18' - 20'

February 25, 2013

Mr. Brian Cass
OHM Holdings, Inc.
W229 N2494 Hwy F
Waukesha, Wisconsin 53186

**Re: Progress Report and Work Scope for Further Site Investigations**
**One Hour Martinizing**
**13405 Watertown Plank Road**
**Elm Grove, Wisconsin**
**BRRTS#: 02-68-552102**

Dear Mr. Cass:

Environmental Forensic Investigations, Inc. (EnviroForensics) is pleased to provide this Further Site Investigation (FSI) progress report for the One Hour Martinizing (OHM) facility located at 13405 Watertown Plank Road in Elm Grove, Wisconsin (Site). The FSI was performed in accordance with Wisconsin Department of Natural Resources (WDNR) regulations and guidance regarding environmental investigations, and in accordance with the procedures presented in the *Status Report, Work Scope and Cost Estimate for Further Site Investigation*, dated August 15, 2012. On-going investigation activities are being performed to fully define the nature and extent of impacts as required by NR-716 of the Wisconsin Administrative Code (WAC).

## 1.0 SITE DESCRIPTION

The Site is located at 13405 Water Town Plank Road, Elm Grove, Waukesha County, Wisconsin. The Site is occupied by a dry cleaning business owned and operated by OHM Holdings, Inc. Historical use of tetrachloroethylene (PCE) as a dry cleaning solvent was stopped at this facility in 2007, and the facility is now used as a drop off location for clothes that are now cleaned only at a single facility that operates in Waukesha, Wisconsin. The location of the Site is depicted on a U.S.G.S. 1:24,000 scale topographic quadrangle map (Figure 1). Site improvements consist of a slab-on-grade, one-story commercial facility and an asphalt parking area. The Site is bound by Watertown Plank Road to the northwest, an asphalt parking lot and



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storm culvert to the southwest, asphalt parking lot followed by commercial properties to the southeast, and a railroad right-of-way to the northeast. The surrounding neighborhood consists of mixed commercial and residential properties. A Site layout map is presented on Figure 2, which also indicates the locations of all previous and current data collection points.

## 2.0 SUMMARY OF PAST INVESTIGATIONS

### 2.1 Soil Sampling

ARCADIS U.S., Inc. (ARCADIS) conducted an initial subsurface investigation at the Site in February 2006 as part of due diligence activities. The investigation included the collection of groundwater and soil samples in the vicinity of the dry cleaning machine located on the east side of the building. Soil samples were collected at GP-1 through GP-4, and groundwater grab samples were collected at GP-1 and GP-2 (Figure 2). Concentrations of the chlorinated solvent PCE were detected in these samples at levels exceeding the applicable public health standards. This prompted a subsequent investigation to determine the extent of impacts. The locations of borings and concentrations of compounds detected are presented in Tables 1, 2, and 3, and on Figures 3 and 4.

EnviroForensics began additional site investigation activities in November 2009. Eight (8) direct-push soil borings (DP-1 through DP-8) were advanced to characterize soil properties and collect soil samples for laboratory analysis (Tables 1 and 2, and Figure 3). Four (4) of the eight (8) soil borings (DP-1 through DP-4) were converted to groundwater monitoring wells MW-1 through MW-4 (refer to monitoring well construction data in Table 4). In addition two (2) groundwater grab samples were collected from borings DP-5 and DP-6 (refer to analytical results in Table 3. Groundwater elevations were measured in the wells (Table 5) to determine the direction of groundwater flow, which has been consistently to the southeast across the Site. There were no volatile organic compounds (VOC) detected in the groundwater monitoring wells at that time (see Table 6). Based on detected soil impacts during this investigation, EnviroForensics recommended additional soil sampling to better define the vertical limits of soil impacts and to conduct a vapor intrusion assessment.

In June 2011, EnviroForensics advanced a total of six (6) borings (B-9 through B-14) using direct-push methods to a total depth of approximately 20 feet below ground surface (bgs). A total of 12 soil samples, two (2) from each boring, were collected for laboratory analysis.

Site soil was found to generally consist of silty to sandy clay extending from the near surface to a depth of 3 to 7 feet bgs. Sand and gravel was found to extend from beneath this unit to at least 21 feet bgs. Groundwater was observed at a depth of approximately 16 to 17 feet bgs in soil samples collected during the investigation. The locations of borings and concentrations of compounds detected are presented in Tables 1, and 2, and on Figure 3.

Soil samples collected from B-10, B-11, and B-12 contained concentrations of PCE and its breakdown products above the WDNR's Residual Contaminant Levels (RCLs). These borings were advanced east of the Site building and adjacent to the storage shed. PCE in soil was also discovered in soil boring B-9 at 13-15 feet bgs. This boring was advanced west of the building.

## 2.2 Grab Groundwater Sampling

Groundwater was encountered approximately 16-17 feet bgs at each of the six (6) soil boring locations. Immediately following soil sampling activities, a 1-inch diameter PVC temporary groundwater sampling point with a five-foot section of slotted screen was installed in each borehole. Groundwater samples collected from B-9, B-10, and B-11 contained concentrations of VOCs greater than NR 140 Enforcement Standards (ES). (See Table 3 and Figure 4 for the locations and analytical results of grab groundwater samples.)

## 2.3 Quarterly Groundwater Monitoring

Quarterly groundwater monitoring was conducted on April 28, September 7, and December 21, 2011; and on February 24, 2012 as outlined in the *Groundwater Sampling Work Scope and Cost Estimate* dated September 17, 2010. Water levels were measured during each past sampling event and are presented in Table 5. Samples were collected from all four (4) existing monitoring wells (MW-1 through MW-4) during each monitoring event. A summary of groundwater analytical results is presented in Table 6. As can be seen in Table 6, there have been one-time periodic, trace level, detections of PCE in wells MW-1 through MW-3, and benzene in well MW-2 over time. The concentrations of these compounds have exceeded the WDNR NR 140 Preventative Action Limits (PAL), but are below the ES.

## 3.0 SUMMARY OF CURRENT FURTHER SITE INVESTIGATION

### 3.1 Scope of Field Investigations

EnviroForensics staff conducted field data collection activities from October 22, 2012 through October 24, 2012 as presented in their *Status Report, Work Scope & Cost Estimate* dated September 24, 2012. Data collection activities included:

- Advancing six (6) direct-push soil borings (B-15 through B-18; HA-1 and HA-2) located outside the building to further define the extent of soil impacts;
- Installing one (1) temporary well in boring B-17 to facilitate collection of a grab groundwater sample;
- The installation of two (2) monitoring wells (MW-5 and MW-6);
- One round of groundwater monitoring from the four (4) existing groundwater monitoring wells and two (2) new monitoring wells;
- The collection of two (2) sub-slab vapor samples (SS-1 and SS-2);
- The collection of two (2) soil gas samples (SG-1 and SG-2); and
- Surveying of all new boring and well locations, well elevations, and property boundaries; and
- Identification of potable supply wells within 1,200 feet of the Site.

Soil and Grab Groundwater Sampling

Soil samples were collected continuously from direct-push borings B-15 through B-18 (see Figure 2). The samples were screened for volatile organic compounds (VOCs) in the field using a photo-ionization detector (PID) and the instrument readings recorded on the soil boring logs included in Attachment A. Soil samples for laboratory analysis were collected from intervals exhibiting the highest PID readings and from other intervals determined by the field geologist to potentially represent a migration pathway, a confining layer, the smear zone just above the water table, or other interval in an attempt to define the vertical distribution and extent of soil impacts. In addition, one groundwater grab sample was collected through a temporary well at boring B-17. The temporary well was immediately abandoned after sample collection. All soil samples and the grab groundwater sample were sent to Test America laboratory and analyzed for total VOCs by EPA Method 8260.

