

# SUPERFUND PRELIMINARY ASSESSMENT

STERLING DRY CLEANERS  
City of Appleton, Wisconsin  
CERCLIS ID WIN #000510415

Prepared by:  
Wisconsin Department of Natural Resources  
Northeast Region

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Prepared by:

Kathleen M. Sylvester, Hydrogeologist  
Oshkosh Service Center  
Wisconsin Department of Natural Resources


Date: September 10, 2012



Reviewed by:

Annette Weissbach, Hydrogeologist  
WDNR Site Assessment Team  
Northeast Region Office – Green Bay

Date: September 10, 2012



Approved by:

Patrick Hamblin  
NPL Coordinator Region 5  
Division of Superfund  
U.S. Environmental Protection Agency

Date: 9/11/12

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### **Abbreviations/Acronyms:**

AFD	= Appleton Fire Department
bgs	= below ground surface
BRRTS	=Bureau for Remediation and Redevelopment Tracking System
CERCLA	= Comprehensive Environmental Response Compensation Liability Act of 1980
cisDCE	= cis 1,2-Dichloroethene
CVOC	= Chlorinated Volatile Organic Compounds
DERP	= Dry Cleaner Environmental Response Program
ER	= Environmental Restoration
ES	= Enforcement Standard(ch. NR 140, WAC)
HRC-X®	= Hydrogen Releasing Compound- Extended ®
OMNNI	= OMNNI Associates, Inc.
PA	= Preliminary Assessment
PCE	= Tetrachloroethene (aka Perchloroethene)
PRP	= Potential Responsible Party
SARA	= Superfund Amendments and Reauthorization Act of 1986
SDC	= Sterling Dry Cleaners
SERAS	= Scientific Engineering Response and Analytical Services
SSDS	= Sub-Slab Depressurization System
SSI	= Site Screening Inspection
START	= Superfund Technical Assessment and Response Team
TCE	= Trichloroethene
$\mu\text{g}/\text{m}^3$	= micrograms per cubic meter
$\mu\text{g}/\text{kg}$	= micrograms per kilogram
$\mu\text{g}/\text{L}$	= micrograms per liter
US EPA	= U.S. Environmental Protection Agency
VC	= Vinyl Chloride
VMS	= Vapor Mitigation System
VOC	= Volatile Organic Compounds
WAC	= Wisconsin Administrative Code
WDHS	= Wisconsin Department of Health Services
WDNR	= Wisconsin Department of Natural Resources

## 1.0 INTRODUCTION

Under authority of the Comprehensive Environmental Response Compensation Liability Act of 1980 (CERCLA), and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Wisconsin Department of Natural Resources (WDNR) was tasked by the United States Environmental Protection Agency (U.S.EPA) to conduct a Preliminary Assessment (PA) at Sterling Dry Cleaners (SDC) as part of the fiscal year 2012 - 2013 Cooperative Agreement.

The purpose of this PA is to collect information concerning current conditions at SDC (CERCLIS ID WIN000510415) located at 304 W. Wisconsin Street, Appleton, Outagamie County, Wisconsin sufficient to assess the threat posed to human health and the environment and to determine the need for additional CERCLA/SARA or other appropriate action. The scope of the assessment includes review of available file information, a comprehensive target survey and an on- and off-site reconnaissance.

U.S.EPA performed a Removal Assessment of air, soil and groundwater in March 2010. An U.S.EPA Removal Action was conducted in 2010, and was documented in a report dated December 6, 2010 ([Reference 1](#)). In May 2011, U.S.EPA performed a Post-Removal Action Assessment to evaluate the effects of the remedial actions on soil, groundwater, and air ([Reference 10](#)). Post-excavation work thus far indicates the need for additional soil and groundwater sampling.

## 2.0 PROPERTY OWNERSHIP AND OPERATOR

The property has been owned by Sterling Enterprises of Wisconsin, Inc. since 1999. SDC is currently operated by Ms. Myra K. Chung, President of Sterling Enterprises of Wisconsin, Inc. More detailed information is provided in Section 4.

## 3.0 PROPERTY DESCRIPTION

### 3.1 Physical Features

The SDC property consists of a 0.23 acre parcel of land located in the SE ¼ of the SW ¼ of section 23, T21N, R17E, City of Appleton, Outagamie County, Wisconsin. The Outagamie County Parcel ID No. is 316093900. The regional location of the site is shown on [Figure 1](#). The site address is 304 W. Wisconsin Street in the City of Appleton and includes "All of LOT 1 AND E23FT OF LOT 2 BLK 31 in the SIXTH WARD PLAT 6WD LESS DOC #1867125 FOR R/W" ([Reference 2](#)). As described in the "Approval and Funding for a Removal Action at the Sterling Dry Cleaners Site" document prepared by U.S.EPA and dated July 27, 2010, the Coordinates for the site are 44.2730 North latitude and 88.4091 West longitude ([Reference 1](#)).

### 3.2 Surrounding Land Uses

The SDC property is physically bounded on the north and west by residential properties, on the east by North Superior Street and on the south by West Wisconsin Avenue ([Figure 2](#)). Commercial properties lie to the east and south of these streets.

### 3.3 Environment & Geology

The climate of Outagamie County is continental and characterized by cold to very cold winters and mild to warm summers. The average winter temperatures are 15° to 30° F and average summer

temperatures range from 67° to 72° F. The average annual precipitation is 31 inches. The prevailing winds are from the west in the winter and the southwest for the remaining seasons(Reference 12).

The SDC property is located in the Lower Fox River Basin in the City of Appleton, Wisconsin (Figure 1). Topography on and off site is relatively flat (Reference 13). Regional groundwater flow is generally southeast toward the Fox River. Shallow groundwater flow direction is relatively flat and tends to be strongly influenced by nearby underground utilities along both Wisconsin Avenue and Superior Street. Depth to groundwater at the property ranges approximately from 3 to 8 feet below ground surface (bgs)(Reference 11). The elevation at the property is about 800 feet above mean sea level (Reference 13).

The surficial soils on the property and in the area are mapped as the Kewaunee silt loam, Winneconne-Manawa association and consist of slowly permeable soils underlain by silty clay glacial till and lacustrine sediments (Reference 12). Previous sampling identified brown to red brown clay as the predominant subsurface soil type to a depth of 13.5 feet(Reference 11).

Regionally, two distinct aquifers are recognized in the Fox-Wolf River basin. The groundwater in Outagamie County moves within glacial drift, which serves as the unconfined (water table) system. In addition, a deeper confined bedrock aquifer comprised of an interbedded Cambrian and Ordovician dolomites and sandstones, called the Cambro-Ordovician aquifer, occurs in this area. Only minor yields of good quality groundwater are obtained from the drift aquifer, therefore, use of the aquifer is restricted to sporadic domestic uses in the rural areas. The Cambro-Ordovician aquifer is the most widely-used aquifer in the basin and yields large quantities (500 to 1,000 gallons per minute) of groundwater for municipal water supplies(Reference 12). The City of Appleton obtains municipal water from Lake Winnebago which is located upgradient of the SDC facility. Therefore, there is no risk to local drinking water supplies from the contamination at the SDC property. There are no targets in the groundwater pathway from an aquifer usage perspective.

#### **4.0 PROPERTY HISTORY**

The SDC property has been a dry cleaning facility since 1954. Prior to 1954 it was a residential parcel. The on-site building was built in 1954 and operated under the name "Avenue Dry Cleaners" until 1977. From 1977 to 1990, Mr. Dale M. Scharine owned the site but the dry cleaning business was operated by Mr. So Man Chu. In 1990, Mr. So Man Chu purchased the property and continued dry cleaning operations under the name "So's Custom Tailors and Dry Cleaning". On January 4, 1998, there was a fire at the building which caused substantial damage (Reference 3). In September 1998, F&M Bank filed an Action for Foreclosure on the property against Mr. Chu.

F&M Bank retained OMNNI Associates, Inc.(OMNNI) to conduct a preliminary soil and groundwater investigation at the site in May 1999 (Reference 4). Significant impacts to soil and groundwater were identified during the investigation (Table 1A and Table 6). The WDNR was not informed of this information at the time.

On June 11, 1999 the property was sold at a Sheriff's Auction to Mr. Young Kim. Mr. Kim began reconstruction of the dry cleaning business. During reconstruction work on June 16, 1999, a contractor for Mr. Kim discovered an overturned 55-gallon drum near the back door of the building (north end) and contacted the Appleton Fire Department (AFD). The WDNR was contacted for Spill Response. The WDNR's Emergency Response contractor, U. S. Petroleum Equipment, responded to the spill. Surface soils in the immediate spill area were excavated and drummed for proper

disposal. WDNR assigned case number #04-45-255919 under WDNR's Bureau for Remediation and Redevelopment Tracking System (BRRTS). Mr. Kim did not speak English and the WDNR misunderstood the current ownership of the property. WDNR understood that the property had not yet been sold on Sheriff's Auction, and in order to make future purchasers aware of the necessity for investigation and cleanup, the WDNR administratively "closed" the spill action in order to place the site notification onto the publicly available WDNR's property tracking website (BRRTS on the Web). Mr. Young Kim filed a Quit Claim Deed on June 18, 1999 transferring the property to his business operation, Sterling Enterprises of Wisconsin, Inc.

Mr. Kim operated the business, SDC, until December 2007 when he apparently sold 100% of the stock for Sterling Enterprises of Wisconsin, Inc. to Mr. Jae Cho. Mr. Cho contacted the WDNR in approximately June 2008 and discussed eligibility in the Dry Cleaner Environmental Response Program (DERP). It was then that the WDNR became aware of the May 1999 work by OMNNI.

On September 28, 2011, Mr. Cho sold 100% of the stock for Sterling Enterprises of Wisconsin, Inc. to Ms. Myra Kim Chung, who currently operates SDC.

## **5.0 REGULATORY HISTORY and PREVIOUS INVESTIGATIONS**

In June 2008, when Mr. Cho contacted the WDNR regarding eligibility for DERP funding, WDNR did a search into the history of the property. During a conversation with OMNNI, the WDNR became aware of the May 1999 work by OMNNI and subsequently discovered the June 1999 spill documentation. OMNNI obtained permission from F&M Bank to release the "Preliminary Soil and Groundwater Investigation" report to WDNR on August 12, 2008 ([Reference 4](#)). The WDNR then notified Mr. Cho of his responsibilities to investigate and restore the property per s. 292.11(3), Wisconsin Statutes in a letter dated August 14, 2008 ([Reference 5](#)).

On May 21, 2009, the WDNR sent a letter to Mr. Cho stating that it had determined that SDC was financially unable to proceed with the necessary investigation and remediation of the site. A deed affidavit ([Reference 6](#)) was filed by WDNR on the property on July 27, 2009 placing a notice of contamination at the property.

In January 2010, the WDNR requested that U.S.EPA conduct a removal assessment at SDC. During the week of March 7, 2010, EPA and Scientific Engineering Response and Analytical Services (SERAS) collected air, soil, and groundwater samples from the SDC property and neighboring properties. Tetrachloroethene (PCE) and its degradation products were detected on and off site in soil, groundwater, and air. Soil concentrations of PCE were detected as high as 463,000 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ); groundwater concentrations of PCE ranged up to 36,600 micrograms per Liter ( $\mu\text{g}/\text{L}$ ); indoor air concentrations at the site were up to 313,000 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). Indoor air concentrations off-site were as high as  $24.1\mu\text{g}/\text{m}^3$  ([Reference 7](#)). Based on these results, the WDNR requested that U.S.EPA conduct an expanded assessment to determine if additional properties had been impacted by historic PCE releases from SDC, pursue enforcement against potentially responsible parties (PRP), and to conduct a removal action at SDC.

On July 27, 2010, U.S.EPA signed an Action Memorandum ([Reference 8](#)) to conduct a time-critical removal at the SDC property. On September 22, 2010, U.S. EPA, Weston Solutions, the Superfund Technical Assessment and Response Team (START), and Environmental Restoration, LLC (ER) mobilized to the SDC property where removal activities were conducted from September 22-30, 2010 and from November 3-4, 2010 ([Reference 9](#)). A total of approximately 164 tons of hazardous waste

contaminated soils were removed for disposal at the Michigan Disposal Waste Treatment Plant. Numerous limitations prevented a complete removal of the source area contamination. Specifically, the active dry cleaning business was present immediately adjacent to the excavation, mature trees are located immediately west, power lines stretched directly over the excavation area, an active gas line and abandoned utility pipe extended into the southern extent of the excavation, and two fiber optic lines extended through the suspected center of the source area. All these factors severely limited the northern extent of the excavation. As a result of these limitations, ER Applied Regenesi Hydrogen Release Compound - Extended (HRC-X<sup>®1</sup>) at the base and sidewalls of the excavation, prior to backfilling the excavation, to enhance microbial activity and degradation of the remaining chlorinated contaminants. The depth of the excavation extended just 3-4 feet bgs in the southeast corner of the excavation, 4-5 feet bgs along the southern edge and southwest corner of the excavation and to 9 feet bgs in the northwest, central and northeast portions of the excavation. The excavation was backfilled with clear stone, followed by compacted clay, and paved with concrete. Rock Road Plumbing installed a vapor intrusion abatement system in the residence at Unit 002 adjacent to the excavation.

From May 2 to 5, 2011, U.S. EPA and SERAS personnel performed additional site sampling to evaluate the effectiveness of the Removal Action and residual impacts in soil, groundwater, and indoor air ([Reference 10](#)). In July 2011, the WDNR installed five permanent monitoring wells to evaluate the effectiveness of the Removal Action over time. Post-excavation sampling revealed that additional site investigation is necessary. Additional semi-annual groundwater sampling at these five monitoring wells continues through spring of 2013 by WDNRs' consultant, Terracon ([Reference 11](#)).

## 6.0 REVISED PATHWAY ANALYSIS

The purpose of this section is to conduct a revised pathway analysis to include information regarding current site conditions. Several phases of soil, groundwater, and vapor sampling occurred between 1999 and 2012. In 2009, the SDC owner notified the WDNR that he was unable to financially proceed with further investigation and remediation. The WDNR requested assistance from U.S. EPA Removal program in assessing soil, groundwater, and vapor risks in the area. Environmental sampling conducted by U.S. EPA, WDNR, and their contractors in 2010 through 2012 established the presence of several exceedances of ch. NR 140 Wisconsin Administrative Code (WAC) groundwater standards on the property in addition to soil and air exceedances. Refer to [Figure 3](#) for the locations of all soil borings/temporary monitoring wells, permanent monitoring wells, and air sampling. Separate figures for each media are also provided in [Figures 4, 5, and 6](#).

Impacts to targets have been identified and trends in groundwater contaminant concentrations are being developed. PCE and its degradation products, trichloroethene (TCE), cis-1,2-dichloroethene (cisDCE), and vinyl chloride (VC) were detected on and off site in soil, groundwater, and/or air. Several sampling events occurred between 1999 and 2011, with soil concentrations of PCE detected as high as 15,000,000 µg/kg; groundwater concentrations ranged up to 36,600 µg/L; indoor air concentrations as high as 313,000 µg/m<sup>3</sup> on site within the active dry cleaner and 24.1 µg/m<sup>3</sup> in an off-site residence ([Reference 7](#)).

The WDNR is continuing the groundwater monitoring and plans to proceed with a Sampling Plan for a Screening Site Inspection (SSI) for additional soil and groundwater analysis.

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<sup>1</sup>Regenesi HRC-X is a controlled-release, electron donor material, that when hydrated is specifically designed to produce an extended, controlled release of lactic acid and enhances natural degradation of CVOCs.



