ENVIROforensics

July 9, 2014

Mr. Dan Martino Sr.
Martino's Master Dry Cleaners
7513 41st Avenue
Kenosha, Wisconsin 53142

Re: Further Site Investigation (FSI 4) Work Scope
Martino's Master Dry Cleaners
3917 52nd Street
Kenosha, Wisconsin 53144
BRRTS# 02-30-552186
EnviroForensics Project #6190

Dear Mr. Martino:

Environmental Forensic Investigations, Inc. (EnviroForensics) is providing this work scope for further site investigation (FSI) activities at the Martino's Master Dry Cleaners facility located at 3917 52nd Street in Kenosha, Wisconsin (Site). For management and tracking purposes, this phase of work will be identified as FSI 4 and Phase 16 of the project.

1.0 BACKGROUND

The project background and results of the most recent site investigation activities were described in the *Further Site Investigation Summary Report* dated March 18, 2014.

EnviroForensics attended a project stakeholder meeting on June 11, 2014 at Wisconsin Department of Natural Resources (WDNR) offices to discuss Site data collected to date, and additional data needs. The WDNR expressed concerns at the meeting regarding potential vapor intrusion risks to nearby structures located within 100-feet of the contaminated soil source area or in contact with contaminated groundwater, and the need to quickly address these concerns. Although EnviroForensics followed existing guidance for assessing vapor intrusion (PUB-RR-800), the WDNR indicated that more needs to be done.

The WDNR referred to case studies where vapor migration to nearby buildings can be unpredictable if near a soil source area or nearby groundwater contaminant plume. Also, vapor accumulation beneath building foundations and intrusion to indoor air has been shown to be highly variable on a seasonal basis. This variability has prompted the WDNR to establish a separate guidance document with new procedures for sub-slab vapor sampling. According to the

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WDNR, sub-slab vapor sampling (as opposed to soil gas sampling) is the most reliable method for ruling out a vapor intrusion risk and is the method that they strongly support.

A new sub-slab sampling guidance document, PUB-RR-986, *Sub Slab Vapor Sampling Procedures,* will be finalized soon and provides the framework for the revised sub-slab sampling scenario and schedule. The guidance recommends that at least three seasonal sub-slab sampling events be performed, with one of those sampling events during the winter months. WDNR has indicated that Site closure could be denied if the vapor risk to nearby properties has not been adequately assessed and their decision will be based on the general requirements of Wisconsin Administrative Code (WAC) Chapter NR-716, and the suggested specific procedures found in PUB-RR-800 and new PUB-RR-986.

The FSI activities described in this work scope are designed to satisfy the following Site-specific WDNR requirements:

1. Determine the locations of sanitary sewer laterals exiting the Site building and expand the Site map to include all utility mains in adjacent roadways and where all Site utility laterals connect with those mains;
2. Investigate the sanitary sewer lateral trench to determine if it has acted as a preferential migration pathway for Site contaminants;
3. Perform sub-slab sampling in each commercial tenant space of the Site building and the adjacent off-site commercial building to the east that have not previously been sampled for three seasonal events;
4. Perform paired indoor and sub-slab sampling at off-site properties within 100 feet of Site contamination for three seasonal events; and
5. Determine the extent of soil and groundwater impacts on residential properties to the south of the Site.

If the results of this work indicate that the nature and extent of impacts are not fully delineated, additional investigation data may be needed.

2.0 FURTHER SITE INVESTIGATION (FSI 4) WORK SCOPE

Phase 16a: Work Scope Development

EnviroForensics has prepared this work scope to serve as the procedures document for the following FSI 4 activities:

- Utility corridor evaluation;
- Vapor intrusion (VI) assessments;
- Soil, groundwater, and soil gas sampling;
- Investigation-derived media management; and

- Data evaluation and results notifications.

Phase 16b: Access Agreements

EnviroForensics will request and coordinate access to the following properties:

- City of Kenosha right-of-way areas along the east side of 40th Avenue;
- 5231 40th Avenue (residence);
- 5233 40th Avenue (residence); and
- A privately owned vacant parcel northwest of the intersection of 39th Avenue and 53rd Street.