Monitoring Well Installation

Two (2) new permanent groundwater monitoring wells (MW-5 and MW-6) were installed during the FSI. Well construction details are presented in Table 4, and monitoring well construction forms are presented in Attachment A. The locations of the new wells are depicted on Figure 2. The new monitoring wells were drilled to depth using hollow stem auger (HSA) methods. The wells are constructed of 2-inch ID PVC riser and 10 feet of 2-inch ID, 0.010-inch slotted PVC well screen set from 15 to 25 feet bgs. Sand filter pack materials were placed from the bottom of the screen up to two feet above the well screen and a bentonite seal was placed from two feet above the filter pack to the ground surface seal. The wells were completed at the surface with flush-mount covers set in concrete. An expandable locking cap and lock was placed on each well. The newly installed monitoring wells were developed in accordance with the requirements of WAC Chapter NR 141. The soil and purge water generated by the well installation and development activities was placed in DOT 17H-rated 55 gallon drums for subsequent characterization and management.

Surveying Associates, Inc of Wauwatosa, Wisconsin was retained to record the elevation and location of the monitoring wells according to standard surveying methods. The horizontal and vertical grid coordinates of each monitoring well and soil boring location were recorded to within 0.1 foot and 0.01 foot, respectively. Horizontal locations were referenced to the State Plane Coordinate System. A property boundary survey was also performed and includes the most recent legal description of the Site. All current reporting figures were updated with the new property boundary survey data.

Groundwater Monitoring

Samples were collected from all six (6) Site monitoring wells during this FSI. Prior to sampling, the wells were opened and allowed to equilibrate to atmospheric pressure. Depth to water was then measured to the nearest 0.01 foot with an electronic water level indicator. Groundwater samples were collected using low flow methodologies. Geochemical parameters including specific conductance, temperature, pH, dissolved oxygen, total dissolved solids, oxidation reduction potential and turbidity were measured and recorded at the start of purging and at definite intervals until parameters stabilized. The water quality parameters for each event were recorded on field forms, which are included in Attachment B. All groundwater and associated QA/AC samples were submitted under appropriate chain-of-custody procedures to Test America,

Inc., University Park, Illinois (Test America) for analysis of VOCs using EPA Method SW-846 8260.

Vapor Intrusion Assessment

In the last few years, there has been much attention paid to the vapor migration pathway by regulators due to the relative mobility of chlorinated solvents within the subsurface and the ability of these solvents to off-gas vapors from soil and groundwater. These vapors can migrate along utility lines, move with groundwater, move through fill and other coarse-grained soil, and even move through clay soil which has fractures to reach and penetrate the foundations of on-site and nearby off-site structures. Adverse human health effects can occur to persons breathing indoor air that has been contaminated by volatile organic compounds at concentrations exceeding toxicity screening levels established by the U.S. Environmental Protection Agency.

The Wisconsin Administrative Code (WAC), Section NR 716.11(5)(a) "**requires all field investigations to evaluate buried utility and drainage improvements as potential contaminant migration pathways**". The Wisconsin Department of Natural Resources (WDNR) has developed procedures for investigating utility corridors. These procedures are presented in the WDNR guidance document, PUB-RR-649, *Guidance for Documenting the Investigation of Utility Corridors,* dated March, 2000.

In addition, the WDNR has developed guidance procedures for screening chlorinated volatile organic (CVOC) solvent releases to the environment in order to address concerns regarding the vapor intrusion (VI) pathway. These procedures are contained in the WDNR guidance document, PUB-RR-800, *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*, dated December, 2010. The guidance specifically states that "**The vapor intrusion pathway should be investigated at all source properties where a release of CVOC has occurred.**" The VI screening criteria apply to developed properties as well as to undeveloped properties (where no buildings currently exist). In addition to CVOC source properties, the PUB-RR-800 requires that the VI pathway must be investigated in the following situations, regardless of whether these conditions exist on or off the source property:

- Any buildings overlying a CVOC soil source
- Any buildings within 100 feet of a CVOC soil source
- Any buildings overlying a CVOC groundwater plume located at the water table with groundwater concentrations above Wisconsin's groundwater enforcement standards (ES)

TCE, and vinyl chloride at concentrations of 540 ug/l, 11 ug/l, and 0.8 ug/l, respectively, which exceed the applicable WDNR Enforcement Standards (ES) for these compounds.

Soil Gas Analytical Results

Soil gas analytical results are summarized in Table 7 and depicted on Figure 7. The laboratory report associated with the soil gas samples is provided in Attachment C. The compounds detected in soil gas samples were PCE and TCE in SG-1, and PCE and chloroform in SG-2. Sample SG-1 contained PCE at a concentration of 29,000 micrograms per cubic meter ($ug/m^3$), which exceeds the industrial Regional Screening Level (RSL) of 18,000 $ug/m^3$. Sample SG-1 also contained TCE at a concentration of 270 $ug/m^3$, below the industrial RSL of 880 $ug/m^3$ but exceeding the residential RSL of 210 $ug/m^3$. No other detected compounds exceeded their respective RSL.

Sub-slab Vapor Analytical Results

Sub-slab vapor analytical results are summarized in Table 8 and depicted on Figure 7. The laboratory report associated with the sub-slab vapor samples is provided in Attachment C. PCE was detected in samples SS-1 and SS-2 at concentrations of 970 $ug/m^3$ and 3,900 $ug/m^3$, respectively. The concentration in SS-1 only exceeded the residential RSL of 420 $ug/m^3$, and the concentration in SS-2 exceeded the applicable industrial RSL of 1,800 $ug/m^3$. Methylene chloride was detected in sample SS-1 at a concentration of 150 $ug/m^3$, which is less than its RSL. No other compounds were detected in the sub-slab vapor samples.

Potable Well Survey

EnviroForensics performed a potable well survey within 1,200 feet of the Site. The survey was based on publically available well constructor's reports (or well construction reports) submitted to the state by well drillers after installation of a water well. The reporting requirement began in 1936. The reports are available in databases maintained by the Wisconsin Department of Trade, Agriculture, and Consumer Protection (DATCP) and WDNR, respectively. EnviroForensics did not confirm the status or condition of all the individual potable wells or the accuracy or completeness of the information provided on the well constructor's reports.

Currently, potable drinking water is supplied exclusively by private wells in Elm Grove. Based on communications with the public works department of Elm Grove, the Village is in the process of seeking an agreement with the City of Brookfield to supply municipal potable water in the

## 3.2 Deviations from Scope

The proposed FSI work scope included two soil borings advanced using a hand auger along the sanitary sewer utility corridor. Instead, these two borings (HA-1 and HA-2) were advanced immediately adjacent to the sanitary sewer and natural gas utility corridors, respectively, using direct-push methodologies.

## 3.3 Investigative Results

Geology

The upper layer of bedrock in the Site area is Silurian-age Niagara Dolomite. Most water supply wells in the area are constructed within this aquifer, based on our review of well construction reports of local potable water supply wells. However, several private water supply wells were also found to be constructed within the unconsolidated sand and gravel overlying bedrock. The depth to bedrock in the area is highly variable and may be anywhere from 55 to 100 feet within a few hundred lateral feet of the Site, base on the well construction reports.

The Niagara Dolomite is overlain by glacial till. Glacial till is typically associated with undifferentiated mixes of silt, clay, sand, gravel, cobbles, and boulders deposited in place by melting glaciers. Under certain flowing water conditions this material can be deposited, or re-worked into deposits, which are more uniform and well-sorted. The glacial till was deposited during the Woodfordian Substage of the Late Wisconsinan Stage of glaciation. There were several advances and retreats of the continental glacier during this Stage, which resulted in several moraine deposits aligned parallel to Lake Michigan in Milwaukee and Waukesha Counties. Unconsolidated soil at the Site is expected to be associated with the Tinley Moraine and of the Oak Creek Formation.