## 6.1 Analytical Results

### Soil Results

Several phases of soil sampling have occurred at the SDC property. During OMNNI's investigation in May 1999 (Reference 4) chlorinated volatile organic compounds (CVOC) contamination was identified at significant concentrations in soil. For example, PCE was found at 20,000 µg/kg at 3-5 feet bgs at boring B-2 (Table 1A). During a spill from a 55-gallon drum stored outside in June 1999, PCE was found in soil at 15,000,000 µg/kg (Table 1B). In March 2010, U.S. EPA Removals drilled ten soil borings (SB01-SB10) to assess the risk to human health. Soil boring SB05 located near the June 1999 spill area had significantly high levels of CVOCs including: PCE at 463,000 µg/kg (4.5-5' depth), TCE at 155,000 µg/kg (6-6.5'), cisDCE at 7,180 µg/kg (6-6.5'), and due to elevated detections limits, VC was not detected above 5,950 µg/kg (6-6.5') (Table 2). With these results, U.S. EPA wrote an Action Memo dated July 27, 2010 to perform a time-critical removal (Reference 8).

U.S. EPA Removals mobilized on September 22 to September 30, 2010 (Reference 9) and excavated and disposed of ten (10) 20-cubic yard roll-off boxes from the source area on the north side of the SDC building. Confirmation soil samples were collected on the sidewalls and base of the excavation (borings SO1-SO6) (Table 3). Results of these confirmation samples ranged from 1600 to 54,000 µg/kg for PCE and showed that significantly impacted soil still remains both horizontally and vertically in the area; however, underground utilities and structural impediments did not allow for further excavation. Specifically, the active dry cleaning business was present immediately adjacent to the excavation, mature trees were located immediately west, power lines stretched directly over the excavation area, an active gas line and abandoned utility pipe extended into the southern extent of the excavation, and two fiber optic lines extended through the suspected center of the source area. These factors severely restricted the depth and the northern extent of the excavation.

On May 3, 2011, U.S. EPA collected four post-excavation soil samples: SB-24 (5-5.5' depth), SB-25 (5.5-6' depth), SB-26 (9-9.5' depth), and SB-27 (5-5.5' depth) (Table 4). On July 13, 2011, WDNR and their contractor collected the following soil samples during the installation of monitoring well borings: MW-1 (1-2' and 6-7' depths), MW-2 (3-4', 9-10', and 12-13' depths), MW-3 (4-5' and 9-10' depths), MW-4 (3-4' and 7-8' depths), and MW-5 (3-4' and 7-8' depths) (Table 5). Almost all soil samples indicated moderate to high concentrations of PCE, TCE, cisDCE, and VC remain in the soils at the property. Soil results ranged from 428 to 298,000 µg/kg for PCE. The highest concentrations were detected in the area of former boring locations SB-25, SB-26 and MW-2, directly north of the northern service door, off the concrete. Detections of PCE in soil at MW-2 were: 4,050 µg/kg at 3-4'; 298,000 µg/kg at 9-10'; and 35,500 µg/kg at 12-13'.

### Groundwater Results

Initial groundwater results were obtained in temporary borings by OMNNI Associates, Inc. in May 1999 (Reference 4) which detected concentrations of PCE as high as 13,000 µg/L at temporary well TW-2 (Table 6). During the U.S. EPA Removal assessment work in March 2010 groundwater samples were obtained from the borings for temporary wells TW-01 to TW-10 (Reference 7). Well TW-05 was located directly north of the northern service door, off the concrete and had the highest concentrations of PCE in groundwater at 36,600 µg/L (Table 7). During the U.S. EPA Removal Action in September 2010, HRC-X® was added into the excavation to further enhance biodegradation of the remaining inaccessible contaminants in saturated soil and groundwater.

In May 2011 U.S. EPA performed post-excavation assessment sampling of groundwater in three temporary wells, TW-24, TW-25, and TW-26. Groundwater results indicated that significant

concentrations of CVOC remain at the site. TW-26 contained the highest remaining concentrations of PCE at 21,100 µg/L, TCE at 1820 µg/L cisDCE at 3440 µg/L, and VC at 1.4 µg/L (Table 8).

In July 2011, five permanent monitoring wells (MW-1 thru MW-5) were installed by the WDNR contractor and are currently being sampled for four semi-annual events. The highest groundwater concentrations were detected in well MW-2. In the August 2011 sampling event, CVOCs were detected as follows: PCE at 1500 µg/L, TCE at 1920 µg/L, cisDCE at 17,000 µg/L, and VC at 425 µg/L. In the February 2012 sampling event detections of CVOCs were as follows: PCE at 419 µg/L; TCE at 109 µg/L; cisDCE at 18,400 µg/L; and VC at 2,330 µg/L (Table 9).

Historical groundwater analytical data (Tables 6, 7, 8, 9, & 10) indicate the presence of CVOC at levels that are above the WDNR ch. NR 140 WAC Enforcement Standards (ES). These standards are similar, if not exactly equivalent to the Federal Drinking Water Standards for most compounds. The following is a summary of the contaminants of concern that have exceeded the ES in one or more monitoring wells at the site during the 2011 to 2012 sampling events: PCE, TCE, cisDCE, and VC. The concentrations detected in August 2011 and February 2012 indicate that natural degradation is occurring at the site (Table 9 and 10) and this degradation is likely due to the application of HRC-X®.

### Surface Water

Samples from the nearest surface water, the Fox River, have not been collected specifically related to the SDC property primarily because the property is an urbanized part of the City and over one mile from the Fox River. There is no likelihood of an observed release to surface water by overland flow, flood, or runoff. The Fox River is not directly used for drinking water. The City of Appleton uses surface water from Lake Winnebago for its drinking water and the intake is several miles upgradient of the site.

### Air Results

In 2010, U.S.EPA Removals assessed the air in and adjacent to the SDC property to evaluate any potential for vapor migration (References 1, 7, & 10). It should be noted that in November 2011, the action limit for TCE in residential indoor air was updated from 10 µg/m<sup>3</sup> to 2.1 µg/m<sup>3</sup> and, in May 2012, the action limit for PCE in residential indoor air was updated from 4.1 µg/m<sup>3</sup> to 42 µg/m<sup>3</sup>. All air results are shown in Tables 11, 12, 13, & 14. SDC is an operating dry cleaner and exceedances of the commercial action limit for indoor air were expected at the business (Table 12); however, the concentrations were below Occupational Safety and Health Administration limits.

The indoor air levels at the residence at Unit 002 (north of the SDC property) were above the action limits at the time of investigation, and a vapor mitigation system (VMS) was installed in September 2010, specifically a sub-slab depressurization system (SSDS). Results of air sampling in May 2011, after the installation of the mitigation system, indicated that concentrations were reduced but still above the acceptable levels. Upon further investigation it was discovered that the exhaust system at the SDC property was located out the north side of the dry cleaner building and air flowed toward the residence at Unit 002. The home's heating/air system was in effect drawing in contaminated ambient air. In August 2011, U.S.EPA and its contractor, ER, remobilized to the SDC property to reconstruct the exhaust system in order to vent the emissions away from neighboring homes (Table 11).

Due to access issues, the residence at Unit 004 (west of the SDC property) was sampled by Wisconsin Department of Health Services (WDHS). Two indoor air samples were taken (basement and 1<sup>st</sup> Floor) and also an ambient air sample outside in the northeast corner of the property (Table 13). The

concentration of PCE in indoor air at Unit 004 residence was above the 2010 action limit; however, it could not be attributed to sub-slab migration. Levels are below the current action limit of 42  $\mu\text{g}/\text{m}^3$ . The outside air sample was located on a support beam on the back carport, and was also very close to the privacy fence and old exhaust vent at SDC, which may explain the significant detection of PCE at the ambient air sample location.

Air sampling was also performed at Unit 005 residence located adjacent to and north of Unit 002. These results initially indicated a potential problem; however, subsequent sampling indicated that indoor and outdoor air did not measure any of the contaminants of concern (Table 14).

## 6.2 Direct Contact Pathway

Approximately twenty Volatile Organic Compounds (VOC) were detected in soils at the SDC property. Concentrations of CVOC such as PCE, TCE, cisDCE, and VC were significantly high and caused vapor concerns on and offsite. In September 2010, U.S.EPA excavated a major portion of contaminated soil to a maximum depth of ten feet; and thus minimized the continued threat to the direct contact pathway (Reference 9) and also its effect on groundwater and air.

The remaining waste mass is currently capped with concrete, building structure, and grass. Additional off-site borings are planned on properties to the west and northwest to further assess any further off-site direct contact concerns. This work will be scoped in the Sampling Plan for the SSI.

There are three on-site workers and customers that enter and exit the site on a regular basis. Residential properties border the site to the north and west. There are two schools, two child care, and three assistant living centers within one mile of the site. Soil contamination has been observed both on and offsite, but the full extent of direct contact exposure is not yet known. Additional access to adjacent off-site properties has been acquired and additional soil sampling is planned in September 2012.

## 6.3 Groundwater Pathway

The SDC site is located in a residential/commercial area in the City of Appleton limits. The 2012 estimated population of the City of Appleton, Wisconsin is 72,623 (Reference 14). The majority of the population within a 4-mile radius for groundwater (Figures 7A and 7B) relies on treated surface water from Lake Winnebago. Rural areas at the 2-4 mile distance may have private or community water wells that are set into bedrock generally greater than 50 foot depth. Contamination from the SDC site is not expected to endanger any water supply wells or surface water due to soil type and distance.

Water supply sources from the census block data (Reference 14) identify the following information:

Distance from site →	0 – ¼ mile	¼ - ½ mile	½ – 1 mile	1 – 2 mile	2 – 4 mile
City Population on Municipal Water (treated surface)	1335	4382	12,433	31,445	62,620

At this time, the measured groundwater impacts are unlikely to affect drinking water supplies to the City of Appleton and surrounding areas. Continued groundwater monitoring will proceed under guidance from the WDNR Remediation & Redevelopment Program and NR 700 WAC requirements. Additional monitoring wells are planned to be installed in fall of 2012 and sampling will be included in the upcoming Sampling Plan for the SSI.

As stated above there are no groundwater targets from an aquifer usage perspective, however, there is a strong likelihood that groundwater may be contributing to off-site vapor migration. Not all vapor migration pathways have been addressed. Vapor impacts from soil and (exhaust) air have been observed and are partially mitigated. However, vapor intrusion from groundwater to on- and offsite utilities and other underground lines is unknown. Therefore the installation of additional monitoring wells is deemed necessary to complete the evaluation of the vapor intrusion pathway.

#### **6.4 Surface Water Pathway**

The surface water pathway will not be evaluated. Contaminated groundwater is not migrating from the subject property and discharging to the Fox River, or other surface water body, consequently surface water sampling is not warranted.

The nearest surface water is the Fox River which is located approximately one mile north from the SDC property. SDC is in an urbanized area with storm water and sanitary sewer controls. Due to distance and topography, there is no likelihood of an observed release to surface water by overland flow, flood or runoff. The SDC property is capped with asphalt, concrete, and buildings. Groundwater is present in slowly permeable soils underlain by silty clay, glacial till, and lacustrine sediments and dolomitic bedrock is present at depths of greater than 50 feet. The Fox River is a major river in Northeast Wisconsin that flows on top of the Dolostone bedrock in the City of Appleton and flows at an average rate of 1800 cubic feet per second ([Reference 16](#)).

#### **6.5 Air Pathway**

The method of air exhaust in the SDC operation created outdoor ground level exceedances above the acceptable range which also caused vapor migration into an adjacent residence at Unit 002 just to the north. U.S.EPA was not allowed access to the residence located at Unit 004 for subslab sampling, therefore indoor air samples were taken by WDHS. Exceedances of the vapor action limit for PCE were also measured at that residence. U.S.EPA installed a SSDS at Unit 002 in September 2010. In August 2011, U.S.EPA installed a new air intake and exhaust system in the SDC building in order to mitigate the remaining vapor migration issues in ambient air and at the off-site residence. These actions appear to have reduced the concentrations both in ambient and indoor air samples.

It should be noted here that Project Action Limits from the November 2002 "OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" were updated as follows:

- In 2010, the residential indoor air action limit was  $4.1 \mu\text{g}/\text{m}^3$  for PCE and  $10 \mu\text{g}/\text{m}^3$  for TCE.
- In November 2011, the residential indoor air action limit for TCE was updated to  $2.1 \mu\text{g}/\text{m}^3$ .
- In May 2012, the residential indoor air action limit for PCE was updated to  $42 \mu\text{g}/\text{m}^3$ .

One year after installation of the residential SSDS at Unit 002 and the installation of a new exhaust system at SDC, the indoor air sampling results indicate no exceedances of the project action limits remain for both PCE and TCE at the residence. PCE was measured in the basement indoor air sample at a concentration of  $1.53 \mu\text{g}/\text{m}^3$  and at  $1.16 \mu\text{g}/\text{m}^3$  in the living room sample. It is presumed that the modifications to the exhaust system have adequately addressed all air quality issues. No further indoor air sampling is planned at this time.

## **7.0 SUMMARY & CONCLUSIONS**

The SDC site is currently an operating dry cleaner. A number of environmental actions and investigations have been conducted and are continuing on the property. A U.S. EPA Removal Action (2010) included soil excavation, addition of HRC-X® reagent into the excavation, installation of a SSDS at the Unit 002 residence, and installation of a new exhaust system in the dry cleaner.

While considerable work has already been accomplished at the site, the full extent of contamination in soil, groundwater and vapor pathways is not defined. The WDNR and its environmental contractor are continuing to perform semi-annual groundwater sampling from five monitoring wells installed at the site in July 2011. Additional soil and groundwater investigation to further evaluate the vapor intrusion pathway is recommended for September/October 2012. A Sampling Plan was submitted to U.S.EPA for approval in July 2012.