Phase 16c: Utility Corridor Evaluation

The utility lines in these roadways can potentially act as conduits for the migration of impacts. Currently, the connecting point between the sanitary sewer lateral servicing the Site and the sanitary main is not known. Sanitary laterals are known receptors for leaks and spills that enter floor drains. EnviroForensics will retain a plumbing contractor to trace the path of the sanitary sewer between the dry cleaner space and the main in the city right-of-way using electronic locating equipment. They will also take video of the sanitary lateral leaving the Site and entering the main to determine if there are any observable breaches in the piping. Site maps will be updated with the path of the sewer. The sanitary sewer lateral will be targeted for soil and soil gas sampling as described in Phase 16e below. This information is required to satisfy the site investigation requirements of Wisconsin Administrative Code (WAC) Chapter NR-716 and generally follows PUB-RR-649, *Guidance for Documenting the Investigation of Utility Corridors*, dated March, 2000.

EnviroForensics will also contact the City of Kenosha to request information on utilities located within the right-of-ways on 52nd and 53rd Streets and 39th and 40th Avenues. The public utility lines will also be added to the Site maps.

Phase 16d: Vapor Intrusion Assessment Activities

The VI assessment activities will be conducted in accordance with current WDNR guidance document PUB-RR-800, and draft document PUB-RR-986. The WDNR recommends that at least three (3) sampling events be performed with one of those events in the winter months to rule out a vapor intrusion risk. This additional sampling information will be needed to satisfy the site investigation requirements of WAC NR-716.

Vapor intrusion assessment activities will include sub-slab vapor sampling in three (3) tenant spaces at the Site (3931, 3931A and the separate adjacent commercial property at 3907 52nd Street). Some of these spaces have been sampled once in the past, so they will be sampled two

more times as recommended by the WDNR. In addition, paired sub-slab and indoor air samples will be collected from the 5231 40th Avenue and 5233 40th Avenue residential properties. WDNR recommends two (2) sub-slab samples for residences having a building footprint greater than 1,500 square feet. The residence at 5233 40th Avenue has a building footprint less than 1,500 square feet and only one (1) sub-slab sample will be needed for each of three (3) events at this location.

The required VI assessment locations are shown on **Figure 1**. Based on a preliminary evaluation of records, the residential properties are improved with a one-story houses having full basements. The Site commercial strip mall and adjacent Chicken Palace have slab-on-grade foundations. The type/number of samples and number of sampling events are listed in the table below.

Property Address	Occupant	Sampling Events	Sub-Slab Samples per event	Indoor Air Samples per event	Outdoor Air Samples per event	Total Samples
3931A 52nd St	Subway	3	2	0	0	6
3931 52nd St	Antojito Bakery	2	2	0	0	4
3907 52nd St	Chicken Palace	2	2	0	0	4
3935 52nd St	Los Compadres	3	2	0	0	6
5233 40th Ave	Espinoza Res.	3	1	2	0	9
5231 40th Ave	Gulick Res.	3	2	2	1	15

The following sections provide detail on specific VI assessment activities to be implemented during the FSI.

Background Conditions Screening

Prior to sampling, an inspection of the occupied spaces will be conducted to identify and inventory materials that could potentially contribute to indoor air conditions, unrelated to VI issues. Suspect items identified during the inspection will be listed on a pre-sampling inspection form for later reference.

A representative for the building occupants will be interviewed regarding the types of activities conducted on a routine basis, and the number and age of people that regularly occupy the space. This information will also be recorded. The buildings' layout will be examined and a simple sketch will be prepared in the field to assist in the selection of indoor air sampling locations. The configuration of the structure's heating ventilation and air conditioning (HVAC) system will also

be inspected to gather information pertaining to air circulation and exchange conditions in the occupied space.

A visual inspection will be conducted for cracks or other penetrations of the concrete floor (i.e. floor drains, sumps, etc.) that could be direct conduits for impacted vapors to migrate into the occupied space. The results of all pre-sampling inspection activities will be recorded on an Indoor Air Building Survey Form.

