project Manager.

VIII. Quality Assurance

For the overall analytical program, one duplicate sample will be collected per each 20 samples submitted to the laboratory. Vapor sample analysis will be performed using USEPA TO-15 methodology. This method uses a quadrupole or ion-trap GC/MS with a capillary column to provide optimum detection limits. This system also offers the advantage of the GC/MS detector, which confirms the identity of detected compounds by evaluating their mass spectra in either the SCAN or SIM mode.

IX. References

DiGiulio, et. al., 2003. Draft Standard Operating Procedure (SOP) for Installation of Sub-Slab Vapor Probes and Sampling Using EPA TO-15 to Support Vapor Intrusion Investigations. http://www.cdphe.state.co.us/hm/indoorair.pdf (Attachment C).

New York State Department of Health (NYSDOH). 2006. “Guidance for Evaluating Soil Vapor Intrusion in the State of New York” October 2006.

Attachment 2

Standard Operating Procedure: Indoor Air Sampling and Analysis Using USEPA Method TO-15

Standard Operating Procedure: Indoor Air Sampling and Analysis Using USEPA Method TO-15

I. Scope and Application

This standard operating procedure (SOP) describes the procedures to collect indoor air samples for the analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method TO-15 (TO-15). The TO-15 method uses a passivated stainless steel canister to collect a whole-air sample that is then analyzed for VOCs using a quadrupole or ion-trap gas chromatograph/ mass spectrometer (GS/MS).

The following sections list the necessary equipment and provide detailed instructions for placing the sampling device and collecting indoor air samples for VOC analysis.

II. Equipment List

The equipment required for indoor air sample collection is presented below:

- Photoionization detector (PID) with VOC detection limit capabilities in the ppb range.
- Stainless steel lab-certified clean sampling canisters (order at least one extra, if feasible).
- Flow controllers with in-line particulate filters and vacuum gauges (flow controllers are pre-calibrated by the laboratory to a specified sample duration [e.g., 8-hour, 24-hour]). Confirm with lab that flow controller comes with in-line particulate filter and pressure gauge (order an extra set for each extra canister, if feasible).
- Stainless steel “T” fitting (for connection to canisters and Teflon® tubing to collect split [i.e., duplicate] samples).
- Appropriate-sized open-end wrench (typically 9/16-inch).
- Chain-of-custody (COC) form.
- Building survey and product inventory form.
- Sample collection log.
- Field notebook.
- Camera.
- Lock and chain (optional).
- Ladder or similar to hold canister above the ground surface (optional).

III. Cautions

Care must be taken to minimize the potential for introducing interferences during the sampling event. As such, care must be taken to keep the canister away from heavy pedestrian traffic areas (e.g., main entranceways, walkways). If the canister is not to be overseen for the entire sample duration, precautions should be taken to maintain the security of the sample (e.g., do not place in areas regularly accessed by the public, fasten the sampling device to a secure object using lock and chain, label the canister to indicate it is part of a scientific project, place the canister in secure housing that does not disrupt the integrity/validity of the sampling event). Sampling personnel should not handle hazardous substances (such as gasoline), permanent marking pens, wear/apply fragrances, or smoke cigarettes before and/or during the sampling event.

Care should also be taken to ensure that the flow controller is pre-calibrated to the proper sample collection time (confirm with laboratory). Sample integrity is maintained if the sampling event is shorter than the target duration, but sample integrity can be compromised if the event is extended to the point that the canister reaches atmospheric pressure.

IV. Health and Safety Considerations

Field sampling equipment must be carefully handled to minimize the potential for injury and the spread of hazardous substances.

V. Procedures

Initial Building Survey

1. Complete the appropriate building survey form and product inventory form (e.g., state-specific form or ARCADIS BBL form) prior to sample collection.

2. Survey the area for the apparent presence of items or materials that may potentially produce or emit constituents of concern and interfere with analytical laboratory analysis of the collected sample. Record relevant information on survey form and document with photographs.

3. Using the PID, screen indoor air in the location intended for sampling and the vicinity of potential VOC sources to preliminarily assess for the potential gross presence of VOCs.

4. Record date, time, location, and PID readings in the field notebook.

5. Items or materials that may contain constituents of concern and/or exhibit elevated PID readings shall be considered probable sources of VOCs. Request approval of the owner or occupant to have these items removed prior to sampling.

Preparation of Stainless Steel Canister and Collection of Sample

1. Record the following information in the field notebook (contact the local airport or other suitable information source [e.g., weatherunderground.com] to obtain the following information):

    a. ambient temperature
    b. barometric pressure
    c. relative humidity

2. Choose the sample location in accordance with the sampling plan. Place the canister on a ladder, tripod, or other similar stand to locate the canister orifice 3 to 5 feet above ground or floor surface. If the canister will not be overseen for the entire sampling period, secure the canister as appropriate (e.g., lock and chain). Canister may be affixed to wall/ceiling support with nylon rope or placed on a stable surface. In general, areas near windows, doors, air supply vents, and/or other potential sources of “drafts” shall be avoided.