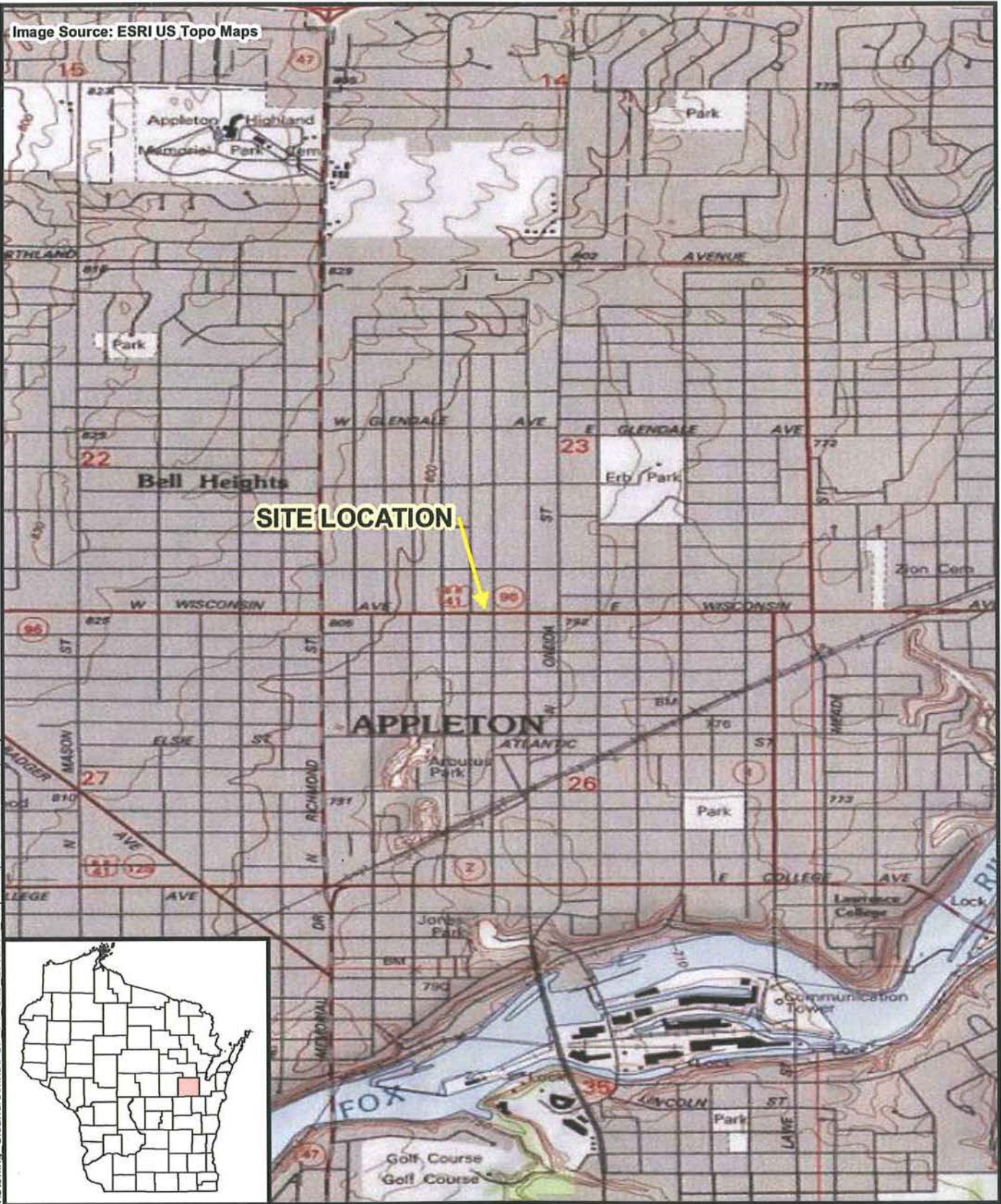
## 8. REFERENCES

1. Sterling Dry Cleaners Site Removal Action, Weston Solutions, Inc., December 6, 2010.\*
2. Outagamie County GIS Website, <http://outagamiecowi.wgxtreme.com>
3. Appleton Fire Department report Incident #98-001-265, dated January 4, 1998.\*
4. Preliminary Soil and Groundwater Investigation, OMNNI Associates, May 14, 1999.\*
5. WDNR Responsible Party Notification Letter dated August 14, 2008.
6. Deed Affidavit, Outagamie County Register of Deeds, Document #1844353, recorded on July 27, 2009.
7. Trip Report #SER00068 – March 2010 Sub-slab Soil Gas, Indoor Air, Soil and Groundwater Sampling, Scientific Engineering Response and Analytical Services, dated May 7, 2010.\*
8. Action Memorandum, U.S. EPA, dated July 27, 2010.\*
9. Sterling Cleaners Site Removal Action, Technical Direction Document No. S05-0001-1008-015, Weston Solutions, dated December 6, 2010.\*
10. Trip Report #SER00068 – May 2011 Indoor Air, Soil and Groundwater Sampling, Scientific Engineering Response and Analytical Services, dated August 3, 2011.\*
11. Lab Analyticals from Pace Analytical and field data for soil and groundwater sampling performed by Terracon on July 14, August 31, 2011 and February 23, 2012.\*
12. Soil Survey of Outagamie County, USDA & University of Wisconsin, November 1978.
13. [http://www.anyplaceamerica.com/topographic\\_maps/wisconsin/outagamie\\_county](http://www.anyplaceamerica.com/topographic_maps/wisconsin/outagamie_county).
14. Demographic and Income Profile / 4-Mile Radius, Esri Business Analyst, May 1, 2012, [www.esri.com/ba](http://www.esri.com/ba)
15. Electronic transmissions of air data from U.S. EPA to WDNR for Unit 002 and Unit 005.\*
16. USGS-Fox River at Appleton Wisconsin, <http://waterdata.usgs.gov/usa/nwis/uv?04084445>

\* References too voluminous to attach; they can be reviewed at Wisconsin Department of Natural Resources-Oshkosh Service Center.



Image Source: ESRI US Topo Maps



File: D:\Sterling Cleaners\mxd\FSP F1 Site Location Map.mxd, 30-Nov-10 11:28, mejacm

**Legend**



Prepared for:  
**U.S. EPA REGION V**

Contract No.: EP-S5-06-04  
TDD: S05-0001-1008-015  
DCN: 1177-2A-AIDZ

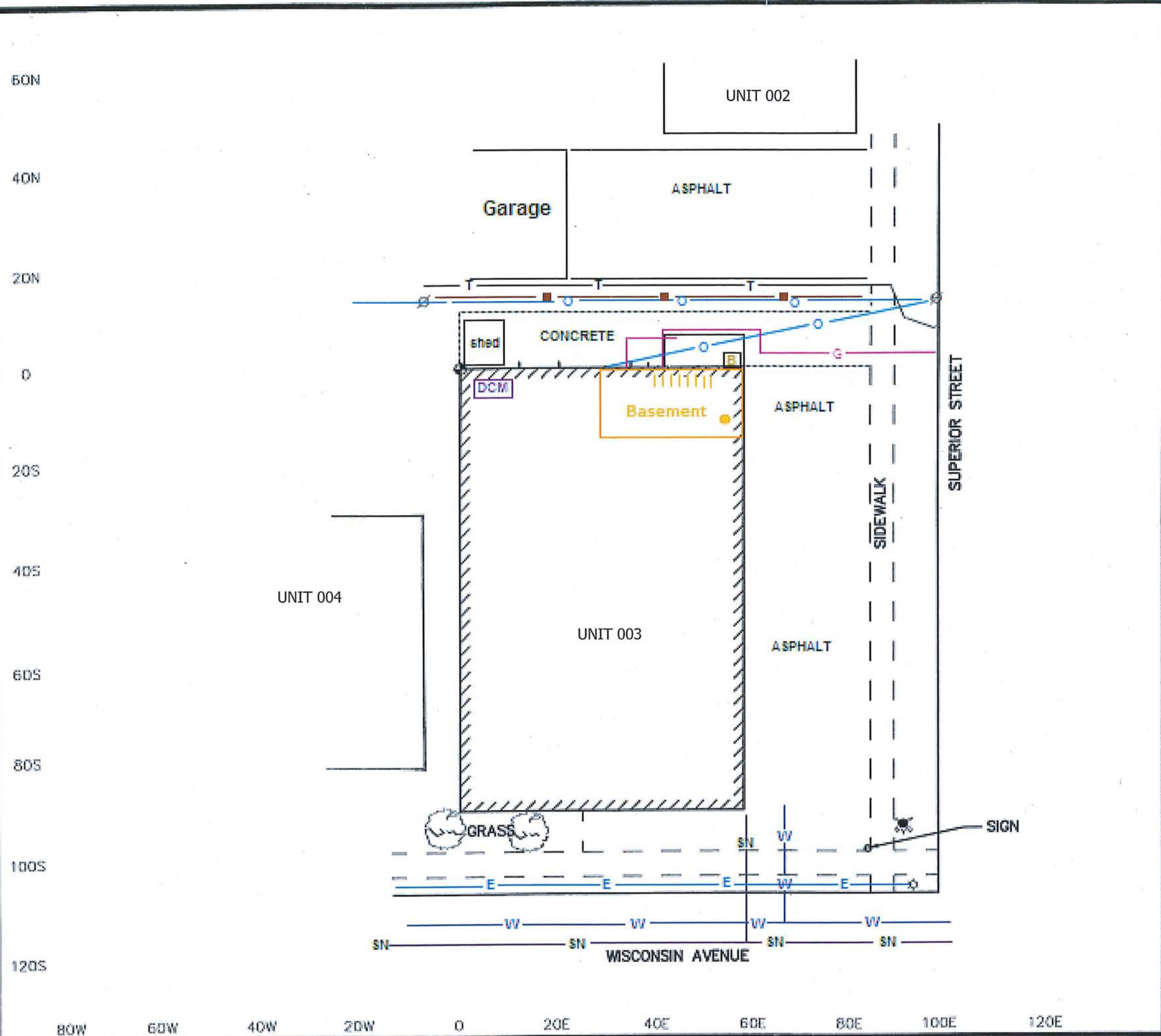


Prepared By:  
**WESTON SOLUTIONS, INC**

750 E. Bunker Court  
Suite 500  
Vernon Hills, Illinois 60061

**Figure 1**  
Site Location Map  
Sterling Cleaners Site  
Appleton, Outagamie County,  
Wisconsin





LOCAL GRID NORTH  
N

0' 4' 8' 20'  
SCALE: 1" = 20'

Note: As of May 2012, the Site has not been accurately surveyed.

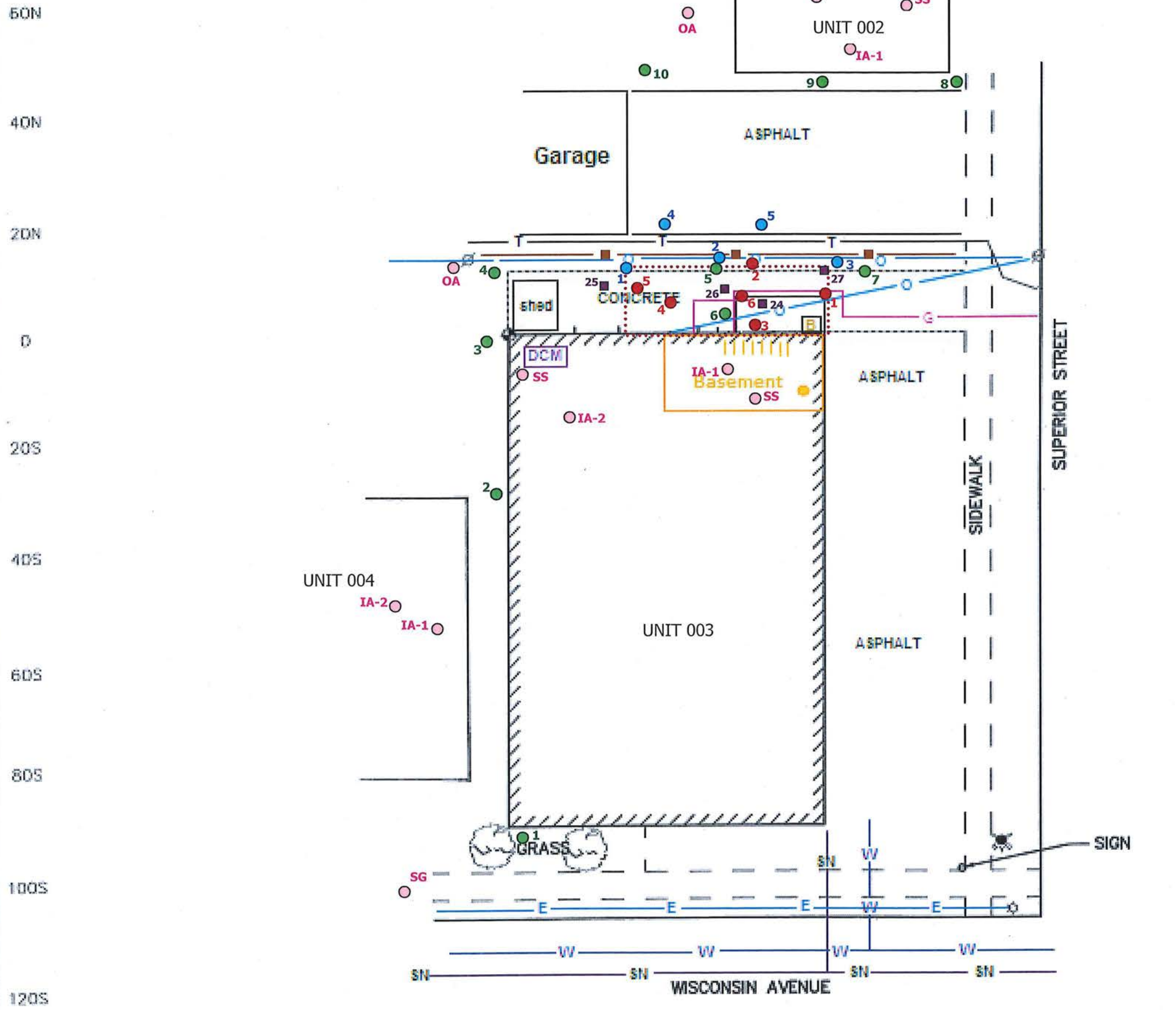
**LEGEND:**

- B1-φ Soil Boring Location and I.D. No. (1999)
- //// Building Face
- Edge of Asphalt
- - - - Edge of Concrete Pavement
- ⊗ Street Light
- ⊙ Light Post
- ⊕ Water Hydrant
- Fence
- E Underground Electric
- O Overhead Electric
- W Water Main
- G Gas Line
- SN Sanitary Sewer
- T Telephone Line
- ⊕ Reference Point
- - - Grid Line (20' Interval)
- T Fiber Optic-Telephone
- DCM Dry Cleaning Machine

Sterling Dry Cleaners  
304 W. WISCONSIN AVENUE  
APPLETON, WISCONSIN

**FIGURE 2**  
**SITE DETAIL MAP**  
**MAY 2012**  
(amended by WDNR)





SCALE: 1" = 20'  
 Note: As of May 2012, the Site has not been accurately surveyed.