Sub-Slab Vapor Sample Point Installation and QA/QC Testing

Sub-slab vapor sampling locations will be determined based on accessibility and the locations of subsurface utility lines beneath the building slabs. Once the locations have been selected, the sub-slab sampling points will be installed. The sampling points will consist of temporary stainless steel Vapor Pin™ probes inserted into holes drilled through the concrete slab. These probes will be left in place until the required sampling events are completed. After their use is no longer needed, the probes will be removed and the holes in the concrete slab will be sealed with cement.

Potential ambient air entering into the samples through leaks in the sampling train or into the sampling points can dilute the sample and lead to the underestimation of the soil vapor concentration in the samples. To ensure that the sub-slab vapor samples are representative of actual conditions, leak testing will be performed. Testing the integrity of the sample points will be conducted using the water dam method.

The integrity of the sampling lines will be tested prior to sampling using a hand pump with a pressure gauge. Negative pressure will be added to the line and observed for 60 seconds for changes. If no change to the pressure is observed the line will be considered intact.

Sub-Slab Vapor Sample Collection

Sub-slab vapor samples will be collected using 1-Liter sample vacuum canisters, which will be connected to the sub-slab vapor point using compression fittings and Teflon-lined polyethylene tubing. The vacuum canisters will be batch-certified by the laboratory for QA/QC purposes. The tubing will be purged of all ambient air using a pump prior to initiating sub-slab sampling. Initial and final pressure readings will be collected from the vacuum canisters and recorded on the Sub-Slab Vapor Field Sampling Form, along with all other required information. Each vacuum canister will be fitted with a regulator to restrict the flow rate to less than 200 milliliters per minute.

Indoor/Outdoor Air Sampling Collection

All indoor air samples will be collected from the breathable space (3-5 feet above the floor). Samples will be collected using a 6-Liter vacuum canister, regulated to withdraw a time-

integrated sample over 8-hour (commercial) or 24-hour (residential) periods. Additionally, one (1) outdoor air sample will be collected from an area up-wind of the residence during each indoor air sampling event. The vacuum canisters used to collect indoor and outdoor air samples will be individually-certified by the laboratory for QA/QC purposes.

Data collected at the nearest fixed weather station throughout the sampling period will be accessed and evaluated. Temperature, wind speed, wind direction, humidity, barometric pressure, and rainfall and their possible effects on the sampling results will be assessed and discussed in the report. Initial and final pressure readings will be collected from the vacuum canister and recorded on Indoor Air Field Sampling Forms along with all other required information.

Sample Designation and Analysis

The sub-slab vapor and indoor/outdoor air samples will be identified by project number, property address, and sample number (e.g., 6190-5231-SSV-1 or 6190-5231-IA-1). Following the completion of sampling activities during each sampling event, the vacuum canisters will be submitted to a laboratory for analysis of the dry cleaning list of chlorinated volatile organic compounds (CVOCs) according to US EPA Method TO-15. All samples will be transmitted under appropriate chain-of-custody procedures.

Phase 16e: Soil, Groundwater, and Soil Gas Sampling

Subsurface Utility Clearance

In accordance with safe work practices and as required by Wisconsin State Law, EnviroForensics will contact Wisconsin Digger's Hotline subsurface utility protection service at least 72-hours prior to the anticipated onset of subsurface work at the Site. As a result, subsurface utilities and structures owned or managed by member companies and municipalities will be located by an independent contractor service. EnviroForensics will also contract with a private underground utility locating service to provide additional confidence regarding the position of potential underground hazards at the Site. The private locating service will use geophysical and/or electromagnetic equipment, as appropriate; to assist in clearing each planned boring location prior to sampling activities.

Soil Boring and Sampling

To further define the extent of vadose zone soil contamination and evaluate potential preferential migration pathways, five (5) soil borings (SB-13 through SB-17) will be advanced using direct-push or hand auger methods at the locations shown on **Figure 2**. Soil will be continuously sampled and logged during boring activities. Field screening at each 2-foot interval will be conducted using a photoionization detector (PID) meter, the results of which will be recorded.