Soil samples for lithological classification were collected from all direct-push borings. The soil boring logs are presented in Attachment A. Site soil at B-15 through B-18 was observed to consist of between one (1) to two (2) feet of fill at the surface. The upper seven (7) to nine (9) feet of material consists of moderately-sorted layers and lenses of silt, clay, sand, and gravel. Below roughly nine (9) feet bgs, the layers and lenses become coarser in texture and are composed mainly of sand to the total depth of the borings, with some layers or lenses of gravel present. Groundwater was encountered at approximately 18 feet bgs in the soil borings.

The moderately-sorted layers and lenses of soil is not typical of glacially-deposited till and may be the result of glacio-fluvial deposition, or repeated erosion and subsequent deposition caused by nearby Underwood Creek during historic flood stage conditions. This creek flows within approximately 50 feet of the Site to the west. The creek has been urbanized for storm water control, and is currently contained within a concrete-lined channel. The creek flows under the access roadway and parking lot immediately adjacent to the Site to the west.

Soil and Grab Groundwater Sample Analytical Results

Soil sample analytical results are summarized in Tables 1 and 2, depicted on Figure 3, and a summary of laboratory analytical results is presented in Attachment C. Tetrachloroethylene (PCE) was detected in a shallow soil sample collected from boring B-15 at a concentration exceeding the industrial direct contact residual contaminant level (RCL). PCE was also detected in a deeper sample collected from B-15 as well as B-16, B-18, and HA-1 at concentrations exceeding the RCL for protection of groundwater. Trichloroethylene (TCE) was detected in samples collected from B-15 and B-16 at concentrations exceeding the RCL for protection of groundwater. Additionally, 1,1,1,2-tetrachloroethane was detected in a sample collected from B-15 at a concentration exceeding the RCL for the protection of groundwater. No other VOCs were detected in soil samples.

A grab groundwater sample was collected from a temporary well placed in soil boring B-17, located as shown on Figure 4. VOCs were not detected in this grab groundwater sample as indicated on Figure 4, in Table 4, and analytical results in Attachment C.

Groundwater Monitoring Well Results

Groundwater elevation data are summarized in Table 5. A potentiometric surface contour map for October 24, 2012 was constructed from the Table 5 data and the direction of groundwater flow is depicted on Figure 5. The groundwater elevation data indicate that shallow groundwater flow at the Site is toward the southeast.

Analytical results of groundwater samples collected from Site monitoring wells are summarized in Table 6 and depicted on Figure 6. The laboratory report associated with the groundwater monitoring data is provided in Attachment C. Samples collected from monitoring wells MW-1, MW-3, MW-5, and MW-6 contained PCE at concentrations exceeding WDNR Preventative Action Limits (PAL). Wells MW-2 and MW-4 did not contain VOC in concentrations exceeding the laboratory detection limits. The groundwater sample collected from MW-6 contained PCE,

TCE, and vinyl chloride at concentrations of 540 ug/l, 11 ug/l, and 0.8 ug/l, respectively, which exceed the applicable WDNR Enforcement Standards (ES) for these compounds.

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Soil gas analytical results are summarized in Table 7 and depicted on Figure 7. The laboratory report associated with the soil gas samples is provided in Attachment C. The compounds detected in soil gas samples were PCE and TCE in SG-1, and PCE and chloroform in SG-2. Sample SG-1 contained PCE at a concentration of 29,000 micrograms per cubic meter ($ug/m^3$), which exceeds the industrial Regional Screening Level (RSL) of 18,000 $ug/m^3$. Sample SG-1 also contained TCE at a concentration of 270 $ug/m^3$, below the industrial RSL of 880 $ug/m^3$ but exceeding the residential RSL of 210 $ug/m^3$. No other detected compounds exceeded their respective RSL.

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Potable Well Survey

EnviroForensics performed a potable well survey within 1,200 feet of the Site. The survey was based on publically available well constructor's reports (or well construction reports) submitted to the state by well drillers after installation of a water well. The reporting requirement began in 1936. The reports are available in databases maintained by the Wisconsin Department of Trade, Agriculture, and Consumer Protection (DATCP) and WDNR, respectively. EnviroForensics did not confirm the status or condition of all the individual potable wells or the accuracy or completeness of the information provided on the well constructor's reports.

Currently, potable drinking water is supplied exclusively by private wells in Elm Grove. Based on communications with the public works department of Elm Grove, the Village is in the process of seeking an agreement with the City of Brookfield to supply municipal potable water in the

future, and a single water supply pipe has been installed along Elm Grove Road for potential connection to a proposed assisted living development that is planned for the Village of Elm Grove.

The well survey results are presented in Table 9. Based on the available data, a total of 51 wells were identified within 1,200 feet of the Site. In addition to the on-site well, the nearest reported wells are located at 13395 Watertown Plank Road, approximately 100 feet east of the Site. Another well was reportedly installed within the shopping center immediately south, in the down-gradient direction of groundwater flow, from the Site (highlighted in Table 9, well identifier WK6279). Like several wells within the survey radius, this well is installed within unconsolidated sand and gravel, not bedrock. A well constructor's report for the private water well at the Site was not available in either database.

## 4.0 CONCLUSIONS

Based on the current and historical investigative data, which adds to the Site Conceptual Model, EnviroForensics concludes the following:

- The primary contaminant detected in the subsurface (soil, groundwater, soil gas, and sub-slab vapor) at the Site is the dry cleaning solvent Tetrachloroethylene (PCE) and the breakdown products of naturally occurring microbial degradation including: Trichloroethylene (TCE), cis-1,2-dichloroethylene (DCE), and vinyl chloride;
- Concentrations of PCE in sub-slab soil gas samples collected beneath the floor slab of the dry cleaning building exceed the EPA Residual Screening Level for industrial/commercial environments;
- Based on detections of VOC in soil and soil gas, it appears that some Site utility lines are acting as transport conduits for the migration of VOC away from the source area located beneath the building slab. This possibility is supported by elevated detections of VOC in close proximity to, and at the relative depths of, sanitary sewer lines, natural gas lines, underground electric lines, and a water supply line, as can be seen on Figure 3. Soil and soil gas impacts detected northwest of the dry cleaning building at HA-1 may indicate transport of PCE, and PCE vapors, along the sanitary sewer corridor, which extends downward from the dry cleaning building to a depth of 14 to 16 feet at the location of HA-1. This preferential migration may account for the concentrations of PCE detected at both B-9 and B-16/MW-6, as some lateral migration of PCE would be expected

and could be accentuated by a fluctuating groundwater table. Further site investigations are needed in and around these utility corridors to determine the magnitude and extent of impacts;

- Concentrations of VOC in newly installed monitoring well MW-6 exceed WDNR Enforcement Standards for groundwater. Additional off-site and on-site investigations are needed to determine the magnitude and extent of groundwater impacts;
- If in pure phase, PCE is heavier than water and can sink through the water table. If this occurs, then samples from shallow water table wells may show less contamination than samples collected deeper within the water column. The potable well survey indicated several nearby water supply wells, some of which are installed within the sand and gravel overburden, with the majority installed within bedrock. These two geologic units are hydraulically connected and may be at risk of contamination if PCE impacts at the Site have migrated deeper within the aquifer. Further investigations of the vertical extent of PCE migration within soil of the source area and deeper groundwater are necessary to determine this risk and/or if dense non-aqueous phase liquid (DNAPL) is present.
- The on-site water supply well is located within an area of PCE soil impacts and the water supply line may have acted as a conduit for migration of PCE. It is possible that PCE could migrate vertically along the well casing and cause impacts to the private water supply. Construction records for the on-site water supply well were not identified in the WDNR database or available from the owner.