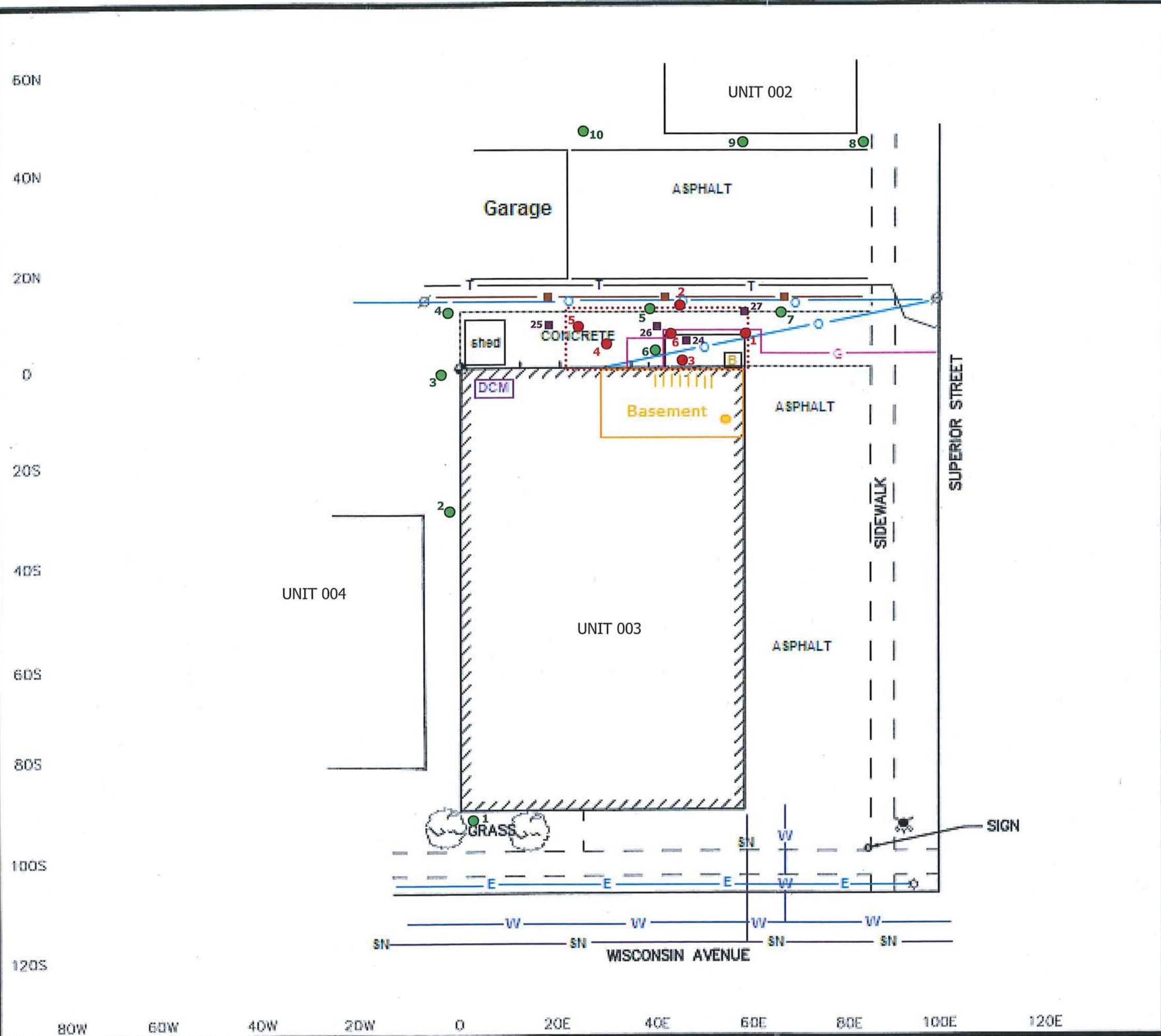
**LEGEND:**

- BI-φ Soil Boring Location and I.D. No. (1999)
- //// Building Footprint
- Edge of Asphalt
- - - Edge of Concrete Pavement
- ⊙ Street Light
- ⊙ Light Post
- ⊙ Water Hydrant
- Fence
- E — Underground Electric
- — Overhead Electric
- W — Water Main
- G — Gas Line
- SN — Sanitary Sewer
- T — Telephone Line
- ⊙ Reference Point
- 20N Grid Line (20' Interval)
- T — Fiber Optic-Telephone
- DCM Dry Cleaning Machine
- EPA Soil Removal September 2010
- WDNR Monitoring Wells July 2011 (MW-1 – MW-5)
- EPA Pre-Removal Sampling March 2010 (SB01/TW01 – SB10/TW10)
- EPA Removal Sampling September 2010 (SO1-SO6)
- EPA Post-Removal Sampling May 2011 (SB24/TW24 – SB27/TW27)
- Vapor Sampling: SubSlab / Indoor Air / Outdoor Air / Soil Gas

**Sterling Dry Cleaners**  
 304 W. WISCONSIN AVENUE  
 APPLETON, WISCONSIN

**FIGURE 3**  
**SAMPLE LOCATIONS**





LOCAL GRID NORTH  
N

0' 4' 8' 20'  
SCALE: 1" = 20'

Note: As of May 2012, the Site has not been accurately surveyed.

**LEGEND:**

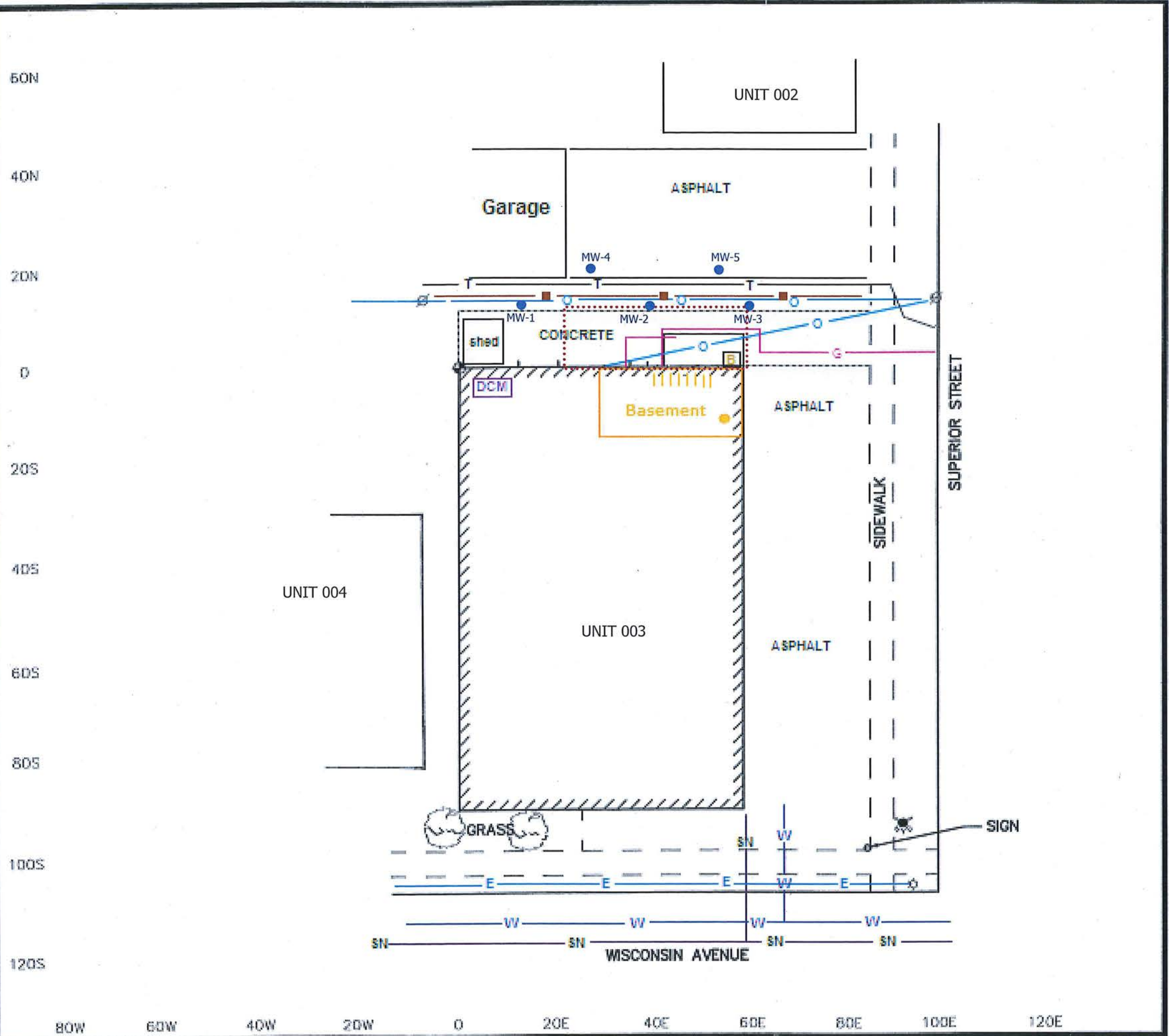
- BI-φ Soil Boring Location and I.D. No. (1999)
- //// Building Face
- Edge of Asphalt
- - - Edge of Concrete Pavement
- ⊙ Street Light
- ⊙ Light Post
- ⊙ Water Hydrant
- Fence
- E Underground Electric
- Overhead Electric
- W Water Main
- G Gas Line
- SN Sanitary Sewer
- T Telephone Line
- ⊙ Reference Point
- 20N Grid Line (20' Interval)
- T Fiber Optic-Telephone
- DCM Dry Cleaning Machine
- ⋯ EPA Soil Removal September 2010

- EPA Pre-Removal Sampling March 2010 (SB01/TW01 – SB10/TW10)
- EPA Removal Sampling September 2010 (SO1-SO6)
- EPA Post-Removal Sampling May 2011 (SB24/TW24 – SB27/27)

**Sterling Dry Cleaners**  
304 W. WISCONSIN AVENUE  
APPLETON, WISCONSIN

**FIGURE 4**  
SOIL SAMPLE & TEMP WELL  
LOCATIONS





LOCAL GRID NORTH  
N

0' 4' 16' 32'  
SCALE: 1" = 20'

Note: As of May 2012, the Site has not been accurately surveyed.

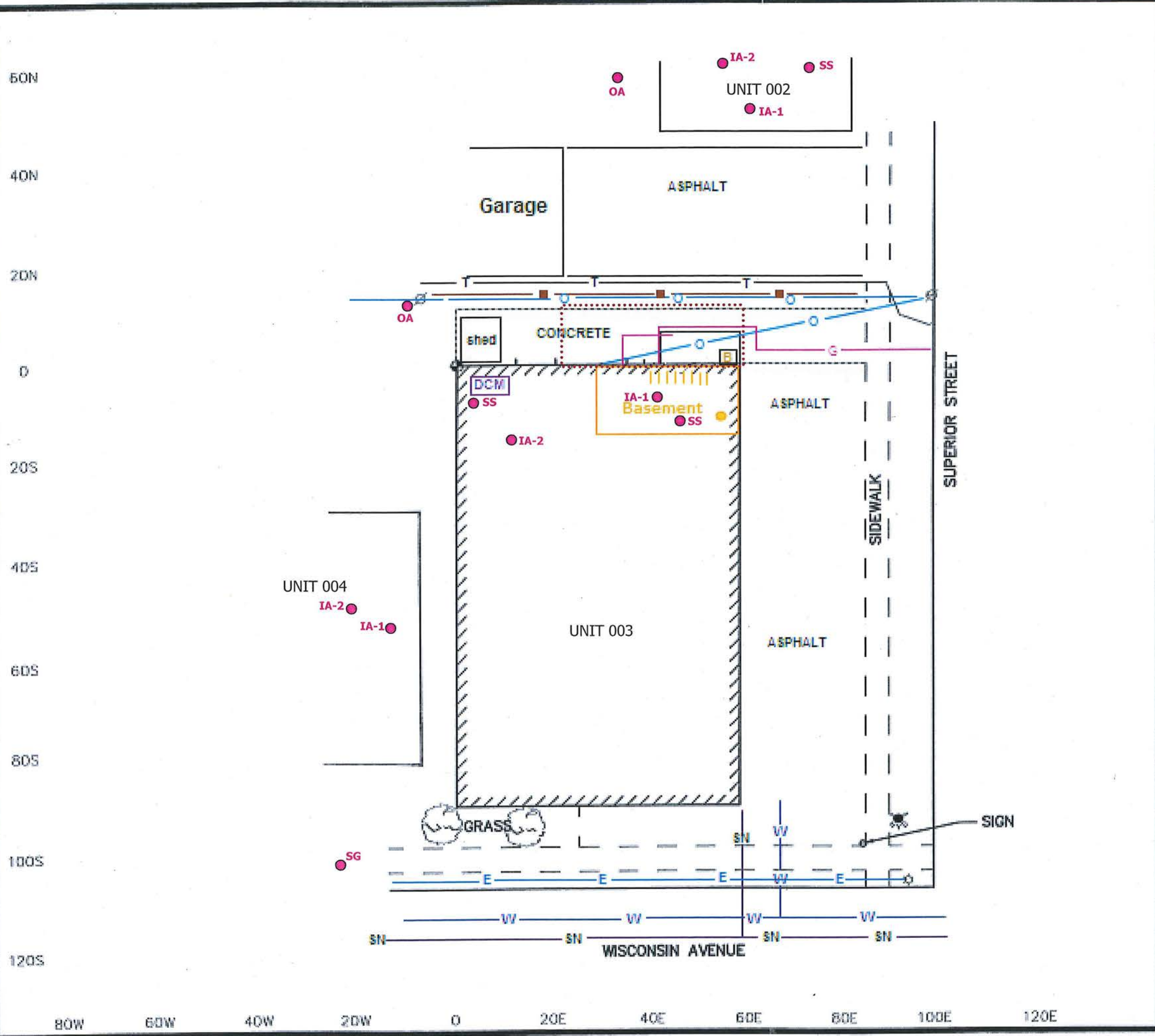
**LEGEND:**

- BI-φ Soil Boring Location and I.D. No. (1995)
- ////// Building Face
- Edge of Asphalt
- - - Edge of Concrete Pavement
- ⊙ Street Light
- ⊙ Light Post
- ⊙ Water Hydrant
- Fence
- E — Underground Electric
- O — Overhead Electric
- W — Water Main
- G — Gas Line
- SN — Sanitary Sewer
- T — Telephone Line
- ⊙ Reference Point
- 20N Grid Line (20' Interval)
- T — Fiber Optic-Telephone
- DCM Dry Cleaning Machine
- ⋯ EPA Soil Removal September 2010

● Monitoring Wells installed by WDNR contractor in July 2011 (MW-1 – MW-5)

**Sterling Dry Cleaners**  
304 W. WISCONSIN AVENUE  
APPLETON, WISCONSIN

**FIGURE 5**  
**WELL LOCATIONS**



LOCAL GRID NORTH  
N

0' 4' 8' 20'

SCALE: 1" = 20'

Note: As of May 2012, the Site has not been accurately surveyed.

**LEGEND:**

- BI ⊕ Soil Boring Location and I.D No. (1999)
- ▨ Building Foot
- Edge of Asphalt
- - - - Edge of Concrete Pavement
- ⊙ Street Light
- ⊙ Light Post
- ⊕ Water Hydrant
- Fence
- E — Underground Electric
- O — Overhead Electric
- W — Water Main
- G — Gas Line
- SN — Sanitary Sewer
- T — Telephone Line
- ⊕ Reference Point
- 20N Grid Line (20' Interval)
- T — Fiber Optic-Telephone
- DCM Dry Cleaning Machine
- ⊠ EPA Soil Removal September 2010

● Vapor Sampling: SS = Subslab  
IA = Indoor Air  
OA = Outdoor Air  
SG = Soil Gas