Soil lithology will be described in accordance with the United Soil Classification System (USCS) and recorded on boring logs.

Soil borings SB-16 and SB-17 will be advanced to the depth of the targeted utility line and one (1) soil sample will be collected from the bottom of each boring or from the interval exhibiting the highest PID reading. Soil borings SB-13 through SB-15 will be advanced to maximum depth of approximately 18 feet bgs, with samples collected from depths of 2, 6, and 10 feet bgs in each boring, unless there is an indication of higher field instrument readings at differing intervals. Soil samples for laboratory analysis will be collected and preserved according to EPA method 5035. Additionally, if perched groundwater is encountered above 8 feet bgs in any of the soil borings, a grab sample of the groundwater will be collected.

All samples will be labeled, logged on a chain of custody form and placed into a cooler containing ice pending delivery to the fixed based laboratory. The soil and grab groundwater samples will be submitted for CVOC analysis using US Environmental Protection Agency (EPA) SW-846 Test Method 8260B.

Investigation-derived media (IDM), including soil cuttings and purge water, generated during sampling activities will be placed into 55-gallon drums for management and disposal (see Phase 16f).

Monitoring Well Installation and Groundwater Monitoring

Small diameter monitoring wells will be installed at SB-13/MW-6, SB-14/MW-7, and SB-15/MW-8 to determine if contaminated groundwater has migrated off Site. EnviroForensics will request a variance from WAC Chapter NR 141 to install the small diameter wells to minimize impacts on the private properties. The wells will be designated MW-6 through MW-8 as shown on **Figure 2**. The wells will be constructed of 1-inch diameter PVC with 10-foot long screened intervals from approximately 8 to 18 feet bgs and will have a sand filter pack, filter pack seal, and annular space seal in accordance with NR 141. Expandable locking caps and keyed alike locks will be placed on each well. Surface completions will consist of small diameter flush-mount well vaults set in a small concrete pad. The new monitoring wells will be developed according to the procedures described in WAC Chapter NR 141.

Upon completion of the installation of the new monitoring wells, a licensed surveyor will locate each new monitoring well by standard surveying methods. A vertical survey will be conducted to establish the elevation of each monitoring well and based on a benchmark, which will be utilized as a vertical control for the Site. The horizontal and vertical grid coordinates of each monitoring well will be recorded to within 0.1 foot and 0.01 foot, respectively. Horizontal locations will be referenced to the State Plane Coordinate System.

Groundwater samples will be collected from the three (3) new wells for three (3) consecutive quarters, concurrent with quarterly on-Site groundwater monitoring. Depth to water

measurements will be collected from each well prior to sample collection. Groundwater samples will be submitted during each monitoring event to a state-certified laboratory for analysis of CVOCs according to US EPA Method 8260B. After three (3) quarters of monitoring have been completed, the wells and flush mountings will be removed and the borings will be properly abandoned.

Soil Gas Sample Collection

Soil gas samples will be collected during the FSI to evaluate the public utility corridors as potential preferential pathways for vapor migration. Soil gas samples will be collected from two (2) soil boring locations, SB-16 and SB-17. The soil gas samples are labeled PRT-4 and PRT-5 on **Figure 1**. PRT-4 will be collected from the west end of the water/gas utility corridor in the alley, and PRT-5 will be collected from the location at which the sanitary sewer lateral exits the building footprint, or at the location of a breach, if a breach is seen on video along the path where the lateral exits the building and connects with the main.

Soil gas samples will be collected using a direct push post-run tubing (PRT) system. PRT soil gas samples will be collected immediately above the perched groundwater, if encountered, or approximately two (2) feet above the water table (approximately 10 feet bgs). The PRT method uses an adapter and tubing to isolate the soil gas sample from the probe rods. In the first step of the procedure, an expendable point holder and expendable point are attached to the lead probe rod and advanced to the desired sampling depth. Teflon tubing attached to a tubing adapter are then lowered down the tool string and threaded to the expendable point holder. The probe rods will then be retracted (typically 1-foot), providing an open void for soil gas sampling. A sample pump will then be connected to the tubing and three (3) times the calculated volume of air in the tubing will be purged prior to collecting the soil gas sample into a 1-liter vacuum canister. A total of two (2) soil gas samples will be collected and submitted to a laboratory for analysis of CVOCs according to EPA Method TO-15. The soil gas analytical results will be compared to vapor risk screening levels (VRSLs) as defined in WDNR guidance.