## 5.0 RECOMMENDATIONS

EnviroForensics recommends that the following Site investigation activities be performed to further delineate the full nature and extent of subsurface impacts and further develop the Conceptual Site Model (the locations of proposed further data collection points are presented on Figure 8):

- Conduct a review of publically available historical records (e.g. city directories, aerial photos, fire insurance maps) and the WDNR contaminated lands database to identify former uses of surrounding properties and potential up-gradient sources of contamination;

- Review Village of Elm Grove utility maps 200 feet east of the Site and 200 feet west of the Site along Watertown Plank Road to determine placement of utilities and locations of laterals that supply nearby buildings;
- Conduct quarterly groundwater monitoring for four (4) quarters from all existing and proposed new monitoring wells to provide data regarding seasonal variations in groundwater flow direction and contaminant concentrations;
- Perform additional soil sampling along the buried utility lines that extend from the Site building at B-19, B-22, B-23, and B-25 using direct-push methods to better define the distribution and magnitude of soil impacts. In addition, collect groundwater grab samples and soil gas samples from B-22 and B-23 to determine the concentrations of CVOC vapors that may be entering the main utility corridors within Watertown Plank Road, and to better determine the lateral extent of groundwater impacts detected at MW-6;
- Sample soil at boring B-24 using direct-push methods and install monitoring well MW-8 to better determine whether soil or groundwater impacts have spread laterally to this location from impacts detected within Site natural gas and sanitary sewer utility corridors;
- Sample soil at boring B-26 using direct-push methods and install monitoring well MW-9 to better determine the extent of impacts in the up-gradient direction of groundwater flow;
- Sample soil at boring B-20 within the dry cleaner building using direct-push methods to determine the vertical extent of soil impacts within the suspected source area and collect a groundwater grab sample;
- Sample soil at boring B-21 to better determine whether the buried underground electric or natural gas lines are acting as migration conduits in this area. Collect up to three (3) discrete grab groundwater samples using dual-tube, direct-push sampling methods to determine the distribution of impacts within groundwater. Based on the grab groundwater results, install a deep piezometer (PZ-1) and paired water table well (MW-7). The nested pair will be utilized to determine shallow and deep groundwater impacts in this area, which is down-gradient to the direction of groundwater flow and adjacent to the suspected source area, and to determine the vertical gradient of groundwater flow;
- Collect samples of groundwater supplied to the building from the on-site potable well. One (1) sample should be collected directly from the water supply well, and another sample from the first accessible spigot from inside the building; and
- Perform in-situ permeability (slug) testing in three monitoring wells to determine the hydraulic conductivity of the uppermost saturated interval.

## 6.0 WORK SCOPE & COST ESTIMATE

All services provided in support of this proposal will be billed on a time-and-materials basis. The cost estimate to complete this scope of work is **$76,978.** Costs are itemized by Phase in Table 10.

It should be recognized that some limitations are inherent in the evaluation of subsurface conditions, and that certain conditions may not be detected. Thus, this investigation cannot provide a guarantee that all possible on-site impacts will be discovered. The proposed cost assumes that normal conditions will be encountered; and that any delays, obstructions, or other limitations outside the control of EnviroForensics may result in additional costs.

We appreciate the opportunity to provide you with this Work Scope and Cost Estimate 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 me at 414-982-3988.

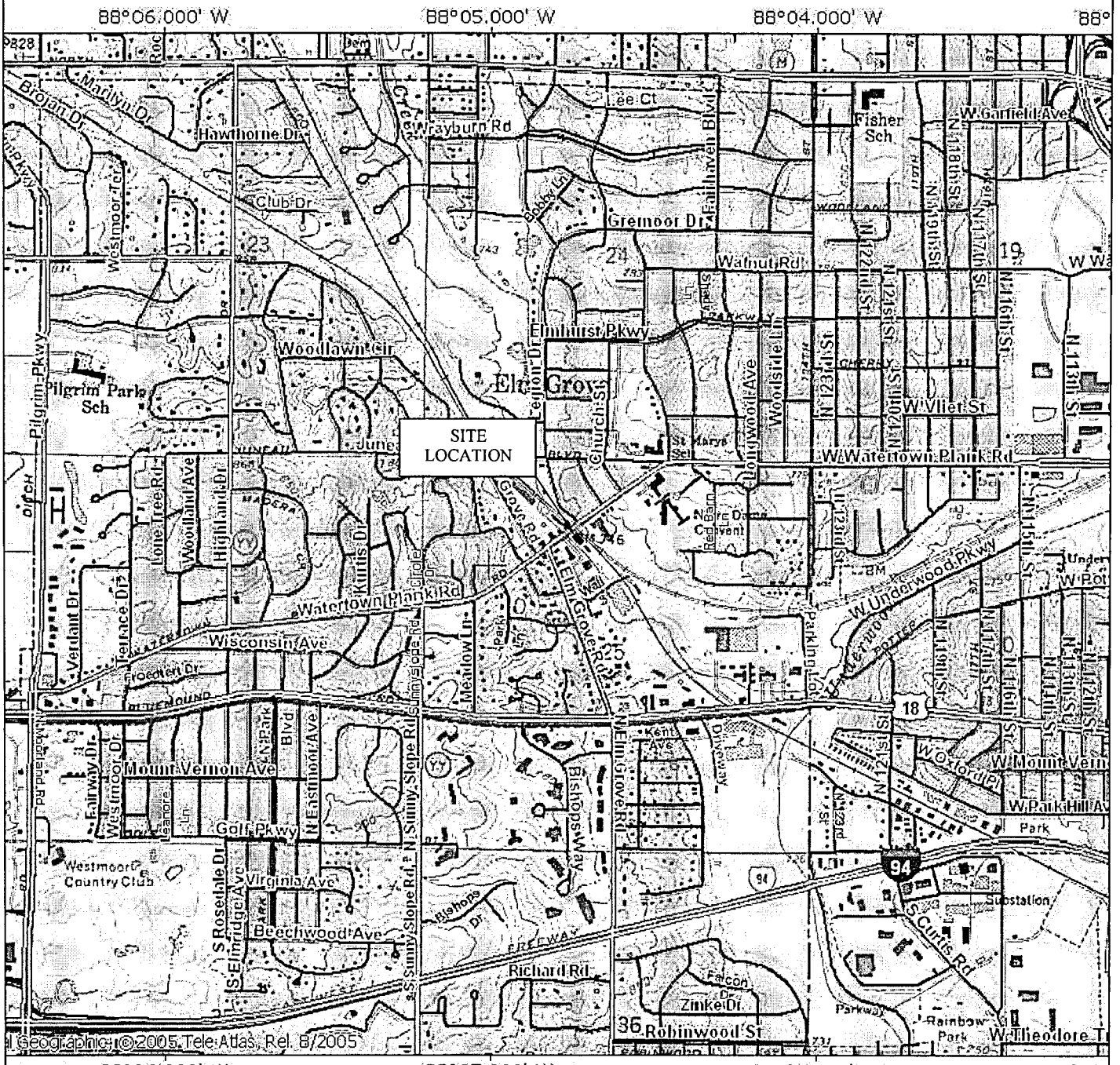
Sincerely yours,

Wayne P Fassbender

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

cc: Andrew Skwierawski, Friebert, Finerty & St. John, S.C.
Ted Warpinski, Friebert, Finerty & St. John, S.C.
Jene Bastian, Travelers Insurance
Daniel Graves, Travelers Insurance

Attachments




Source: US Geological Survey, Wauwatosa, Wisconsin, 7.5 minute quadrangle

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ENVIROforensics
ENVIRONMENTAL FORENSIC INVESTIGATIONS, INC.
602 N. Capitol Ave., Ste 210 • Indianapolis, IN 46204
EnviroForensics.com

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| Date: | 12/6/12 |
| Designed: | SP |
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| DWG file: | 67172-12 |