**Sterling Dry Cleaners**  
304 W. WISCONSIN AVENUE  
APPLETON, WISCONSIN

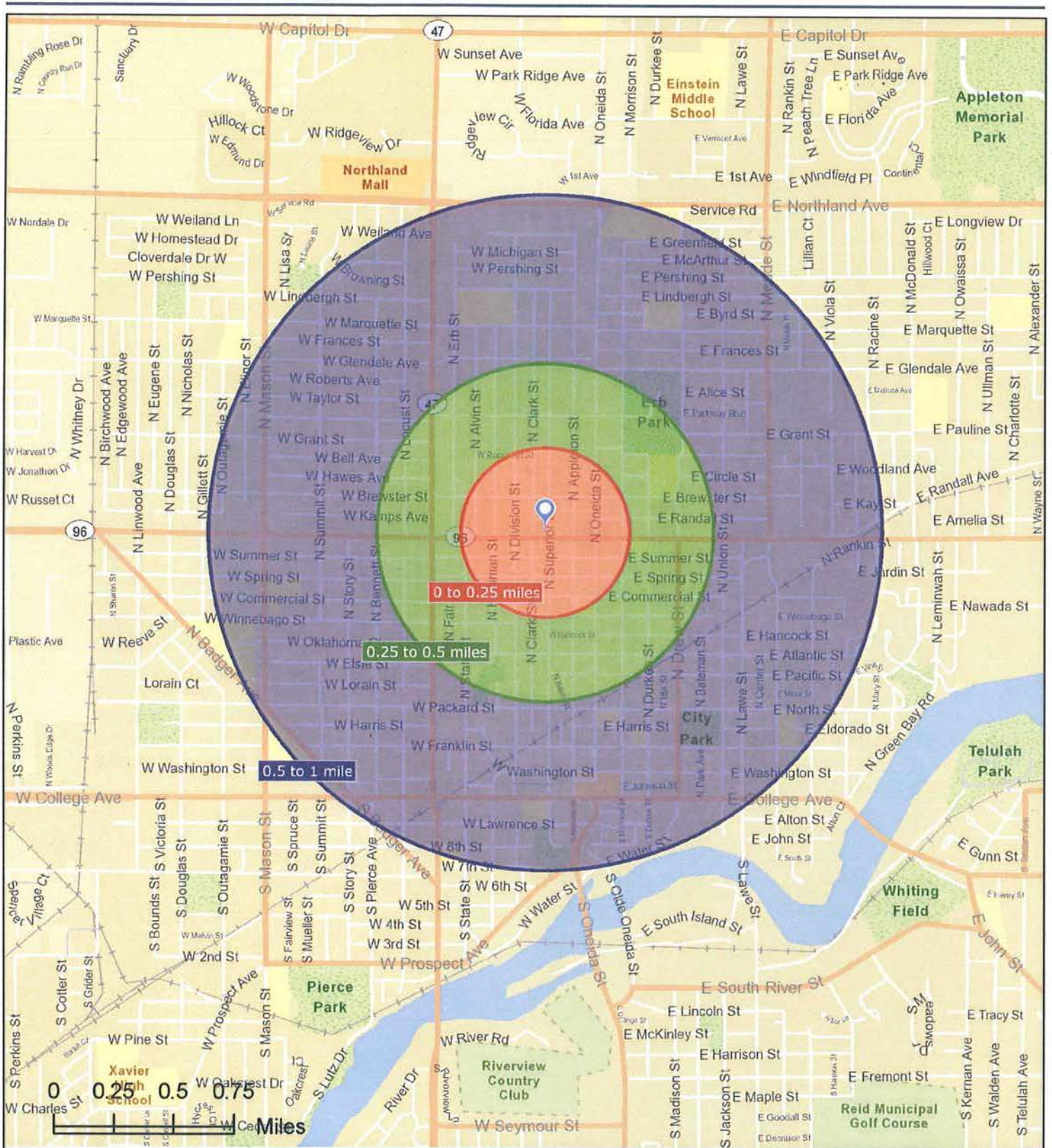
**FIGURE 6**  
VAPOR SAMPLE LOCATIONS





# FIGURE 7A

Sterling Dry Cleaners 1 mi



May 01, 2012

Made with Esri Business Analyst



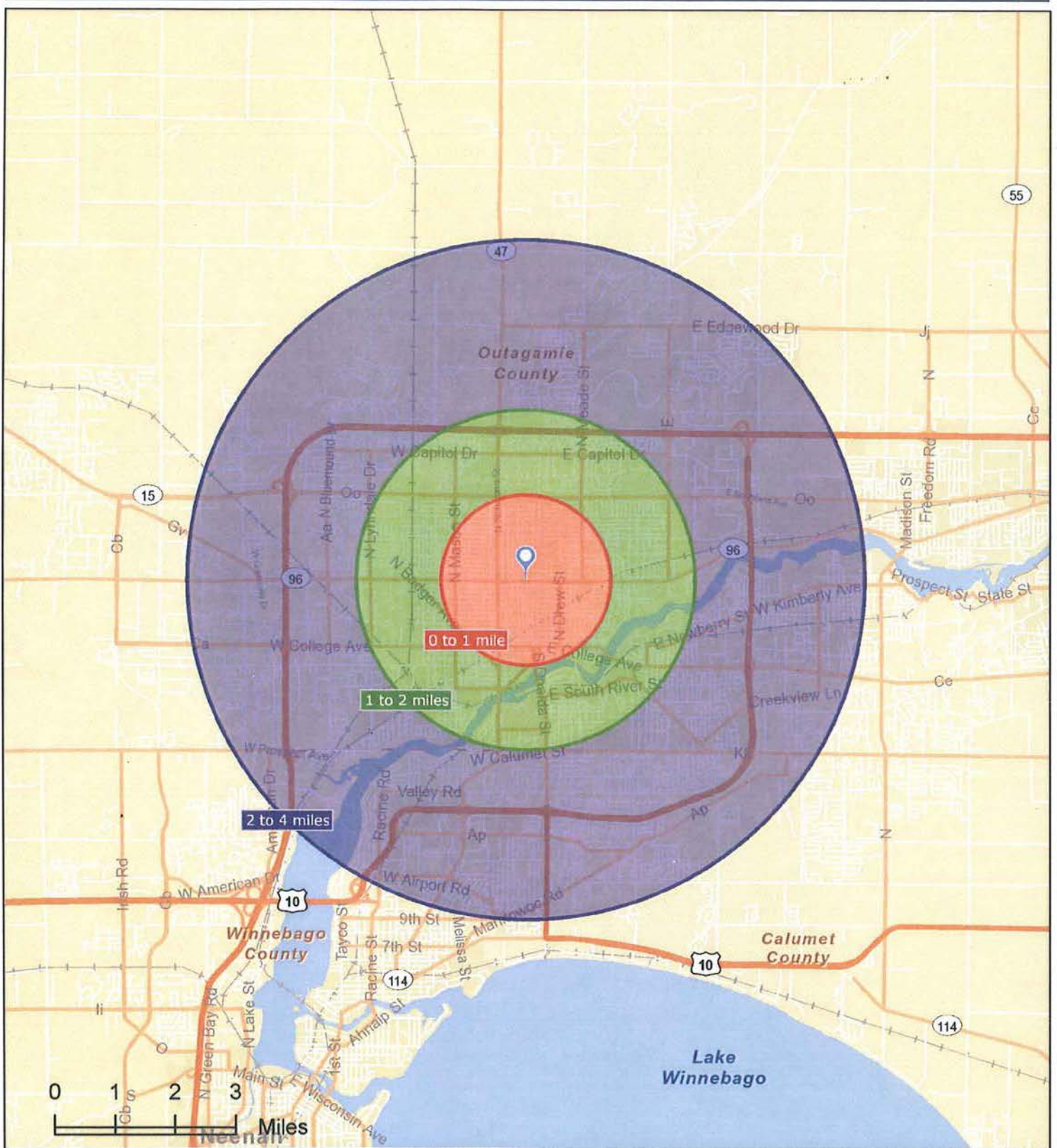


TABLE 11  
Unit 002  
AIR DATA

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Air data (µg/m3) collected by US EPA at Unit 002						
Sample Name	Sample Date	Location	PCE	TCE	cis-1,2 DCE	VC
		<b>2011 IA</b>	<b>4.1</b>	<b>10.0</b>	not available	<b>1.6</b>
		2012 IA	42	2.1	not available	1.6
		<i>2011 SS</i>	<i>41</i>	<i>100</i>	not available	<i>16</i>
		<i>2012 SS</i>	<i>420</i>	<i>21</i>	not available	<i>16</i>
<b>SS</b>	11/04/2010	basement	7.390	<0.161	<0.119	<0.0767
<b>IA1</b>	03/10/2010	basement-top of freezer	<b>*24.1</b>	1.28	0.326	<0.0657
	09/30/2010	Installation of Vapor Mitigation System				
	11/04/2010	basement-top of freezer	<b>*9.16</b>	<0.161	<0.119	<0.0767
	01/26/2011	basement-top of freezer	<b>*6.61</b>	0.822	0.260	<0.0767
	05/04/2011	basement-top of freezer	<b>*8.59</b>	0.468	<0.342	<0.0767
	08/01/2011	New exhaust system installed at SDC				
	09/15/2011	basement-top of freezer	1.53	1.470	0.893	<0.0767
<b>IA2</b>	03/10/2010	1st Floor - living room	<b>*15.7</b>	0.838	0.171	<0.0703
	09/30/2010	Installation of Vapor Mitigation System				
	11/04/2010	1st Floor - living room	<b>*9.29</b>	0.188	<0.119	<0.0767
	01/26/2011	1st Floor - living room	<b>*6.58</b>	0.489	<0.119	<0.0767
	05/04/2011	1st Floor - living room	<b>*6.57</b>	0.477	<0.321	<0.0767
	08/01/2011	New exhaust system installed at SDC				
	09/15/2011	1st Floor - living room	1.16	<0.161	<0.119	<0.0767
<b>IA2-COL</b>	11/04/2010	1st Floor - kitchen counter	<b>*9.22</b>	0.219	<0.119	<0.0767
	01/26/2011	1st Floor - kitchen counter	<b>*6.73</b>	0.487	<0.119	<0.0767
	05/04/2011	1st Floor - kitchen counter	1.18	<0.161	<0.119	<0.0767
<b>OA</b>	03/10/2010	backyard deck	7.05	0.110	<0.0793	<0.0511
	11/04/2010	backyard deck	2.49	<0.161	<0.119	<0.0767
	01/26/2011	backyard deck	<0.203	<0.161	<0.119	<0.0767
	05/04/2011	backyard deck	6.15	<0.161	<0.119	<0.0767
	08/01/2011	New exhaust system installed at SDC				
	09/15/2011	backyard deck	<0.203	<0.161	<0.119	<0.0767

**BOLD: IA Indoor Air concentrations** above residential risk level

*Italics: SS Subslab concentrations* above residential risk level

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

OA: Outdoor Ambient Air

SG: Soil Gas

\* **NOTE:** the Residential Action Limit at the time of the work was significantly lower than the May 2012 action limits. (PCE= 4.1 µg/m3 in 2011)

Legend:

- µg/m3: micrograms per cubic meter
- PCE: Tetrachloroethylene
- TCE: Trichloroethylene
- cisDCE: cis-1,2 Dichloroethene
- VC: Vinyl Chloride

≈ In September 2010 a vapor mitigation system was installed in Unit 002 and in August 2011 a new properly exhausted venting system was installed at Sterling Dry Cleaners-304 W. Wisconsin.

TABLE 12  
Unit 003  
AIR DATA

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Air data ( $\mu\text{g}/\text{m}^3$ ) collected by US EPA in Unit 003 (source)						
Sample Name	Sample Date	Location	PCE	TCE	cis-1,2 DCE	VC
		<b>2011 IA</b>	<b>21</b>	<b>44</b>	not available	<b>28.0</b>
		2012 IA	180	8.8	not available	28.0
		<i>2011 SS</i>	<i>210</i>	<i>440</i>	not available	<i>280.0</i>
		<i>2012 SS</i>	<i>1800</i>	<i>88</i>	not available	<i>280.0</i>
<b>IA1</b>	03/10/2010	Basement	<b>37,400</b>	3.32	3.85	<0.068
<b>SS2</b>	03/10/2010	Subslab 1st Floor	<i>2,740</i>	19.3	0.259	<0.0611
<b>IA2</b>	03/10/2010	1st Floor	<b>313,000</b>	4.45	0.9	<0.0611

**BOLD: IA Indoor Air concentrations** above residential risk level

*Italics: SS Subslab concentrations* above residential risk level

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

OA: Outdoor Ambient Air

SG: Soil Gas

\* **NOTE:** the Non-Residential Action Limit at the time of the work was significantly lower than the May 2012 action limits. (PCE= 21  $\mu\text{g}/\text{m}^3$  in 2011)

Legend:

$\mu\text{g}/\text{m}^3$ : micrograms per cubic meter

PCE: Tetrachloroethylene

TCE: Trichloroethylene

cisDCE: cis-1,2 Dichloroethene

VC: Vinyl Chloride

☞ On August 30, 2011 EPA installed a new air intake and venting system in Sterling Dry Cleaners. This redirected the exhaust to above the roof line, thus minimizing impact to ground level air space.



TABLE 13  
Unit 004  
AIR DATA

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Air data (µg/m3) collected by US EPA & WDHS at Unit 004						
Sample Name	Sample Date	Location	PCE	TCE	cis-1,2 DCE	VC
		<b>2011 IA</b>	<b>4.1</b>	<b>2.1</b>	not available	<b>1.6</b>
		2012 IA	42	2.1	not available	1.6
		<i>2011 SS</i>	<i>41</i>	<i>21</i>	not available	<i>16</i>
		<i>2012 SS</i>	<i>420</i>	<i>21</i>	not available	<i>16</i>
<b>SG1</b>	03/10/2010	EPA-front sidewalk	4.17	<0.107	<0.0793	<0.0511
<b>IA1</b>	03/10/2010	DHS basement center floor	<b>*36.746</b>	<1.978	<1.459	<0.941
<b>IA2</b>	03/10/2010	DHS-1st Floor living room	<b>*37.44</b>	ND	ND	ND
<b>OA</b>	03/10/2010	DHS-Outside hanging on pillar of carport northeast corner of property	206.98	ND	ND	ND

**BOLD: IA Indoor Air concentrations** above residential risk level

*Italics: SS Subslab concentrations* above residential risk level

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

OA: Outdoor Ambient Air

SG: Soil Gas

\* **NOTE:** the Residential Action Limit at the time of the work was significantly lower than the May 2012 action limits. (PCE= 4.1 µg/m3 in 2011)

Legend:

µg/m3: micrograms per cubic meter

PCE: Tetrachloroethylene

TCE: Trichloroethylene

cisDCE: cis-1,2 Dichloroethene

VC: Vinyl Chloride

☞ In September 2010 a vapor mitigation system was installed in Unit 002 and in August 2011 a new properly exhausted venting system was installed at Sterling Dry Cleaners-304 W. Wisconsin.

**TABLE 14**  
**Unit 005**  
**AIR DATA**

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Air data (µg/m3) collected by US EPA at Unit 005						
Sample Name	Sample Date	Location	PCE	TCE	cis-1,2 DCE	VC
		<b>2011 IA</b>	<b>4.1</b>	<b>2.1</b>	not available	<b>1.6</b>
		2012 IA	42	2.1	not available	1.6
		<i>2011 SS</i>	<i>41</i>	<i>21</i>	not available	<i>16</i>
		<i>2012 SS</i>	<i>420</i>	<i>21</i>	not available	<i>16</i>
<b>IA1</b>	08/25/2010	Basement - on stool	2.4	<0.161	<0.119	<0.0767
	09/30/2010	Basement - on stool	1.4	<0.161	<0.119	<0.0767
	01/26/2011	Basement - on stool	<0.203	<0.161	<0.119	<0.0767
<b>IA2</b>	08/25/2010	1st Floor - kitchen counter	<b>43.6</b>	0.284	<0.119	<0.0767
	09/30/2010	1st Floor - kitchen counter	2.8	0.162	0.119	<0.0767
	01/26/2011	1st Floor - kitchen counter	<0.203	<0.161	<0.119	<0.0767
<b>IA3</b>	09/30/2010	Basement - on floor	1.4	<b>12.8</b>	<0.119	<0.0767
<b>SS1</b>	08/25/2010	Basement	9.2	<2.15	<1.59	<1.02
<b>OA</b>	08/25/2010	side porch - chair	<0.203	<0.161	<0.119	<0.0767
	09/30/2010	side porch - chair	0.929	<0.161	<0.119	<0.0767
	01/26/2011	back porch	<0.203	<0.161	<0.119	<0.0767

**BOLD: IA Indoor Air concentrations** above residential risk level

*Italics: SS Subslab concentrations* above residential risk level

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

OA: Outdoor Ambient Air

SG: Soil Gas

Legend:

µg/m3: micrograms per cubic meter

PCE: Tetrachloroethylene

TCE: Trichloroethylene

cisDCE: cis 1,2 Dichloroethene

VC: Vinyl Chloride

\* **NOTE:** the Residential Action Limit at the time of the work was significantly lower than the May 2012 action limits. (PCE= 4.1 µg/m3 in 2011)

☞ In September 2010 a vapor mitigation system was installed in Unit 002 and in August 2011 a new properly exhausted venting system was installed at Sterling Dry Cleaners-304 W. Wisconsin.