3. Record canister serial number and flow controller number in the field notebook and COC form. Assign sample identification on canister ID tag, and record in the field notebook, sample collection log, and COC form.

4. Remove the brass dust cap from the canister. Attach the flow controller with in-line particulate filter and vacuum gauge (leave swage-lock cap on the vacuum gauge during this procedure) to the canister with the appropriate-sized wrench. Tighten with fingers first, then gently with the wrench.

5. Open the canister valve to initiate sample collection. Record the date and local time (24-hour basis) of valve opening in the field notebook, sample collection log, and COC form. Collection of duplicate/split samples will include attaching a stainless steel “T” to split the indoor air stream to two canisters, one for the original investigative sample and one for the duplicate/split sample.

6. Record the initial vacuum pressure in the canister in the field notebook and COC form. If the initial vacuum pressure does not register less than -28 inches of Hg, then the canister is not appropriate for use and another canister should be used.

7. Take a photograph of the canister and surrounding area.

Termination of Sample Collection

1. Arrive at the canister location at least 10 to 15 minutes prior to the end of the sampling interval.

2. Stop collecting the sample when the canister vacuum reaches approximately 2 inches of Hg (leaving some vacuum in the canister provides a way to verify if the canister leaks before it reaches the laboratory) or when the desired sample time has elapsed.

3. Record the final vacuum pressure. Stop collecting the sample by closing the canister valve. Record the date, local time (24-hour basis) of valve closing in the field notebook, sample collection log, and COC form.

4. Remove the particulate filter and flow controller from the canister, re-install brass plug on canister fitting, and tighten with wrench.

5. Package the canister and flow controller in the shipping container supplied by the laboratory for return shipment to the laboratory. The canister does not require preservation with ice or refrigeration during shipment.

6. Complete the appropriate forms and sample labels as directed by the laboratory (e.g., affix card with string).

7. Complete COC form and place requisite copies in shipping container. If shipping by courier service (e.g. FedEx) close the shipping container and affix a custody seal to the container closure. Ship the container to the laboratory via overnight carrier for analysis. If transporting directly to laboratory or for laboratory sample pick up, follow standard Chain of Custody procedures..

VI. Waste Management

No specific waste management procedures are required.

VII. Data Recording and Management

PID measurements taken during the initial building survey will be recorded in the field notebook, with notations of project name, sample date, sample time, and sample location (e.g., description and GPS coordinates if available). A building survey form and product inventory form will also be completed for each building within the facility being sampled during each sampling event.

Measurements will be recorded in the field notebook at the time of measurement, with notations of project name, sample date, sample start and finish times, sample location (e.g., description and GPS coordinates, distance from permanent structure [e.g., two building columns or two room corners]) if available), canister serial number, flow controller number, initial vacuum reading, and final vacuum reading. Field notebooks and COC records will be transmitted to the Project Manager.

VIII. Quality Assurance

For the overall analytical program, one duplicate sample will be collected per each 20 samples submitted to the laboratory. Indoor air sample analysis will be performed using USEPA Method TO-15. This method uses a quadrupole or ion-trap GC/MS with a capillary column to provide optimum detection limits. This system also offers the advantage of the GC/MS detector, which confirms the identity of detected compounds by evaluating their mass spectra in either the SCAN or SIM mode.

Attachment 3

Standard Operating Procedure: Ambient Air Sampling and Analysis Using USEPA Method TO-15

Standard Operating Procedure: Ambient Air Sampling and Analysis Using USEPA Method TO-15

I. Scope and Application

This standard operating procedure (SOP) describes the procedures to collect ambient air samples for the analysis of volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method TO-15 (TO-15). The TO-15 method uses a passivated stainless steel canister to collect a whole-air sample that is then analyzed for VOCs using a quadrupole or ion-trap gas chromatograph/mass spectrometer (GS/MS).

The following sections list the necessary equipment and provide detailed instructions for placing the sampling device and collecting ambient air samples for VOC analysis.

II. Equipment List

The equipment required for ambient air sample collection is presented below:

- Stainless steel lab-certified clean canisters (order at least one extra, if feasible).
- Flow controllers with in-line particulate filters and vacuum gauges (flow controllers are pre-calibrated by the laboratory to a specified sample duration [e.g., 8-hour, 24-hour]). Confirm with lab that flow controller comes with in-line particulate filter and pressure gauge (order an extra set for each extra canister, if feasible).
- Appropriate-sized open-end wrench (typically 9/16-inch).
- Chain-of-custody (COC) form.
- Sample collection log.
- Field notebook.
- Camera.
- Lock and chain (optional).
- Ladder or similar to hold canister above the ground surface (optional).

