ENVIROforensics

February 15, 2015

Ms. Gena Larson
Remediation & Redevelopment Program
Wisconsin Department of Natural Resources
101 Webster Street
Madison, WI 53707

Re: Site Investigation Work Plan
Former Vogue Cleaners
1416 North 4th Street, Milwaukee, WI 53212
BRRTS # 02-41-559223
EnviroForensics Project# 6350

Dear Ms. Larson:

Environmental Forensic Investigations, Inc. (EnviroForensics) is presenting this Site Investigation Work Plan for the Former Vogue Cleaners facility located at 1416 North 4th Street, Milwaukee (Site). The Wisconsin Department of Natural Resources (WDNR) sent a *Responsible Party* letter to Mr. Ron Collison, dated August 22, 2012, requiring an investigation of the nature, extent, and degree of petroleum and chlorinated solvent contamination at the Site. This Work Plan for a Site Investigation was developed to address this requirement.

SITE LOCATION AND BACKGROUND

The Site is located just north of the intersection of North 4th Street and West Vliet Street, north of downtown Milwaukee. The Milwaukee River is located two blocks to the east of the Site. The area consists of commercial and industrial properties with a residential apartment building property located to the east of the Site across an alley. Milwaukee Plating, which has a documented chlorinated solvent open Environmental Repair Program (ERP) case, is located within one block to the north of the Site at 1434 North 4th Street. A site location map is found on **Figure 1**.

The Site operated as a dry cleaner facility from approximately 1952 to 1993. The Site building consists of a two-story brick structure with a partial basement. Four (4) underground storage tanks (UST), located on the southeast portion of the Site, were removed in June 18, 2012 by Endpoint Solutions Corporation of Hales Corners, Wisconsin. Two of the tanks were 600-gallon vertical USTs with cone bottoms, contents unknown. The other two tanks were 8,000-gallon capacity, with one formerly containing Stoddard solvent and the other containing fuel oil. The

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tank closure assessment revealed concentrations of petroleum and chlorinated solvent compounds in the soil. The release was reported to the WDNR on August 15, 2012.

PROPOSED SCOPE OF WORK

In order to define the nature, extent, and degree of impacts to the Site from petroleum and chlorinated dry cleaning solvents, EnviroForensics recommends the following general scope of work:

- Advance 21 direct-push soil borings and convert each to a temporary well to assess soil and groundwater impacts.
- Advance four (4) hand-auger soil borings inside the building to determine the degree of contamination at an assumed source area.
- Advance one (1) deep boring to determine the vertical extent of contamination at the UST source area.
- Install six (6) permanent monitoring wells to determine groundwater flow direction and one (1) piezometer to evaluate vertical contaminant migration.

The proposed locations of each of the sampling points are shown on **Figure 2.** These were determined from a site visit and review of environmental reports for nearby properties. The following sections describe in detail the tasks associated with the proposed scope of work.

Off-Site Access, Health & Safety Plan and Chemical Inventory

Access agreements will be drafted and sent to the City of Milwaukee for the borings/wells that are proposed in the city right-of-way. A Site Health and Safety Plan will be developed to protect workers involved with the investigation.

An on-Site inventory will be conducted to identify the number of containers, volume of product in each and the type of chemicals stored on-Site. This information is necessary to identify the type of contaminants that could be encountered on-Site, so the appropriate analytical testing is performed for the contaminants of concern, and to determine if any testing is needed for any unidentified chemical products. This information will also be required prior to any container removal or building demolition efforts.

Investigation Activities

EnviroForensics proposes to advance 19 direct-push borings to 20 feet below ground surface (bgs), one (1) boring to 40 feet bgs, and four (4) hand-auger borings to 4 feet bgs. Once the initial soil and groundwater data have been analyzed, EnviroForensics will install six (6) permanent monitoring wells to evaluate groundwater flow direction and gradient. Each well will

be screened at a depth of approximately 10 to 20 feet bgs. A piezometer will be nested next to one of the monitoring wells and screened from approximately 35 to 40 ft bgs. Sample collection methodologies are discussed below.