SITE LOCATION MAP
One Hour Martinizing
13405 Watertown Plank Road
Elm Grove, WI

| Figure |
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| Project |
| 6142 |

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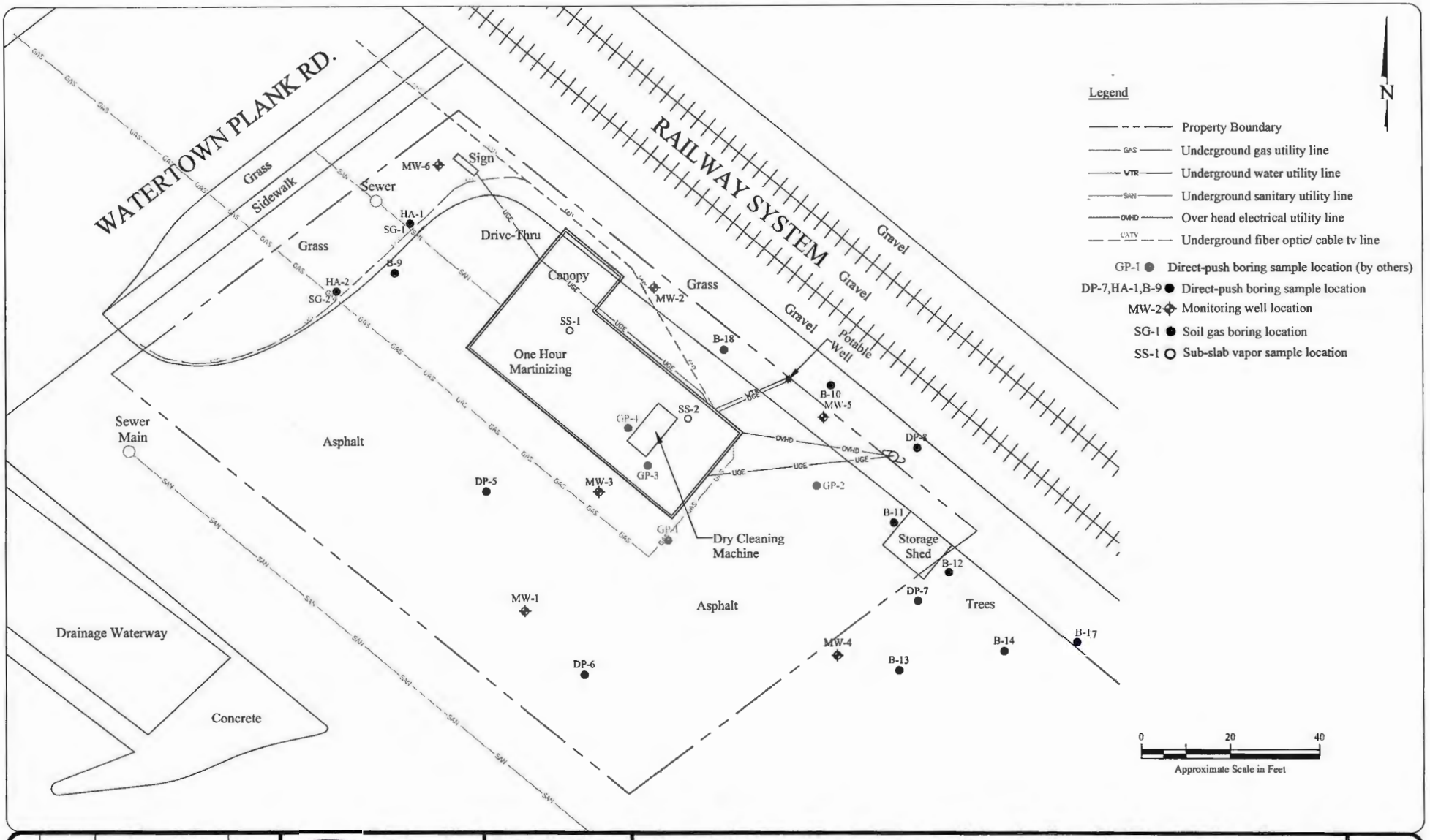


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EnviroForensics.com

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| Date: | 12/6/12 |
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# SITE LAYOUT MAP

One Hour Marinizing
13405 Watertown Plank Road
Elm Grove, WI

| Figure |
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| Project |
| 6142 |

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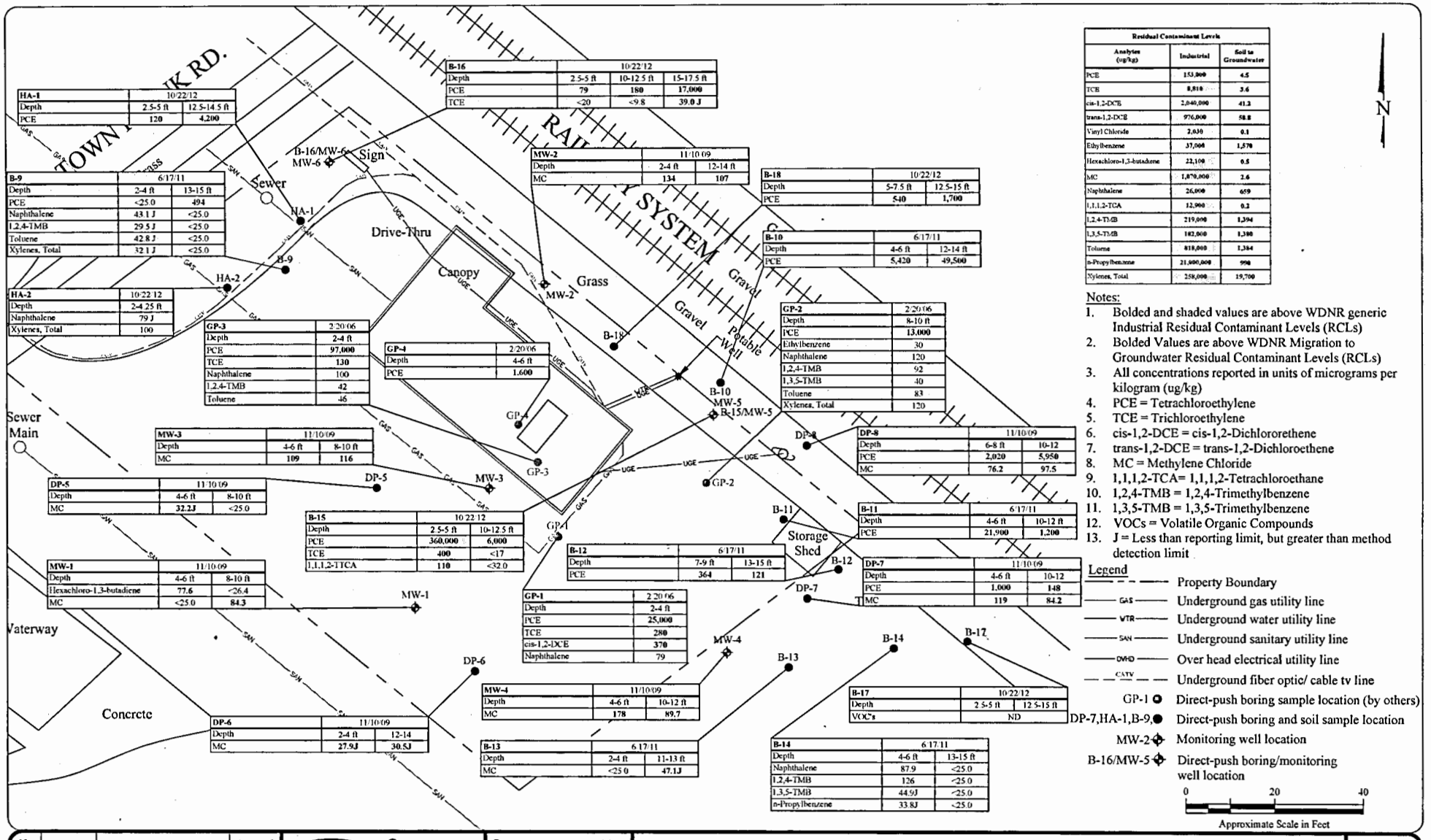