TABLE 6  
OMNNI Groundwater Data

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI

WDNR BRRTS #02-45-552133

Groundwater data (µg/L) collected May 7, 1999 by OMNNI Associates for F&M Bank

Well Name	Screen Interval	Location	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	1,1,1-TCA	1,1-DCA	chloromethane
		ES	5.00	5.00	70.00	100.00	0.20	200.00	850.00	30.00
		PAL	0.50	0.50	7.00	20.00	0.02	40.00	85.00	3.00
<b>TW-1</b>	~	North side of building and east of overhead door	<b>8200</b>	<b>200</b>	<b>650</b>	<19	<7.5	<23	31 J	<9
<b>TW-2</b>	~	North side of building north of TW-1	<b>13,000</b>	<b>60</b>	<b>350</b>	<19	<7.5	<23	<17	<6.5
<b>TW-3</b>	~	North side of building and west of overhead door	<b>1800</b>	<4.8	<3.2	<3.8	<1.5	<4.5	<3.4	<1.8
<b>TW-4</b>	~	South side of building	<b>24</b>	<4.8	<3.2	<3.8	<1.5	<4.5	<3.4	<1.8

Legend:

µg/L: micrograms per liter

ES: Enforcement Standard, ch. NR 140, Wis. Adm. Code

PAL: Preventative Action Limit, ch. NR 140, Wis. Adm. Code

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

VC: Vinyl Chloride

DCA: Dichloroethane

TCA: Trichloroethane

**BOLD:** ES

*Italics:* PAL exceedance

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

**TABLE 7**  
**PRE-Excavation Groundwater Data**

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI										
WDNR BRRTS #02-45-552133										
Groundwater data (µg/L) collected by US EPA on March 8 & 9, 2010										
Well Name	Screen Interval	Location	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	1,1,1-TCA	1,1-DCA	chloromethane
		ES	5.00	5.00	70.00	100.00	0.20	200.00	850.00	30.00
		PAL	0.50	0.50	7.00	20.00	0.02	40.00	85.00	3.00
<b>TW01</b>	~	front SW corner of 304 W. Wisconsin	<5	<5	<5	<5	<5	<5	<5	<5
<b>TW02</b>	~	west side of 304 W. Wisconsin	<i>2.07 J</i>	<5	<5	<5	<5	<5	<5	<5
<b>TW03</b>	~	NW corner of building at 304 W. Wisconsin	<i>1.98 J</i>	<5	<5	<5	<5	<5	<5	<5
<b>TW04</b>	~	NW corner of property 304 W. Wisconsin	<b>356</b>	<b>134 J</b>	<b>150</b>	1.81 J	<5	<5	<5	<5
<b>TW05</b>	~	north side of property (near fence)	<b>36,600</b>	<b>19,100</b>	<b>26,400</b>	<b>137</b>	<5	<5	3.86 J	<5
<b>TW06</b>	~	near back door on north side of building 304 W. Wisconsin	<b>9560</b>	<b>1840</b>	<b>7280</b>	48.8	<b>3.66 J</b>	1.96 J	4.18 J	<5
<b>TW07</b>	~	northeast side of property near fence	<b>20.3</b>	<i>3.31 J</i>	2.64 J	<5	<5	<5	<5	<5
<b>TW08</b>	~	SE corner of home at Unit 002	<b>12.4</b>	<i>2.25 J</i>	1.67 J	<5	<5	<5	<5	<5
<b>TW09</b>	~	south side of home at Unit 002	<b>57.9</b>	<b>11.9</b>	17.6	<5	<5	<5	<5	<5
<b>TW10</b>	~	between home & garage at Unit 002	<i>3.84 J</i>	<5	<5	<5	<5	<5	<5	<5

Legend:

µg/L: micrograms per liter

ES: Enforcement Standard, ch. NR 140, Wis. Adm. Code

PAL: Preventative Action Limit, ch. NR 140, Wis. Adm. Code

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

VC: Vinyl Chloride

DCA: Dichloroethane

TCA: Trichloroethane

**BOLD:** ES exceedance

*Italics:* PAL exceedance

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

**TABLE 8**  
**POST Excavation Groundwater Data**

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Groundwater data (µg/L) collected by US EPA on May 3, 2011							
Well Name	Screen Interval	Location	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		ES	5.00	5.00	70.00	100.00	0.20
		PAL	0.50	0.50	7.00	20.00	0.02
<b>TW09</b>	~	South side of home at Unit 002	<b>DRY</b>	<b>DRY</b>	<b>DRY</b>	<b>DRY</b>	<b>DRY</b>
<b>TW24</b>	~	South shelf area of excavation	<b>5770</b>	<b>1190</b>	<b>1430</b>	16.3	<5
<b>TW25</b>	~	West end of excavation	<b>991</b>	<b>581</b>	<b>7520</b>	66.2	<b>21</b>
<b>TW26</b>	~	Center in deep part of excavation	<b>21,100</b>	<b>1820 J</b>	<b>3440 J</b>	33.6	<b>1.4</b>

Legend:

µg/L: micrograms per liter

ES: Enforcement Standard, ch. NR 140, Wis. Adm. Code

PAL: Preventative Action Limit, ch. NR 140, Wis. Adm. Code

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

VC: Vinyl Chloride

DCA: Dichloroethane

TCA: Trichloroethane

**BOLD:** ES exceedance

*Italics:* PAL exceedance

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation



# TABLE 9

## Monitoring Well Groundwater Data

### Legend:

µg/L: micrograms per liter

ES: Enforcement Standard, ch. NR 140, Wis. Adm. Code

PAL: Preventative Action Limit, ch. NR 140, Wis. Adm. Code

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

VC: Vinyl Chloride

DCA: Dichloroethane

TCA: Trichloroethane

**BOLD: ES**

*Italics: PAL*

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection  
and limit of quantitation

TABLE 10  
MONITORING WELL  
NATURAL ATTENUATION DATA

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Groundwater data collected by Terracon under WDNR contract												
Well Name	Screen Interval	Sample Date	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	pH (standard units)	Specific Conductance (mS/cm)	Methane	Ethane	Ethene	Sulfate (mg/L)	Nitrite-Nitrate (mg/L)	Total Organic Carbon (mg/L)
MW-1	3'-13'	8/31/2011	1.0	-65	4.8	1.9	<0.64	<0.36	23.1	103	<0.12	11.0
		2/23/2012	2.7	-106	7.3	1.65	26.0	<0.36	220	163	<0.12	5.1
MW-2	3'-13'	8/31/2011	0.9	-176	4.7	5.6	<0.64	<0.36	21.1	2.6†	<0.12	2,730
		2/23/2012	0.3	-113	7.1	4.09	270	<0.36	1,190	22.7	<0.12	1,040
MW-3	3'-13'	8/31/2011	2.0	125	4.9	1.3	<0.64	<0.36	<0.30	252	0.54	3.4
		2/23/2012	1.0	92	6.4	1.56	<0.64	<0.36	0.78†	242	0.37	0.52
MW-4	3'-13'	8/31/2011	0.8	92	4.8	1.0	<0.64	<0.36	<0.30	55.2	<0.12	6.0
		2/23/2012	0.8	89	6.6	1.11	<0.64	<0.36	<0.30	20.4	<0.12	3.3
MW-5	3'-13'	8/31/2011	1.6	156	4.9	1.1	<0.64	<0.36	<0.30	123	0.72	11.4
		2/23/2012	0.3	55	7.1	1.14	1.9†	<0.36	<0.30	99.9	<0.12	2.4

Legend:

mg/L: milligrams per liter  
mV: millivolts  
mS/cm: millisiemens/centimeter



# TABLE 1A OMNNI Soil Data

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI

WDNR BRRTS #02-45-552133

Soil data ( $\mu\text{g}/\text{kg}$ ) collected **May 7, 1999** by **OMNNI Associates** for F&M Bank

Boring Name	B-1	B-2	B-3	B-4
Depth	5'-7'	3'-5'	1'-3'	11'-13'
Location	North side of building and east of overhead door	North side of building and north of B-1	North side of building and west of overhead door	South side of building
PCE	<500	<b>20,000</b>	<b>440</b>	<25
TCE	<500	<250	<25	<25
cis-1,2 DCE	<b>3100</b>	<b>170</b>	<25	<25
Vinyl Chloride	<250	<250	<25	<25
n-Butylbenzene	<b>38,000</b>	<250	<25	<25
sec-Butylbenzene	<b>12,000</b>	<250	<25	<25
n-Propylbenzene	<b>28,000</b>	<250	<25	<25
1,2,4 + 1,3,5 Trimethylbenzenes	<b>79,000</b>	<250	<25	<25
**plus many other VOC compounds				

$\mu\text{g}/\text{kg}$ : micrograms per kilogram

**BOLD**: contaminant detected

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: dichloroethene

TCA: trichloroethane

## TABLE 1B SPILL SOIL DATA

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI

WDNR BRRTS #02-45-552133

Soil data (µg/kg) collected June 17, 1999 by  
US Petroleum Equipment, WDNR Emergency Contractor

Sample Name	Front	Side
Depth	unknown	unknown
Location	confirmation sample taken after spill excavation.	confirmation sample taken after spill excavation.
PCE	<b>15,000,000</b>	<b>5,300,000</b>
TCE	<250	<250
cis-1,2-DCE	<250	<250
Vinyl Chloride	<250	<250
Naphthalene	<b>460</b>	<250
Xylenes	<b>820</b>	<250
n-Butylbenzene	<b>11,000</b>	<b>1,700</b>
n-Propylbenzene	<b>480</b>	<250
1,2,4 + 1,3,5 Trimethylbenzenes	<b>2,040</b>	<b>280</b>

Legend:

µg/kg: micrograms per kilogram

**BOLD:** contaminant detected

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: dichloroethene

## TABLE 2 PRE-Excavation Soil Data

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI

WDNR BRRTS #02-45-552133

Soil data (µg/kg) collected by US EPA on March 8 & 9, 2010

Boring Name	SB01	SB01	SB02	SB02	SB02	SB03	SB03	SB03	SB03	SB04	SB04	SB04	SB05	SB05	SB05	SB05
Depth (feet)	0.5-1.0	4-4.5	0.5-1.0	5.5-6	9.5-10	0-0.5	0.5-1	1.5-2	6.5-7	0.5-1	4-4.5	7-7.5	2-2.5	4.5-5	6-6.5	9.5-10
Location	front SW corner of 304 W. Wisconsin		west side of 304 W. Wisconsin			NW corner of building at 304 W. Wisconsin				NW corner of property 304 W. Wisconsin			north side of property (near fence)			
PCE	<b>3 J</b>	<6	<b>24.2</b>	<6	<6	<b>21.5</b>	<b>18.7</b>	<b>14.5</b>	<6	<b>83.1</b>	<b>2070</b>	<b>1080</b>	<b>97,400</b>	<b>463,000</b>	<b>228,000</b>	<b>113,000</b>
TCE	<6	<6	<b>1.53 J</b>	<6	<6	<6	<b>2.26 J</b>	<b>2.68 J</b>	<b>1.48 J</b>	<6	<b>35.1</b>	<b>51.3</b>	<b>453 J</b>	<b>3370</b>	<b>155,000</b>	<b>426</b>
cis-1,2-DCE	<6	<6	<b>1.42 J</b>	<6	<6	<6	<b>3.78 J</b>	<b>1.96 J</b>	<6	<6	<b>7.68</b>	<b>30</b>	<b>99.1 J</b>	<b>1120 J</b>	<b>7180</b>	<b>&lt;581</b>
Vinyl Chloride	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<66	<66	<b>&lt;5950</b>	<b>&lt;581</b>

Legend:

µg/kg: micrograms per kilogram

**BOLD:** contaminant detected

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

## TABLE 2 PRE-Excavation Soil Data

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI

WDNR BRRTS #02-45-552133

PRE-Excavation Soil data (µg/kg) collected by US EPA on March 8 & 9, 2010

Boring Name	SB06	SB06	SB06	SB07	SB07	SB07	SB08	SB08	SB09	SB09	SB10	SB10
Depth (feet)	1.5-2	5.5-6	9-9.5	1.5-2	5.5-6	9.5-10	1.5-2	7-7.5	1.5-2	9.5-10	2.5-3	9.5-10
Location	near back door on north side of building 304 W. Wisconsin			northeast side of property near fence			SE corner of home at Unit 002		south side of home at Unit 002		between home & garage at Unit 002	
PCE	<b>24,800</b>	<b>1160</b>	<b>2830</b>	<b>27.3 J</b>	<6	<b>2.27 J</b>	<6	<6	<b>2.7 J</b>	<6	<b>1.89 J</b>	<b>4.09 J</b>
TCE	<b>884</b>	<b>220</b>	<b>804</b>	<b>3.41 J</b>	<6	<8	<6	<6	<6	<6	<6	<b>1.95 J</b>
cis-1,2-DCE	<b>260 J</b>	<b>1000</b>	<b>89.1</b>	<b>7.72</b>	<6	<8	<6	<6	<6	<b>1.47 J</b>	<6	<b>2.01 J</b>
Vinyl Chloride	<b>&lt;301</b>	<58	<57	<6	<6	<8	<6	<6	<6	<6	<6	<6

Legend:

µg/kg: micrograms per kilogram

**BOLD:** contaminant detected

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

TABLE 3  
Excavation Confirmation Soil Data

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Excavation Confirmation Soil data (µg/kg) collected by US EPA on September 22, 2010							
Sample Name	S01	S02	S03	S04	S05	S06	
Depth (feet)	1.5	1.5	3.5	5.5	1.5	9	
Location	east sidewall	north sidewall	base -- east	base -- west	west sidewall	base -- center	
PCE	<b>1900</b>	<b>1600</b>	<b>2000</b>	<b>20,000</b>	<b>7000</b>	<b>54,000</b>	
TCE	<b>150</b>	<b>39</b>	<b>100</b>	<b>350</b>	<b>23</b>	<b>110</b>	
cis-1,2-DCE	<5.0	<5.0	<b>140</b>	<b>250</b>	<b>8.6</b>	<b>22</b>	
Vinyl Chloride	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	

Legend:

µg/kg: micrograms per kilogram

**BOLD:** contaminant detected

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

**TABLE 4**  
**POST-Excavation Soil Data**

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI				
WDNR BRRTS #02-45-552133				
POST-Excavation Soil data ( $\mu\text{g}/\text{kg}$ ) collected by US EPA on May 3, 2011				
Boring Name	SB24	SB25	SB26	SB27
Depth (feet)	5-5.5	5.5-6	9-9.5	5-5.5
Location	South shelf area of excavation	West end of excavation	Center in deep part of excavation	East end of excavation
PCE	<b>1300 J</b>	<b>3610</b>	<b>91,200</b>	<b>3900</b>
TCE	<b>967 J</b>	<b>1400</b>	<2940	<b>50.7 J</b>
cis-1,2-DCE	<b>3100 J</b>	<b>2130</b>	<2940	<b>281 J</b>
Vinyl Chloride	<b>5.76 J</b>	<333	<2940	<4.4

Legend:

$\mu\text{g}/\text{kg}$ : micrograms per kilogram

**BOLD**: contaminant detected

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene



TABLE 5  
Well Installation Soil Data

Sterling Dry Cleaners, 304 W Wisconsin Ave, Appleton, WI WDNR BRRTS #02-45-552133 Soil data (µg/kg) collected by Terracon under WDNR contract on July 13, 2011												
Well Name	MW-1	MW-1	MW-2	MW-2	MW-2D	MW-2	MW-3	MW_3	MW-4	MW-4	MW-5	MW-5
Depth	1-2 ft	6-7 ft	3-4 ft	9-10 ft	9-10 ft	12-13 ft	4-5 ft	9-10 ft	3-4 ft	7-8 ft	3-4 ft	7-8 ft
Location	West of S-05 and SB-25, outside NW corner of excavation		Adj. to former SB-05, within excavation to 10 ft bgs				Adj. to S-06 and SB-27, within excavation to 10 ft bgs		At Unit 002, adj. to residential garage and approx. 20 ft N of source area		At Unit 002, between dry cleaner and residential home and approx. 20 ft N of source area	
PCE	<b>5220</b>	<b>11,000</b>	<b>4050</b>	<b>209,000</b>	<b>298,000</b>	<b>35,500</b>	<b>1900</b>	<25	<b>8180</b>	<b>2690</b>	<b>428</b>	<25
TCE	<b>406</b>	<b>775</b>	<b>40 "J"</b>	<625	<1000	<b>500</b>	<b>30</b>	<25	<b>445</b>	<b>199</b>	<25	<25
cis-1,2-DCE	<b>605</b>	<b>1500</b>	<b>85</b>	<625	<1000	<100	<25	<25	<b>154 "J"</b>	<b>76</b>	<25	<25
Vinyl Chloride	<25	<50	<25	<625	<1000	<100	<25	<25	<50	<25	<25	<25
1,1,1-TCA	<25	<50	<25	<625	<1000	<100	<25	<25	<50	<25	<25	<b>126</b>