Soil Investigation Sampling

The soil investigation work will be performed in two (2) stages as a cost saving measure, so that only the work necessary to meet the project objectives is implemented. The following summarizes each stage, location, and purpose of the borings.

Stage 1

- Two (2) borings will be advanced up-gradient of the Site to the west to determine if any off-Site sources are affecting the Site.
- Seven (7) borings will be advanced in the southern portion of the Site and in the former UST bed location. One (1) of the six (6) borings will be advanced deeper to provide vertical delineation down-gradient of the source.
- Four (4) hand-auger borings will be advanced to a depth of 4 feet bgs in the rear (east portion) of the building where the dry cleaning machines and stills are located to determine the degree of contamination in this potential source area. Two (2) of these borings are located in areas where a concrete floor exists that will need to be cored.
- Three (3) soil borings will be advanced in the alley to the east of the Site to determine if the underground utility corridor might be acting as a preferential pathway for contaminant migration.

Stage 2

- Three (3) soil borings will be advanced immediately south of the former UST source area.
- Up to two (2) additional soil borings will be advanced in the alley to the east of the Site to investigate the lateral extent of utility corridor contaminant migration.
- Up to four (4) down-gradient borings will be advanced to delineate the groundwater plume in the right of way along West Vliet Street.

Direct-push soil samples will be collected in 4-ft long by 1.5-inch diameter vinyl acetate plastic sample sleeves, sampled and logged. Field screening at each 2-ft interval will be conducted using a photoionization detector (PID) meter, the results of which will be recorded. Soil lithology will be continuously described in accordance with the Unified Soil Classification System (USCS) and recorded on boring logs.

Soil samples for laboratory analysis will be collected in laboratory supplied sample jars for analysis of volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) SW-846 Test Method 8260 and polynuclear aromatic hydrocarbons (PAHs) by USEPA SW-846 Test Method 8270. Nitrile gloves will be changed between each sample

interval and new plastic sleeves will be inserted into the sample probe. Any reusable sampling equipment that comes in contact with soil samples will be decontaminated with an Alconox detergent solution and triple rinsed with clean water between sampling intervals.

Per standard data quality assurance and quality control (QA/QC) protocol, one (1) duplicate sample per 20 or fewer samples (20%) will be analyzed for VOCs via US EPA SW-846 Test Method 8260 and PAHs by US EPA SW-846 Test Method 8270. These soil samples will be labeled, logged on a chain-of-custody form and placed into a cooler containing ice pending delivery to the fixed-based, state certified laboratory. Soil cuttings generated during sampling activities will be placed into Department of Transportation (DOT) 17H-rated drums, or equivalent for subsequent characterization and management.

Direct-Push Groundwater Sampling

Grab groundwater samples will be collected from each boring location via a temporary well to further define the horizontal distribution of dissolved phase contaminants. Groundwater samples will be collected from a 1-inch diameter, 10-foot PVC temporary screen using disposable tubing connected to a check valve and/or peristaltic pump.

The grab groundwater samples will be transferred into laboratory supplied containers. The groundwater samples will be labeled, logged on a chain of custody form in the field and placed into a cooler containing ice pending delivery to the laboratory. The samples will be analyzed for VOCs using USEPA SW-846 Test Method 8260B and PAHs by USEPA SW-846 Test Method 8270.

Monitoring Well Installation and Development

Upon receipt of the subsurface investigation data, the most effective placement of the monitoring well network will be determined. The monitoring wells will be drilled using a 4.25-inch hollow-stem auger (HSA). Well construction will consist of approximately 10 feet of 2-inch inside diameter (ID) PVC riser and 10 feet of 2-inch ID, 0.010-inch slotted, PVC well screen. The piezometer will consist of approximately 35 feet of 2-inch ID PVC riser and 5 feet of 2-inch ID, 0.010-inch slotted, PVC well screen. The monitoring wells will be constructed such that the water table intersects the well screens. Sand pack materials will be placed from the bottom of the screen up to one foot above the well screen. A bentonite seal will extend from one (1) foot bgs to the top of the sand pack. Expandable locking caps and locks will be placed on each well. Flush-mount well boxes will be set in 2-ft by 2-ft concrete pads.