| B-16 | 10/22/12 | | |
|---|---|---|---|
| Depth | 2.5-5 ft | 10-12.5 ft | 15-17.5 ft |
| PCE | 79 | 180 | 17,000 |
| TCE | <20 | <9.8 | 39.0 J |

| HA-1 | 10/22/12 | |
|---|---|---|
| Depth | 2.5-5 ft | 12.5-14.5 ft |
| PCE | 120 | 4,200 |

| MW-2 | 11/10/09 | |
|---|---|---|
| Depth | 2-4 ft | 12-14 ft |
| MC | 134 | 107 |

| B-18 | 10/22/12 | |
|---|---|---|
| Depth | 5-7.5 ft | 12.5-15 ft |
| PCE | 540 | 1,700 |

| B-9 | 6/17/11 | |
|---|---|---|
| Depth | 2-4 ft | 13-15 ft |
| PCE | <25.0 | 494 |
| Naphthalene | 43.1 J | <25.0 |
| 1,2,4-TMB | 29.5 J | <25.0 |
| Toluene | 42.8 J | <25.0 |
| Xylenes, Total | 32.1 J | <25.0 |

| B-10 | 6/17/11 | |
|---|---|---|
| Depth | 4-6 ft | 12-14 ft |
| PCE | 5,420 | 49,500 |

| HA-2 | 10/22/12 |
|---|---|
| Depth | 2-4.25 ft |
| Naphthalene | 79 J |
| Xylenes, Total | 100 |

| GP-3 | 2/20/06 |
|---|---|
| Depth | 2-4 ft |
| PCE | 97,000 |
| TCE | 130 |
| Naphthalene | 100 |
| 1,2,4-TMB | 42 |
| Toluene | 46 |

| GP-4 | 2/20/06 |
|---|---|
| Depth | 4-6 ft |
| PCE | 1,600 |

| GP-2 | 2/20/06 |
|---|---|
| Depth | 8-10 ft |
| PCE | 13,000 |
| Ethylbenzene | 30 |
| Naphthalene | 120 |
| 1,2,4-TMB | 92 |
| 1,3,5-TMB | 40 |
| Toluene | 83 |
| Xylenes, Total | 120 |

| MW-3 | 11/10/09 | |
|---|---|---|
| Depth | 4-6 ft | 8-10 ft |
| MC | 109 | 116 |

| DP-8 | 11/10/09 | |
|---|---|---|
| Depth | 6-8 ft | 10-12 |
| PCE | 2,020 | 5,950 |
| MC | 76.2 | 97.5 |

| DP-5 | 11/10/09 | |
|---|---|---|
| Depth | 4-6 ft | 8-10 ft |
| MC | 32.2J | <25.0 |

| B-15 | 10/22/12 | |
|---|---|---|
| Depth | 2.5-5 ft | 10-12.5 ft |
| PCE | 360,000 | 6,000 |
| TCE | 400 | <17 |
| 1,1,1,2-TTCA | 110 | <32.0 |

| B-11 | 6/17/11 | |
|---|---|---|
| Depth | 4-6 ft | 10-12 ft |
| PCE | 21,900 | 1,200 |

| B-12 | 6/17/11 | |
|---|---|---|
| Depth | 7-9 ft | 13-15 ft |
| PCE | 364 | 121 |

| DP-7 | 11/10/09 | |
|---|---|---|
| Depth | 4-6 ft | 10-12 |
| PCE | 1,000 | 148 |
| MC | 119 | 84.2 |

| MW-1 | 11/10/09 | |
|---|---|---|
| Depth | 4-6 ft | 8-10 ft |
| Hexachloro-1,3-butadiene | 77.6 | <26.4 |
| MC | <25.0 | 84.3 |

| GP-1 | 2/20/06 |
|---|---|
| Depth | 2-4 ft |
| PCE | 25,000 |
| TCE | 280 |
| cis-1,2-DCE | 370 |
| Naphthalene | 79 |

| MW-4 | 11/10/09 | |
|---|---|---|
| Depth | 4-6 ft | 10-12 ft |
| MC | 178 | 89.7 |

| B-17 | 10/22/12 | |
|---|---|---|
| Depth | 2.5-5 ft | 12.5-15 ft |
| VOC's | ND | |

| DP-6 | 11/10/09 | |
|---|---|---|
| Depth | 2-4 ft | 12-14 |
| MC | 27.9J | 30.5J |

| B-13 | 6/17/11 | |
|---|---|---|
| Depth | 2-4 ft | 11-13 ft |
| MC | <25.0 | 47.1J |

| B-14 | 6/17/11 | |
|---|---|---|
| Depth | 4-6 ft | 13-15 ft |
| Naphthalene | 87.9 | <25.0 |
| 1,2,4-TMB | 126 | <25.0 |
| 1,3,5-TMB | 44.9J | <25.0 |
| n-Propylbenzene | 33.8J | <25.0 |

| Residual Contaminant Levels | | |
|---|---|---|
| Analytes (ug/kg) | Industrial | Soil to Groundwater |
| PCE | 153,000 | 4.5 |
| TCE | 8,810 | 3.6 |
| cis-1,2-DCE | 2,040,000 | 41.2 |
| trans-1,2-DCE | 976,000 | 58.8 |
| Vinyl Chloride | 2,030 | 0.1 |
| Ethylbenzene | 37,000 | 1,570 |
| Hexachloro-1,3-butadiene | 22,100 | 0.5 |
| MC | 1,870,000 | 2.6 |
| Naphthalene | 26,000 | 659 |
| 1,1,1,2-TCA | 12,900 | 0.2 |
| 1,2,4-TMB | 219,000 | 1,394 |
| 1,3,5-TMB | 182,000 | 1,380 |
| Toluene | 818,000 | 1,384 |
| n-Propylbenzene | 21,000,000 | 998 |
| Xylenes, Total | 258,000 | 19,700 |

Notes:

1. Bolded and shaded values are above WDNR generic Industrial Residual Contaminant Levels (RCLs)
2. Bolded Values are above WDNR Migration to Groundwater Residual Contaminant Levels (RCLs)
3. All concentrations reported in units of micrograms per kilogram (ug/kg)
4. PCE = Tetrachloroethylene
5. TCE = Trichloroethylene
6. cis-1,2-DCE = cis-1,2-Dichlororethene
7. trans-1,2-DCE = trans-1,2-Dichloroethene
8. MC = Methylene Chloride
9. 1,1,1,2-TCA= 1,1,1,2-Tetrachloroethane
10. 1,2,4-TMB = 1,2,4-Trimethylbenzene
11. 1,3,5-TMB = 1,3,5-Trimethylbenzene
12. VOCs = Volatile Organic Compounds
13. J = Less than reporting limit, but greater than method detection limit

Legend

- Property Boundary
- GAS — Underground gas utility line
- VTR — Underground water utility line
- SAN — Underground sanitary utility line
- OHD — Over head electrical utility line
- CATV — Underground fiber optic/ cable tv line
- GP-1 — Direct-push boring sample location (by others)
- DP-7,HA-1,B-9 — Direct-push boring and soil sample location
- MW-2 — Monitoring well location
- B-16/MW-5 — Direct-push boring/monitoring well location

0 20 40

Approximate Scale in Feet

| No. | Date | Revision | Approved |
|---|---|---|---|
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| | |
|---|---|
| Date: | 12/6/12 |
| Designed: | MM |
| Drawn: | MMM |
| Checked: | WF |
| DWG file: | 61155-10 |