Legend:

µg/kg: micrograms per kilogram

**BOLD:** contaminant detected

ND: No detect - below the limit of detection

"J": J flagged by lab as detected between limit of detection and limit of quantitation

PCE: Tetrachloroethene

TCE: Trichloroethene

DCE: Dichloroethene

TCA: Trichloroethane

# REFERENCE 1



Weston Solutions, Inc.  
20 North Wacker Drive, Suite 1210  
Chicago, IL 60606-2901  
312-424-3300 • Fax 312-424-3330  
www.westonsolutions.com

December 6, 2010

Ms. Kathy Clayton  
On-Scene Coordinator  
United States Environmental Protection Agency, Region V  
C/o Wisconsin Department of Natural Resources  
2984 Shawano Avenue  
Green Bay, WI 54307-0448

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**Subject: Sterling Cleaners Site Removal Action  
Appleton, Outagamie County, Wisconsin  
Technical Direction Document No.: S05-0001-1008-015  
Document Control No.: 1177-2A-AIDZ  
Identification No.: B5VH  
Work Order No.: 20405.012.001.1177.00**

Dear Ms. Clayton:

WDNR BRRTS # 02-45-552133

The United States Environmental Protection Agency (U.S. EPA) tasked the Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) to provide oversight of removal activities at the Sterling Cleaners Site in Appleton, Outagamie County, Wisconsin (the Site). Under Technical Direction Document (TDD) No. S05-0001-1008-015, U.S. EPA tasked WESTON START to

- Perform general project oversight;
- Collect excavation soil sidewall samples;
- Conduct perimeter air monitoring activities;
- Collect sub-slab vapor probe, indoor, and ambient air samples;
- Conduct a vacuum check on the vapor intrusion abatement system;
- Collect written and photographic documentation; and
- Track disposition of the wastes generated during the removal activities.

From September 22 through 30, 2010, U.S. EPA, WESTON START, and the Emergency and Rapid Response Services (ERRS) contractor, Environmental Restoration, LLC (ER), conducted removal activities at the Site. Table 1 in Attachment A lists the agencies and organizations involved in the response.

This letter report discusses the Site description, Site background, removal activities, disposition of waste, the effectiveness of removal activities, difficulties encountered, and conclusions. In addition, this letter report has five attachments. Attachment A provides the tables for this letter report. Attachment B provides the figures. Attachment C provides analytical results for

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1177-2A-AIDZ

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express written permission of U.S. EPA.

TABLE 1  
 Water Level Data - March 2010  
 Sterling Cleaners Site  
 Appleton, WI  
 May 2010

Location	Well Depth*	Stickup Height**	Depth to Water	
			Round 1* (After Installation)	Round 2* (Before Sampling)
TW-01	9.8	0.3	5.11	4.92
TW-02	9.4	0.4	4.25	4.20
TW-03	9.7	0.1	9.00	6.07
TW-04	9.7	0.6	3.90	3.57
TW-05	9.7	0.3	3.61	3.34
TW-06	9.7	0.1	8.31	8.45
TW-07	9.7	0.2	2.82	2.77
TW-08	9.7	0.2	4.34	4.15
TW-09	9.7	0.6	4.21	4.15
TW-10	9.7	0.3	3.90	2.60

Round 1 conducted on 03/09/2010 at 1600 hours

Round 2 conducted on 03/10/2010 at 0800 hours

\* - Measured in feet below the top of well casing

\*\* - Measured in feet above the ground surface

TABLE 2.1  
 Sub-slab Soil Gas, Indoor Air and Ambient Air SUMMA® Canister Results - March 2010  
 Sterling Cleaners Site  
 Appleton, WI  
 May 2010  
 (All results in µg/m<sup>3</sup>)

Sample Number	Project Action Limits*	0-068-0005	0-068-0006	0-068-0007	0-068-0009	0-068-0010	0-068-0011	0-068-0012	0-068-0013
Location		Unit003	Unit003	Unit003	Unit002	Unit002	Unit002	Unit002	Unit004
Sub Location		IA1 (Basement)	SS2 <sup>subslab</sup> (First Floor) <i>on first floor</i>	IA2 (First Floor)	IA1 (Basement)	IA2 (First Floor)	IA2_COL (First Floor)	AMB	SG1
Matrix		Air	Soil Gas	Air	Air	Air	Air	Air	Soil Gas
Date	Air / Soil Gas	3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010
1,1,1-Trichloroethane	2200 / 22000	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	1.5 / 15	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	500 / 5000	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	200 / 2000	0.138	ND	0.432	ND	ND	ND	ND	ND
Carbon Tetrachloride	1.6 / 16	0.501	0.433	0.613	0.632	0.461	0.445	0.415	0.231
cis-1,2-Dichloroethene	35 / 350	3.85	0.259	0.908	0.326	0.161	0.171	ND	ND
Methylene Chloride	52 / 520	0.736 J	0.49 J	1.16 J	0.393 J	0.559 J	0.486 J	1.04 J	0.0907 J
Tetrachloroethene	8.1 / 81	<b>37400</b>	<b>2740</b>	<b>313000</b>	<b>24.1</b>	<b>15.1</b>	<b>15.7</b>	7.05	4.17
trans-1,2-Dichloroethene	70 / 700	ND	ND	0.114	ND	ND	ND	ND	ND
Trichloroethene	0.22 / 2.2	<b>3.32</b>	<b>19.3</b>	<b>4.45</b>	<b>1.28</b>	<b>0.779</b>	<b>0.838</b>	0.11	ND
Vinyl Chloride	2.8 / 28	ND	ND	ND	ND	ND	ND	ND	ND

µg/m<sup>3</sup> - Micrograms per cubic meter

\* - Project Action Limits from OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)

"bold text" - Value exceeds project action limit

ND - Not detected above the reporting limit

J - Value is estimated

SS - Sub-slab

SG - Soil gas

AMB - Ambient

IA - Indoor air

COL - Collocated

Unit 003 = 304 W. WISCONSIN  
 Unit 002 = 1315 N. SUPERIOR  
 Unit 004 = 308 W. WISCONSIN

TABLE 2.2  
 Sub-slab Soil Gas, Indoor Air and Ambient Air SUMMA® Canister Results - March 2010  
 Sterling Cleaners Site  
 Appleton, WI  
 May 2010  
 (All results in ppbv)

Sample Number	Project Action Limits*	0-068-0005	0-068-0006	0-068-0007	0-068-0009	0-068-0010	0-068-0011	0-068-0012	0-068-0013
Location		Unit003	Unit003	Unit003	Unit002	Unit002	Unit002	Unit002	Unit004
Sub Location		IA1 (Basement)	SS2 (First Floor)	IA2 (First Floor)	IA1 (Basement)	IA2 (First Floor)	IA2_COL (First Floor)	AMB	SG1
Matrix		Air	Soil Gas	Air	Air	Air	Air	Air	Soil Gas
Date		Air / Soil Gas	3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010
1,1,1-Trichloroethane	400 / 4000	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.28 / 2.8	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	120 / 1200	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	50 / 500	0.0348	ND	0.109	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.26 / 2.6	0.0797	0.0688	0.0975	0.101	0.0733	0.0708	0.066	0.0367
cis-1,2-Dichloroethene	8.8 / 88	0.972	0.0654	0.229	0.0822	0.0405	0.0431	ND	ND
Methylene Chloride	15 / 150	0.212 J	0.141 J	0.335 J	0.113 J	0.161 J	0.14 J	0.3 J	0.0261 J
Tetrachloroethene	1.2 / 12	<b>5510</b>	<b>404</b>	<b>46100</b>	<b>3.56</b>	<b>2.23</b>	<b>2.32</b>	1.04	0.615
trans-1,2-Dichloroethene	18 / 180	ND	ND	0.0288	ND	ND	ND	ND	ND
Trichloroethene	0.041 / 0.41	<b>0.617</b>	<b>3.59</b>	<b>0.829</b>	<b>0.238</b>	<b>0.145</b>	<b>0.156</b>	0.0204	ND
Vinyl Chloride	1.1 / 11	ND	ND	ND	ND	ND	ND	ND	ND

ppbv - Parts per billion by volume

\* - Project Action Limits from OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)

"bold text" - Value exceeds project action limit

ND - Not detected above the reporting limit

J - Value is estimated

SS - Sub-slab

SG- Soil gas

AMB - Ambient

IA - Indoor air

COL - Collocated



TABLE 3  
 Soil Sample Results - March 2010  
 Sterling Cleaners Site  
 Appleton, WI  
 May 2010  
 (All results in µg/kg)

Sample Number	Location	Date	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene
0-068-1000	SS01(0.5-1)	3/8/2010	6.91	ND	ND
0-068-1001	SS01(2.5-3)	3/8/2010	8.66	ND	ND
0-068-1002	SB01(0.5-1)	3/9/2010	ND	3.04 J	ND
0-068-1003	SB01(4-4.5)	3/9/2010	ND	ND	ND
0-068-1004	SB02(0.5-1)	3/9/2010	1.42 J	24.2	1.53 J
0-068-1005	SB02(5.5-6)	3/9/2010	ND	ND	ND
0-068-1006	SB02(9.5-10)	3/9/2010	ND	ND	ND
0-068-1007	SB03(0-0.5)	3/9/2010	ND	21.5	ND
0-068-1008	SB03(0.5-1)	3/9/2010	3.78 J	18.7	2.26 J
0-068-1009	SB03(1.5-2)	3/9/2010	1.96 J	14.5	2.68 J
0-068-1010	SB03(6.5-7)	3/9/2010	ND	ND	1.48 J
0-068-1011	SB04(0.5-1)	3/9/2010	ND	83.1 J	ND
0-068-1012	SB04(4-4.5)	3/9/2010	7.68	2070	35.1
0-068-1013	SB04(7-7.5)	3/9/2010	30	1080	51.3
0-068-1014	SB05(2-2.5)	3/9/2010	99.1 J	97400	453 J
0-068-1015	SB05(4.5-5)	3/9/2010	1120 J	463000	3370
0-068-1016	SB05(6-6.5)	3/9/2010	7180 J	228000 J	155000 J
0-068-1017	SB05(9.5-10)	3/9/2010	ND	113000	426 J
0-068-1018	SB06(1.5-2)	3/9/2010	260 J	24800	884
0-068-1019	SB06(5.5-6)	3/9/2010	1000	1160	220
0-068-1020	SB06(9-9.5)	3/9/2010	89.1 J	2830	804 J
0-068-1021	SB07(1.5-2)	3/9/2010	7.72	27.3 J	3.41 J
0-068-1022	SB07(5.5-6)	3/9/2010	ND	ND	ND
0-068-1023	SB07(9.5-10)	3/9/2010	ND	2.27 J	ND
0-068-1024	SB08(1.5-2)	3/9/2010	ND	ND	ND
0-068-1025	SB08(7-7.5)	3/9/2010	ND	ND	ND
0-068-1026	SB09(1.5-2)	3/9/2010	ND	2.7 J	ND
0-068-1027	SB09(9.5-10)	3/9/2010	1.47 J	ND	ND
0-068-1028	SB10(2.5-3)	3/9/2010	ND	1.89 J	ND
0-068-1029	SB10(9.5-10)	3/9/2010	2.01 J	4.09 J	1.95 J
0-068-1030	FD-01 (SB01(4-4.5))	3/9/2010	ND	ND	ND
0-068-1031	FD-02 (SB06(5.5-6))	3/9/2010	2040	996	252

µg/kg - Micrograms per kilogram

ND - Not detected above the reporting limit

J - Value is estimated

SS - Sub-slab

SB - Soil boring

FD - Field duplicate

TABLE 4  
 Ground Water Sample Results - March 2010  
 Sterling Cleaners Site  
 Appleton, WI  
 May 2010  
 (All results in µg/L)

Sample Number	Location	Date	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene
0-068-1033	TW-05A	3/9/2010	26400	35900	19100
0-068-1034	TW-06A	3/9/2010	7280	9560	1660
0-068-1035	TW-10	3/10/2010	ND	3.84 J	ND
0-068-1036	TW-09	3/10/2010	17.6	57.9	11.9
0-068-1037	TW-08	3/10/2010	1.67 J	12.4	2.25 J
0-068-1038	TW-07	3/10/2010	2.64 J	20.3	3.31 J
0-068-1039	TW-06B	3/10/2010	7200	9090	1840
0-068-1040	TW-05B	3/10/2010	25600	36600	16600
0-068-1041	TW-04	3/10/2010	150	356	134 J
0-068-1042	TW-03	3/10/2010	ND	1.98 J	ND
0-068-1043	TW-02	3/10/2010	ND	2.07 J	ND
0-068-1044	TW-01	3/10/2010	ND	ND	ND
0-068-1045	FD-03 (TW-05B)	3/10/2010	26900	32500	17400

µg/L - Micrograms per liter

ND - Not detected

J - Value is estimated

TW - Temporary well

FD - Field duplicate

REFERENCE 2  
Outagamie County GIS website  
(<http://outagamiecowi.wgxtreme.com>)

**2011 Property Record | Outagamie County, WI**

*Assessed values not finalized until after Board of Review  
Property information is valid as of 04/24/2012*

**Tax Bill**

*(requires Adobe Reader)*

**OWNER**

STERLING ENTERPRISE OF WIS INC  
304 W WISCONSIN AVE  
APPLETON, WI 54911

**CO-OWNER(S)**

**PROPERTY DESCRIPTION**

SIXTH WARD PLAT 6WD LOT 1 AND E23FT OF LOT 2 BLK 31 LESS  
DOC #1867125 FOR R/W

Municipality:

CITY OF APPLETON

Property Address:

304 W WISCONSIN AVE

**PROPERTY INFORMATION**

Parcel ID:

316093900

Document #:

1867125

Tax Districts:

APPLETON SCHOOL  
FOX VALLEY TECH

**LAND VALUATION**

<u>Code</u>	<u>Acres</u>	<u>Land</u>	<u>Impr.</u>	<u>Total</u>
G2	.230	\$54,800	\$120,200	\$175,000

REFERENCE 3  
**FIRE INVESTIGATION REPORT**

Incident #: 98-001-265		Date: 01/04/98	Time of Alarm: 2031 Hrs.
Address: 304 W. Wisconsin Avenue			
Owner: So Man Chu		Owner's Address: 3411 N. Rankin Street	
Owner's DOB: 01/19/54		Owner's Telephone #: (920) 830-8826	
Occupant(s):			
Occupant(s) DOB:		Occupant(s) Telephone #:	
Operating Status: Dry Cleaners		Alarm Received By: 911	
Origin of Fire: West wall; south of dry-cleaning machine.			
Cause of Fire: Undetermined with suspicion			
Extent of Fire: Fire damage to area of origin; heavy smoke damage throughout structure.			
Construction of Building and Features Influencing Fire Spread: Open Construction			
Property Type	Status	Motive	Offense
Store	Active		Investigation Only
County: Outagamie			
Station: 1		Inhabited: No	
Estimated \$ Loss: \$200,000.00		Insurance Coverage: Sentry insurance Companies 1045 N. Lynndale Drive Suite 1A Appleton, WI 54914 Agent: Lil Savage	
Juvenile(s) Involved:		Juvenile(s) Names:	
Injuries: None	Deaths: None		Arrests:
Reason Closed:		Date Closed:	
Inspector Name: Fire Marshal Eugene R. Reece Jr.		Inspector #: 10	