The newly installed monitoring wells will be developed by removing three (3) to five (5) well volumes of water with a submersible pump, or until the water becomes clear of significant sediment. The development equipment will be decontaminated between each monitoring well. The purge water generated by the well development process and later sampling will be placed in DOT 17H-rated 55 gallon drums, or equivalent, for subsequent characterization and management.

Monitoring Well Sampling

EnviroForensics personnel will remobilize to the Site and conduct groundwater sampling on the six (6) newly installed monitoring wells and one (1) piezometer a minimum of 24 hours after well development activities have been completed.

Well lids will be removed at least 15 minutes prior to collecting water level measurements to allow groundwater in the monitoring well to equilibrate with the atmospheric pressure. The depth to water in each well will be measured using an electronic sounding device and recorded on sampling forms prior to sample collection activities. Groundwater purging and sample collection will be conducted using standard low-flow methods. Field parameters including pH, specific conductivity, temperature, oxidation reduction potential (ORP), dissolved oxygen (DO), and turbidity will be measured to determine when purging is complete and to evaluate geochemical parameters. One (1) groundwater sample will then be collected from each well. Purge water will be stored on-site in sealed and labeled DOT 17H-rated drums, or equivalent, for subsequent characterization and management.

Monitoring Well Surveying

Upon completion of the installation of the new monitoring wells, a licensed surveyor will record the elevation and location of each monitoring well by standard surveying methods. A vertical elevation survey will be conducted to establish the elevation of each monitoring relative to average mean sea level (amsl). The horizontal and vertical grid coordinates of each monitoring well and soil boring location will be recorded to within 0.5 foot and 0.01 foot, respectively. Horizontal coordinates will be referenced to the State Plane Coordinate System.

Reporting

Once the investigation results are available, EnviroForensics will complete a Site Investigation Report, which will describe the work performed and summarize the findings of the work completed to date. The report will also include information on delineation of the horizontal and vertical extent of groundwater impacts, and a summary of all analytical testing results and field measurements. Appropriate tables, maps, figures, and attachments will be provided to aid data presentations and interpretation and the findings of the investigation.

SCHEDULE

EnviroForensics will commence field work within two (2) weeks of receiving executed access agreement with the City of Milwaukee. It is anticipated that the initial phase of the subsurface investigation field activities will take four (4) days to complete. The well installation and sampling phase will take an additional four (4) days to complete. Data analysis will commence following receipt of laboratory results, and reporting will be completed within six (6) weeks of receiving the laboratory results.

If you have any questions, please feel free to contact either of the undersigned at 866-888-7911.