# SOIL ANALYTICAL RESULTS MAP

One Hour Martinizing
13405 Watertown Plank Road
Elm Grove, WI

| Figure |
|---|
| 3 |
| Project |
| 6142 |

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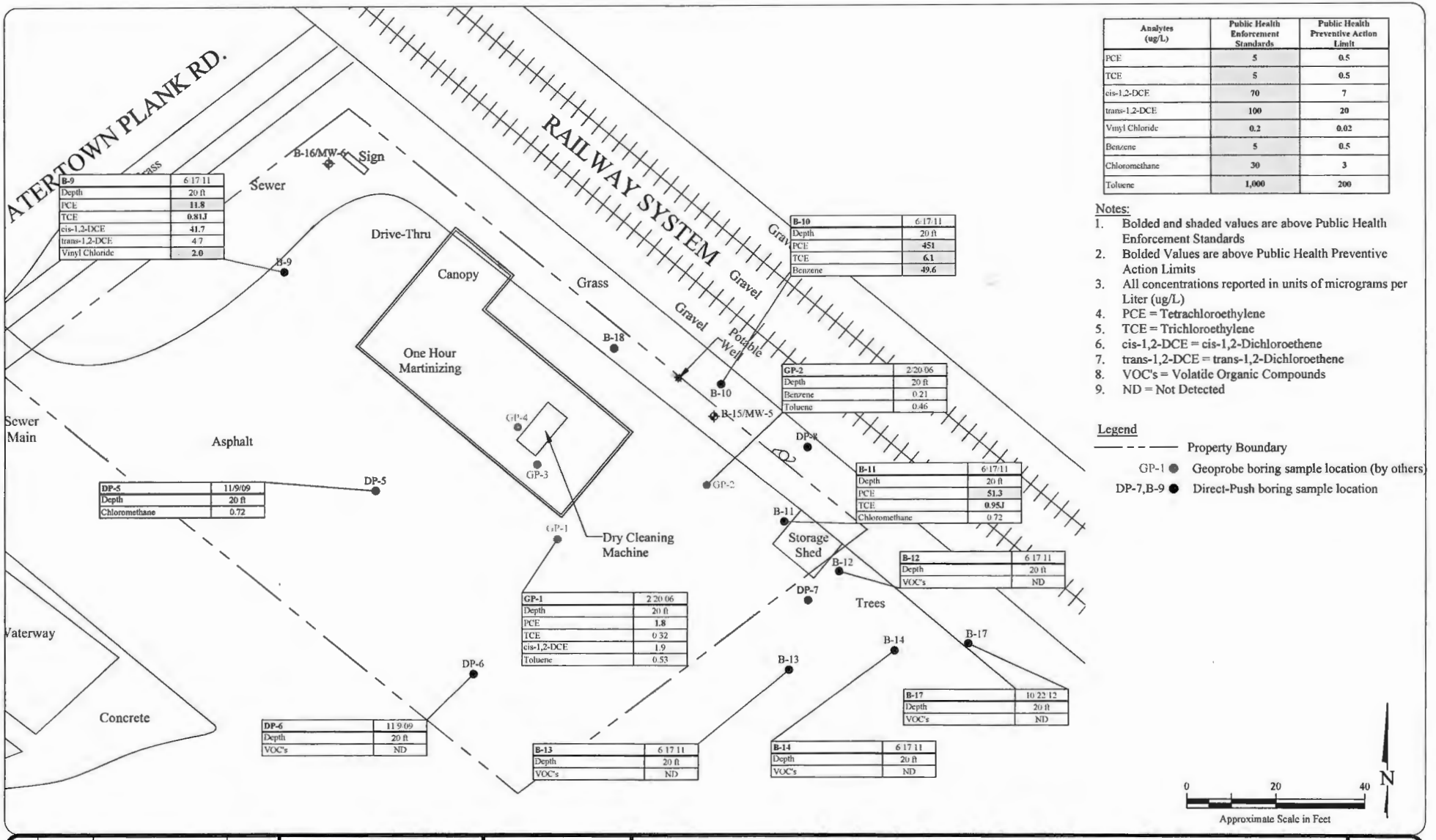


| Analytes (ug/L) | Public Health Enforcement Standards | Public Health Preventive Action Limit |
|---|---|---|
| PCE | 5 | 0.5 |
| TCE | 5 | 0.5 |
| cis-1,2-DCE | 70 | 7 |
| trans-1,2-DCE | 100 | 20 |
| Vinyl Chloride | 0.2 | 0.02 |
| Benzene | 5 | 0.5 |
| Chloromethane | 30 | 3 |
| Toluene | 1,000 | 200 |

Notes:

1. Bolded and shaded values are above Public Health Enforcement Standards
2. Bolded Values are above Public Health Preventive Action Limits
3. All concentrations reported in units of micrograms per Liter (ug/L)
4. PCE = Tetrachloroethylene
5. TCE = Trichloroethylene
6. cis-1,2-DCE = cis-1,2-Dichloroethene
7. trans-1,2-DCE = trans-1,2-Dichloroethene
8. VOC's = Volatile Organic Compounds
9. ND = Not Detected

Legend

Property Boundary

GP-1 Geoprobe boring sample location (by others)

DP-7,B-9 Direct-Push boring sample location

| No. | Date | Revision | Approved |
|---|---|---|---|
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| | |
|---|---|
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| Designed: | MM |
| Drawn: | MMM |
| Checked: | WF |
| DWG file: | 61155-10 |

# GRAB GROUNDWATER RESULTS MAP

One Hour Martinizing
13405 Watertown Plank Road
Elm Grove, WI

| Figure |
|---|
| 4 |
| Project |
| 6142 |

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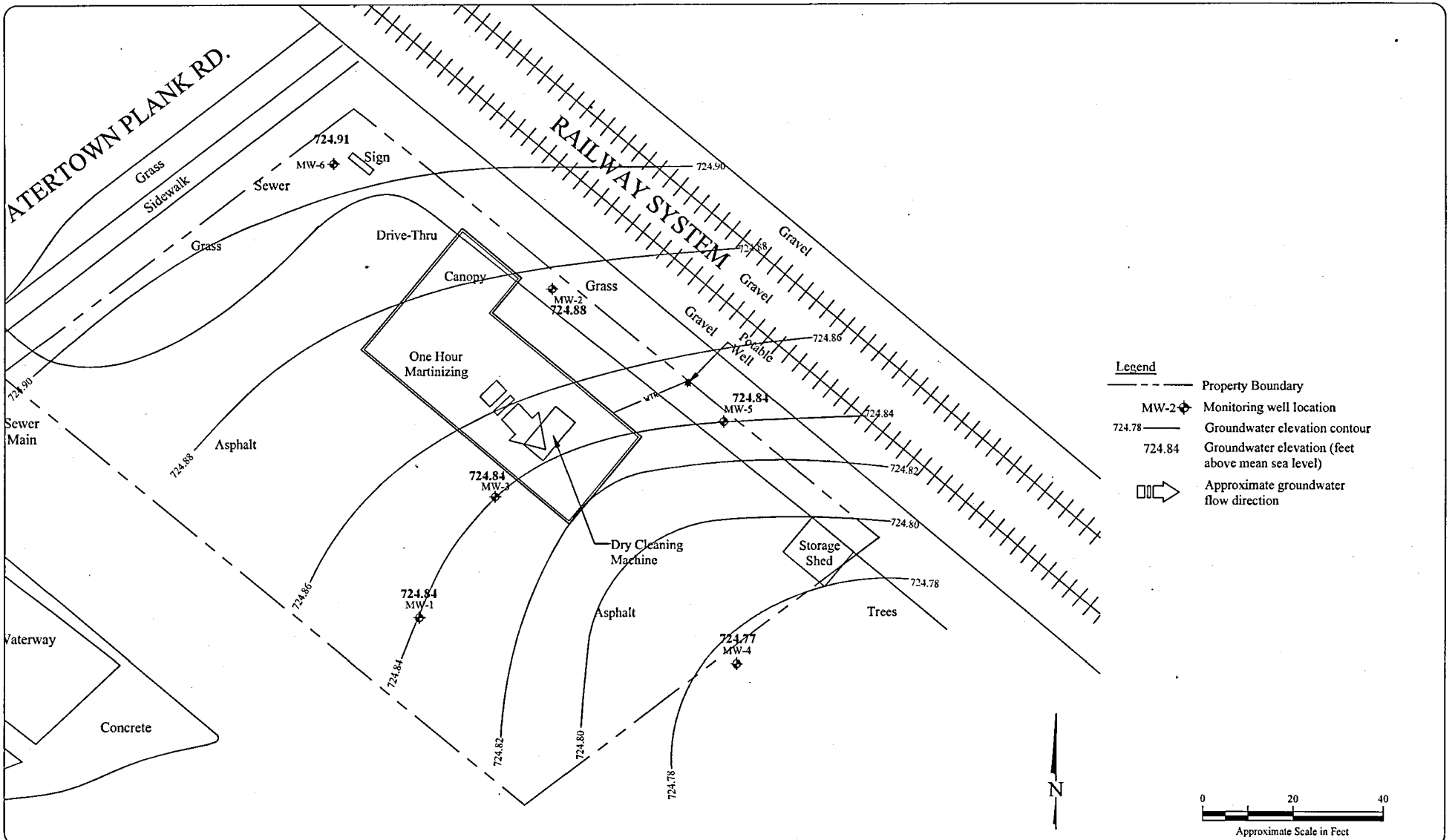