Phase 16f: Investigation-Derived Media Management

IDM generated during the FSI, including soil cuttings and purge water, will be contained in 55-gallon drums for characterization and management. Composite samples will be collected from soil and purge water drums generated during the FSI for characterization purposes. The samples will be analyzed for total volatile organic compounds (VOCs) by EPA Method 8260 to determine if the materials are considered non-hazardous, or if further laboratory testing is necessary. A licensed subcontractor will properly manage all investigative derived media.

Phase 16g: Data Evaluation and Results Notifications

EnviroForensics will evaluate and summarize FSI data as it is received to identify any remaining data gaps. If additional site investigation data will be required to delineate the nature and extent

of impacts and/or assess or mitigate VI exposure, a brief work scope and cost estimate will be prepared.

In accordance with WAC Chapter NR 716.14, EnviroForensics will prepare sample results notifications (WDNR Form 4400-249) for each off-Site property at which samples are collected, for each data collection event. The notifications will include a sample location map, results summary table, and the relevant portion of the laboratory report. Sample results notifications will be submitted to the off-Site property owners. A copy of each notification will also be submitted to WDNR, as required. Assuming EnviroForensics is granted access to each property listed under Phase 16b, a total of ten (10) results notifications will be required.

Phase 16h: Project Management

Project management tasks must be completed to support execution of the FSI work scope activities, track and maintain the project budget, and ensure overall project progress. Project management tasks may include, but are not limited to: budget tracking; communication of project progress and budget status updates; communication with and responding to WDNR representatives, carriers, client and third parties; and unanticipated contingency items that may require attention. The estimated project management budget is based on costs incurred during previous phases of the site investigation and based on the work scope having duration of ten months.

SCHEDULE

It is anticipated that the proposed work can be initiated within two (2) weeks of authorization to proceed. Standard laboratory turn around times will be requested, which will provide analytical results within two (2) weeks of sample submittal. The evaluation of data will be ongoing during the FSI. Results notifications will be submitted to off-Site property owners and WDNR within ten (10) business days of receipt of the analytical data, as required under WAC Chapter NR 716.14. It is anticipated that the entire work scope can be completed within ten (10) months of authorization to proceed.

It should be recognized that some limitations are inherent in the evaluation of subsurface conditions. Thus, EnviroForensics cannot guarantee that the activities described in this work scope will completely define the nature and extent of contamination. The proposed cost assumes that no additional access agreements are required and that typical subsurface conditions will be encountered. Any delays, obstructions, or other limitations outside the control of EnviroForensics may result in additional cost to the Project.

PROJECT TEAM

Mr. Brian Kappen, P.G. will manage this project and will serve as the project Hydrogeologist as defined in Wisconsin Administrative Code Chapter NR 712.03(1). Mr. Kappen will also provide

oversight of all project activities as required by NR 712.05. Mr. Wayne Fassbender, P.G., P.M.P. will serve as senior project manager. As required by NR 712, the staff will meet the appropriate professional requirements necessary for each Phase of the project.

We appreciate the opportunity to provide you with this Status Report and Work Scope and look forward to working with you on this project. If you have any questions or require additional information, please don't hesitate to contact us at 414-326-4412.

Sincerely,
Environmental Forensic Investigations, Inc.

Brian Kappen, P.G.
Project Manager

Wayne Fassbender, P.G., P.M.P.
Senior Project Manager

Attachments:
Figure 1: Proposed Vapor Intrusion Sample Locations
Figure 2: Proposed Soil Boring and Monitoring Well Locations

cc: Ted Warpinski, Friebert, Finerty & St. John, S.C.
Andrew Skwierawski, Friebert, Finerty & St. John, S.C.
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