Sincerely,

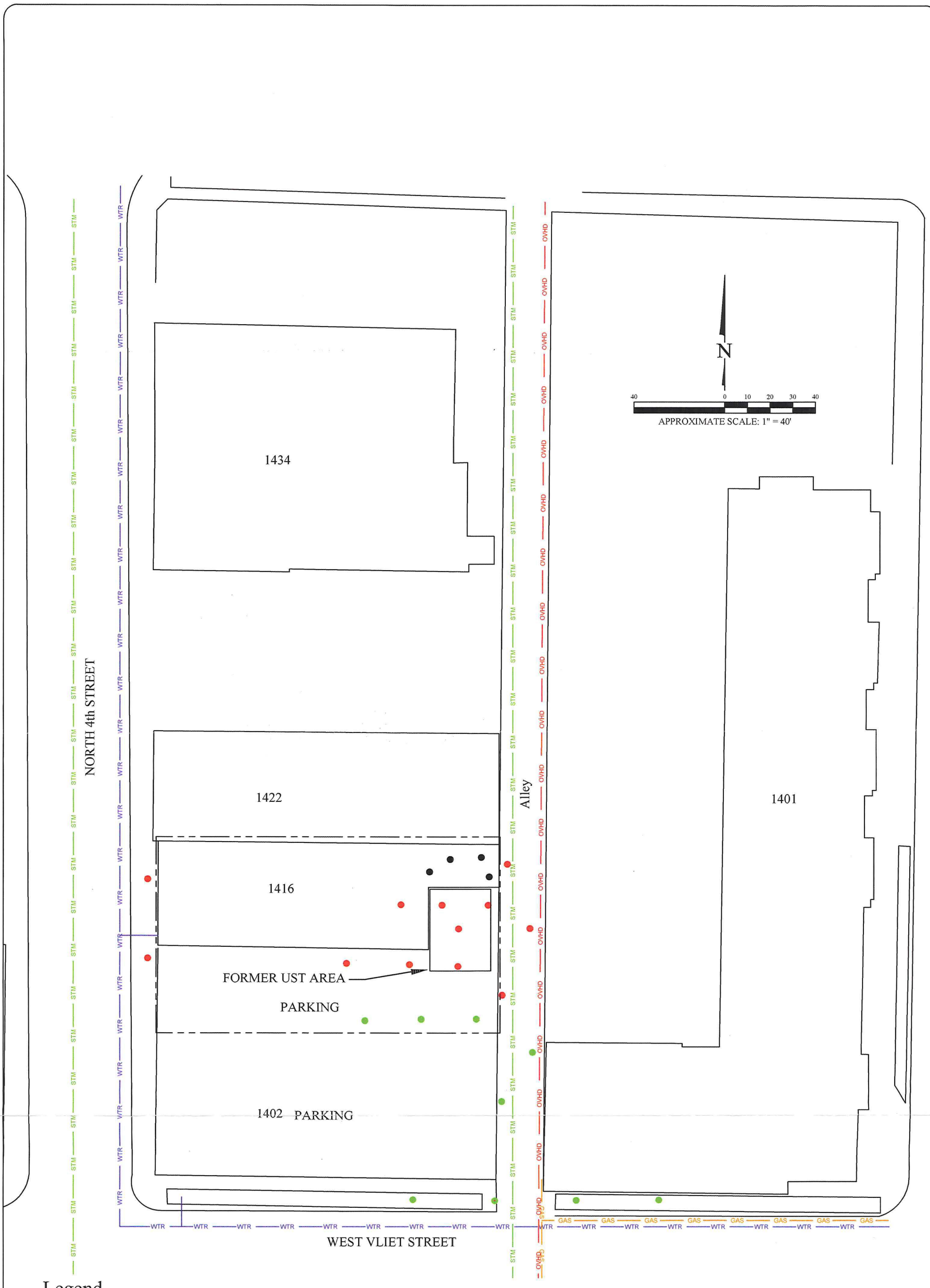
Environmental Forensic Investigations, Inc.

Rob Hoverman, PG
Senior Project Manager

Attachments –

Figure 1 – Site Plan for Proposed Sample Locations

CC: Ted Warpinski – Freibert, Finerty and St. John, S.C.
Ron Collison



Legend

- Proposed Hand Auger Locations
- Proposed Stage 1 Boring Locations
- Proposed Stage 2 Boring Locations

- Property boundary
- Underground gas utility line
- Underground water utility line
- Underground storm utility line
- Over head electrical utility line

No.	Date	Revision	Approved

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Date:	11/18/14
Designed:	AJ
Drawn:	AJ
Checked:	BR
DWG file:	6350-0051

SITE PLAN FOR PROPOSED SAMPLE LOCATIONS

1416-1420 North 4th Street
Milwaukee, Wisconsin 53212

Figure 1

Project 6350