III. Cautions

Care must be taken to minimize the potential for introducing interferences during the sampling event. As such, care must be taken to keep the canister away from heavy pedestrian traffic areas (e.g., main entranceways, walkways). If the canister is not to be overseen for the entire sample duration, precautions should be taken to maintain the security of the sample (e.g., do not place in areas regularly accessed by the

public, fasten the sampling device to a secure object using lock and chain, label the canister to indicate it is part of a scientific project, place the canister in secure housing that does not disrupt the integrity/validity of the sampling event). Sampling personnel should not handle hazardous substances (such as gasoline), permanent marking pens, wear/apply fragrances, or smoke cigarettes before and/or during the sampling event.

Care should also be taken to ensure that the flow controller is pre-calibrated to the proper sample collection time (confirm with laboratory). Sample integrity is maintained if the sampling event is shorter than the target duration, but sample integrity can be compromised if the event is extended to the point that the canister reaches atmospheric pressure.

IV. Health and Safety Considerations

Field sampling equipment must be carefully handled to minimize the potential for injury and the spread of hazardous substances.

V. Procedures

Preparation of Stainless Steel Canister and Collection of Sample

1. Record the following information in the field notebook (contact the local airport or other suitable information source [e.g., weatherunderground.com] to obtain the following information):

    a. ambient temperature
    b. barometric pressure
    c. relative humidity

2. Choose the sample location in accordance with the sampling plan. Place the canister on a ladder, tripod, or other similar stand to locate the canister orifice 3 to 5 feet above ground or floor surface. If the canister will not be overseen for the entire sampling period, secure the canister as appropriate (e.g., lock and chain).

3. Record canister serial number and flow controller number in the field notebook and COC form. Assign sample identification on canister ID tag, and record in the field notebook, sample collection log, and COC form.

4. Remove the brass dust cap from the canister. Attach the flow controller with in-line particulate filter and vacuum gauge (leave swage-lock cap on the vacuum gauge during this procedure) to the canister with the appropriate-sized wrench. Tighten with fingers first, then gently with the wrench.

5. Open the canister valve to initiate sample collection. Record the date and local time (24-hour basis) of valve opening in the field notebook, sample collection log, and COC form.

6. Record the initial vacuum pressure in the canister in the field notebook and COC form. If the initial vacuum pressure does not register less than -28 inches of Hg, then the canister is not appropriate for use and another canister should be used.

7. Take a photograph of the canister and surrounding area.

Termination of Sample Collection

1. Arrive at the canister location at least 10 to 15 minutes prior to the end of the sampling interval.

2. Stop collecting the sample when the canister vacuum reaches approximately 2 inches of Hg (leaving some vacuum in the canister provides a way to verify if the canister leaks before it reaches the laboratory) or when the desired sample time has elapsed.

3. Record the final vacuum pressure. Stop collecting the sample by closing the canister valve. Record the date, local time (24-hour basis) of valve closing in the field notebook, sample collection log, and COC form.

4. Remove the particulate filter and flow controller from the canister, re-install brass plug on canister fitting, and tighten with wrench.

5. Package the canister and flow controller in the shipping container supplied by the laboratory for return shipment to the laboratory. The canister does not require preservation with ice or refrigeration during shipment.

6. Complete the appropriate forms and sample labels as directed by the laboratory (e.g., affix card with string).

7. Complete COC form and place requisite copies in shipping container. If shipping by courier service (e.g. FedEx) close the shipping container and affix a custody seal to the container closure. Ship the container to the laboratory via overnight carrier for analysis. If transporting directly to laboratory or for laboratory sample pick up, follow standard Chain of Custody procedures. Close shipping container and affix custody seal to container closure. Ship to laboratory via overnight carrier (e.g., Federal Express) for analysis.

VI. Waste Management

No specific waste management procedures are required.

VII. Data Recording and Management

Measurements will be recorded in the field notebook at the time of measurement, with notations of project name, sample date, sample start and finish times, sample location (e.g., description and GPS coordinates if available), canister serial number, flow controller number, initial vacuum reading, and final vacuum reading. Field notebooks and COC records will be transmitted to the Project Manager.

VIII. Quality Assurance

For the overall analytical program, one duplicate sample will be collected per each 20 samples submitted to the laboratory. Ambient air sample analysis will be performed using USEPA Method TO-15. This method uses a quadrupole or ion-trap GC/MS with a capillary column to provide optimum detection limits. This system also offers the advantage of the GC/MS detector, which confirms the identity of detected compounds by evaluating their mass spectra in either the SCAN or SIM mode.