| No. | Date | Revision | Approved |
|---|---|---|---|
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| Designed: | MM |
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| Checked: | WF |
| DWG file: | 61155-10 |

# POTENTIOMETRIC SURFACE CONTOUR MAP - 4th QTR 2012

One Hour Martinizing
13405 Watertown Plank Road
Elm Grove, WI

| Figure |
|---|
| 5 |
| Project |
| 6142 |

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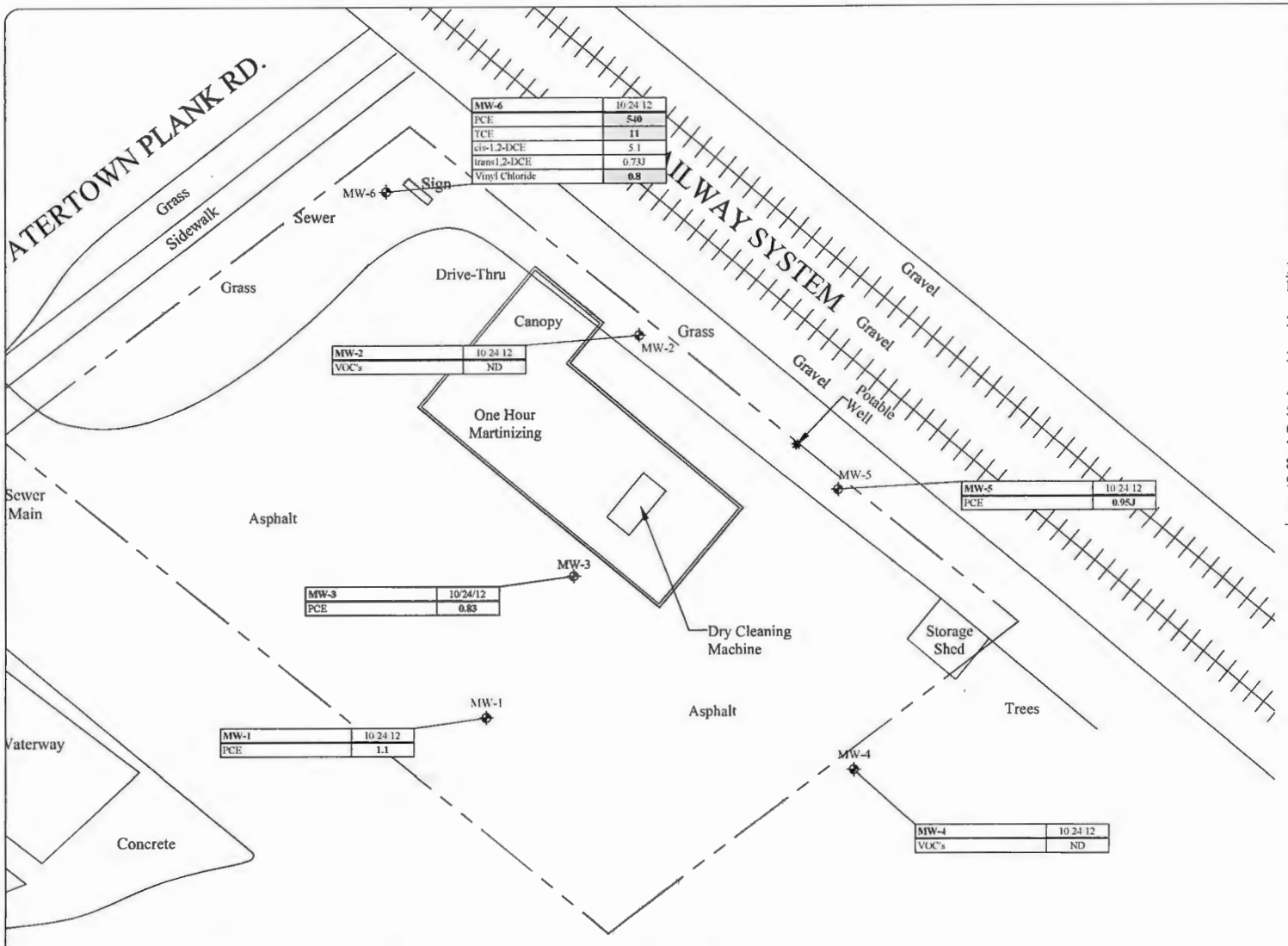


| Analytes (ug/L) | Public Health Enforcement Standards | Public Health Preventive Action Limit |
|---|---|---|
| PCE | 5 | 0.5 |
| TCE | 5 | 0.5 |
| cis-1,2-DCE | 70 | 7 |
| trans-1,2-DCE | 100 | 20 |
| Vinyl Chloride | 0.2 | 0.02 |
| Benzene | 5 | 0.5 |
| Naphthalene | 100 | 10 |
| 1,2,4-Trimethylbenzene | 480 | 96 |

Notes:
1. Bolded and shaded values are above Public Health Enforcement Standards
2. Bolded Values are above Public Health Preventive Action Limits
3. All concentrations reported in units of micrograms per Liter (ug/L)
4. PCE = Tetrachloroethylene
5. TCE = Trichloroethylene
6. cis-1,2-DCE = cis-1,2-Dichloroethene
7. trans-1,2-DCE = trans-1,2-Dichloroethene
8. VOC's = Volatile Organic Compounds
9. ND = Not Detected

Legend

Property Boundary

MW-2 Monitoring well sample location

0 20 40 N

Approximate Scale in Feet

| No. | Date | Revision | Approved |
|---|---|---|---|
| | | | |
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| | |
|---|---|
| Date: | 12/6/12 |
| Designed: | MM |
| Drawn: | MMM |
| Checked: | WF |
| DWG file: | 61155-10 |

# GROUNDWATER ANALYTICAL RESULTS MAP

One Hour Martinizing
13405 Watertown Plank Road
Elm Grove, WI

| Figure |
|---|
| 6 |
| Project |
| 6142 |

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