**This document is the property of  
the Appleton Fire Department and  
is loaned to your agency. Its  
contents are not to be distributed  
outside your agency.**

REFERENCE 4

R + R - OSH  
RECEIVED

AUG 12 2008

TRACKED  33  
REVIEWED

Preliminary Soil a  
Groundwater  
Investigation

at the

So's Dry Cleaning Site

304 W. Wisconsin Ave.  
Appleton, WI 54911

May 14, 1999

R + R - OSH  
RECEIVED

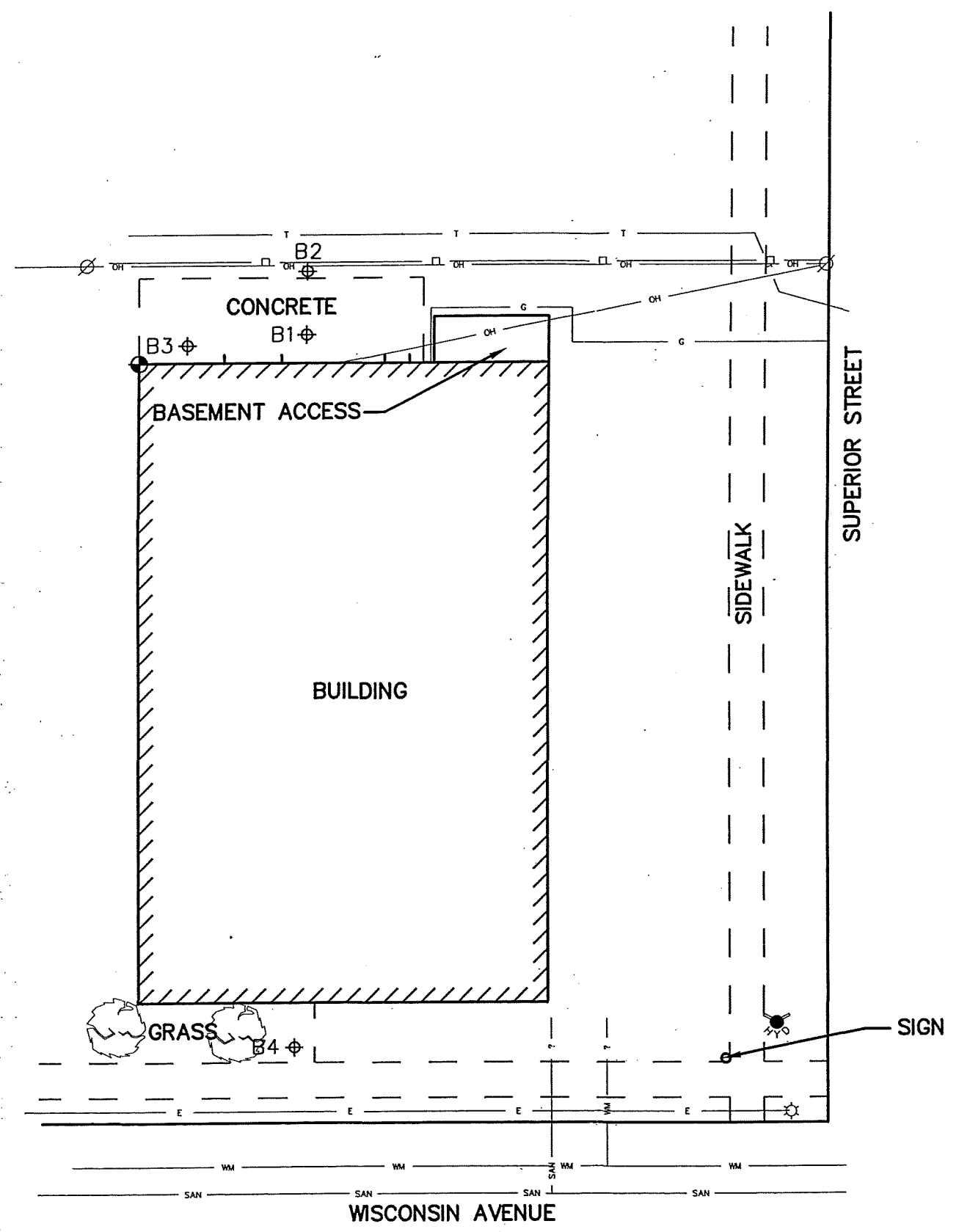
AUG 12 2008

TRACKED   
REVIEWED

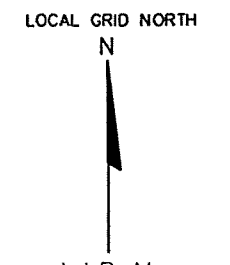
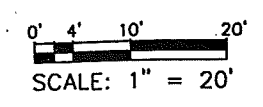
Project N1562A99



60N  
40N  
20N  
0  
20S  
40S  
60S  
80S  
100S  
120S



80W 60W 40W 20W 0 20E 40E 60E 80E 100E 120E



**LEGEND:**

- B1 ⊕ Soil Boring Location and I.D. No.
- ▨ Building Face
- Edge of Asphalt
- Edge of Concrete Pavement
- ⊙ Street Light
- ⊛ Light Post
- ⊕ Water Hydrant
- Fence
- E — Underground Electric
- OH — Overhead Electric
- WM — Water Main
- G — Gas Line
- SAN — Sanitary Sewer
- T — Telephone Line
- ⊕ Reference Point
- 20N Grid Line (20' Interval)

FIGURE 1  
SITE DETAIL MAP

FORMER SO'S DRY CLEANING  
304 W. WISCONSIN AVENUE  
APPLETON, WISCONSIN



ONE SYSTEMS DRIVE  
APPLETON, WI 54914  
PHONE (920) 735-6900  
FAX (920) 830-6100

PROJECT MANAGER:	PROJECT NO:	N1562A99
PROJECT ENGINEER:	CAD FILE NO:	N1562A2
DRAWN BY:	SCALE:	1" = 20'
REVIEWED BY:	DATE:	5/11/99

N1562A99  
SO'S DRY CLEANING

TABLE 2  
SUMMARY OF LABORATORY ANALYSIS  
SOIL BORING SAMPLES

PARAMETER	STANDARD	B1-3	B2-2	B3-1	B4-6
SAMPLE DATE		May 7, 1999			
SAMPLE DEPTH		5.0-7.0	3.0-5.0	1.0-3.0	11.0-13.0
GASOLINE RANGE ORGANICS (mg/kg)	100~	1100	<10	<10	<10
DIESEL RANGE ORGANICS (mg/kg)	100~	460	<10	<10	<10
DETECTED VOCs (µg/kg)					
n-BUTYLBENZENE	-	38000	<250	<25	<25
sec-BUTYLBENZENE	-	12000	<250	<25	<25
cis-1,2-DICHLOROETHENE	-	3100	170	<25	<25
ETHYLBENZENE	2900	8500	<250	<25	<25
ISOPROPYLBENZENE	-	4800	<250	<25	<25
NAPHTHALENE	-	2100	<250	<25	<25
n-PROPYLBENZENE	-	28000	<250	<25	<25
TETRACHLOROETHENE	-	<500	20000	440	<25
TOLUENE	1500	<500	<250	<25	<25
TRICHLOROETHENE	-	<500	<250	<25	<25
1,2,4-TRIMETHYLBENZENE	-	49000	<250	<25	<25
1,3,5-TRIMETHYLBENZENE	-	30000	<250	<25	<25
m,p-XYLENE	4100	2200	<250	<50	<50
o-XYLENE	(combined)	4900	<250	<25	<25


~ A permeability test was not run on these samples. This standard is used due to the presence of sand seams.

TABLE 3  
 SUMMARY OF LABORATORY ANALYSIS  
 TEMPORARY WELL SAMPLES

PARAMETER	ES	PAL	TW1	TW2	TW3	TW4
SAMPLE DATE	-	-	5/7/99	5/7/99	5/7/99	5/7/99
DETECTED VOCs (µg/L)						
n-BUTYLBENZENE	-	-	100	<12	<2.3	<2.3
sec-BUTYLBENZENE	-	-	27	<17	<3.4	<3.4
1,1-DICHLOROETHANE	850	85	31	<17	<3.4	<3.4
cis-1,2-DICHLOROETHENE	70	7	650	350	<3.2	<3.2
n-PROPYLBENZENE	-	-	76	<15	<3	<3
TETRACHLOROETHENE	5	0.5	8200	13000	1800	24
TRICHLOROETHENE	5	0.5	200	160	<4.8	<4.8
1,2,4-TRIMETHYLBENZENE	-	-	440	<18	<3.5	<3.5
1,3,5-TRIMETHYLBENZENE	-	-	160	<32	<6.4	<6.4

ES = enforcement standard

PAL = preventive action limit

 = sample concentrations detected above the enforcement standard

Note: Temporary wells are not constructed in a manner which will allow them to be used as NR 140 points of enforcement. The ES and PAL are shown for comparative purposes only.

## State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES



Jim Doyle, Governor  
 Matthew J. Frank, Secretary  
 Ronald W. Kazmierczak, Regional Director

Northeast Region Headquarters  
 2984 Shawano Ave., P.O. Box 10448  
 Green Bay, Wisconsin 54307-0448  
 Telephone 920-662-5100  
 FAX 920-662-5413  
 TTY Access via relay - 711

August 14, 2008

Jae Cho, President  
 Sterling Enterprises  
 304 West Wisconsin Ave  
 Appleton, WI 54911

Subject: Reported Contamination at **SO'S DRY CLEANERS (FORMER)**,  
**304 W Wisconsin Ave, Appleton, WI**  
 WDNR BRRTS Activity # **02-45-552133**

Dear Mr. Cho:

On August 12, 2008, Brian Wayner of OMNNI Associates, Inc, notified the Wisconsin Department of Natural Resources ("WDNR") that PERC and petroleum contamination had been detected at the site described above.

Based on the information that has been submitted to the WDNR regarding this site, we believe you are responsible for investigating and restoring the environment at the above-described site under Section 292.11, Wisconsin Statutes, known as the hazardous substances spills law.

This letter describes the legal responsibilities of a person who is responsible under Section 292.11, explains what you need to do to investigate and clean up the contamination, and provides you with information about cleanups, environmental consultants, possible financial assistance, and working cooperatively with the WDNR, Department of Commerce ("Commerce") or the Department of Agriculture, Trade and Consumer Protection.

### Legal Responsibilities:

Your legal responsibilities are defined both in statute and in administrative codes. The hazardous substances spill law, Section 292.11 (3) Wisconsin Statutes, states:

- **RESPONSIBILITY.** A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of the state.

Wisconsin Administrative Code chapters NR 700 through NR 749 establish requirements for emergency and interim actions, public information, site investigations, design and operation of remedial action systems, and case closure. Wisconsin Administrative Code chapter NR 140 establishes groundwater standards for contaminants that reach groundwater.

Activity Name: SO's Dry Cleaners (Former)

RP: Jae Cho

**Steps to Take:**

The longer contamination is left in the environment, the farther it can spread and the more it may cost to clean up. Quick action may lessen damage to your property and neighboring properties and reduce your costs in investigating and cleaning up the contamination. To ensure that your cleanup complies with Wisconsin's laws and administrative codes, you should hire a professional environmental consultant who understands what needs to be done. These are the first steps to take:

1. Within the next **30 days**, by September 14, 2008, you should submit written verification (such as a letter from the consultant) that you have hired an environmental consultant. If you do not take action within this time frame, the WDNR may initiate enforcement action against you.
2. Within the next **60 days**, by October 14, 2008, your consultant should submit a work plan and schedule for the investigation. The consultant must comply with the requirements in the NR 700 Wis. Adm. Code rule series and should adhere to current WDNR technical guidance documents.

In addition, within 30 days of completion of the site investigation, your consultant should submit a site investigation report to the department or other agency with administrative authority.

For sites with petroleum contamination, when your investigation has established the degree and extent of contamination, your consultant will be able to determine whether the Department of Commerce or the WDNR has authority over the case. For agrichemicals, your case will be transferred to the Department of Agriculture, Trade and Consumer Protection for oversight.

Sites where discharges to the environment have been reported are entered into the Bureau for Remediation and Redevelopment Tracking System ("BRRTS"), a version of which appears on the WDNR's internet site. You may view the information related to your site at any time (<http://botw.dnr.state.wi.us/botw/Welcome.do>) and use the feedback system to alert us to any errors in the data.

If you want a formal written response from the department on a specific submittal, please be aware that a review fee is required in accordance with ch. NR 749, Wis. Adm. Code. If a fee is not submitted with your reports, you should proceed under the advice of your consultant to complete the site investigation and cleanup to maintain your compliance with the spills law and chapters NR 700 through NR 749. **Do not delay the investigation of your site by waiting for an agency response.** We have provided detailed technical guidance to environmental consultants. Your consultant is expected to know our technical procedures and administrative rules and should be able to answer your questions on meeting cleanup requirements.

All correspondence regarding this site should be sent to:

Jennifer Borski  
Remediation and Redevelopment Program  
Wisconsin Department of Natural Resources  
625 E. County Rd. Y, Suite 700  
Oshkosh, WI 54901-9731  
[jennifer.borski@wisconsin.gov](mailto:jennifer.borski@wisconsin.gov)

Unless otherwise requested, please send only one copy of plans and reports. In addition to the paper copy, an electronic copy may also be submitted. To speed processing, correspondence should reference the BRRTS and FID numbers (if assigned) shown at the top of this letter.



Activity Name: SO's Dry Cleaners (Former)

RP: Jae Cho

**Additional Information for Site Owners:**

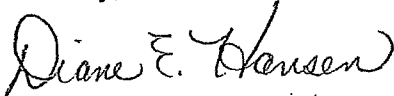
We encourage you to visit our website at <http://dnr.wi.gov/org/aw/rr>, where you can find information on selecting a consultant, financial assistance and understanding the cleanup process. You will also find information there about liability clarification letters, post-cleanup liability and more.

Information to help you select a consultant, materials on controlling costs, understanding the cleanup process, and choosing a site cleanup method are enclosed. In addition, *Fact Sheet 2 – Voluntary Party Remediation and Exemption from Liability* is enclosed and provides information on obtaining protection of limited liability under s. 292.15, Wis. Stats.

If you have questions, call **Jennifer Borski, 920-424-7887** for more information or visit the RR web site at the address above.

Thank you for your cooperation.

Sincerely,



Diane E. Hansen  
Environmental Program Associate  
Remediation & Redevelopment Program

- Enclosures:
1. Remediation & Redevelopment Program
  2. Environmental Contamination – The Basics
  3. Selecting an Environmental Consultant
  4. Environmental Services Contractor List
  5. The Dry Cleaner Env Response Fund Program
  6. Is the Program For Me?
  7. Reimbursement Application Instructions & Checklist
  8. Dry Cleaner Reimbursement Application
  9. Fact Sheet 2, VPLE

cc: Brian Wayner, OMNNI Associates, Inc., One Systems, Appleton, WI 54914  
Jennifer Borski - DNR, Oshkosh

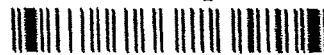
REFERENCE 6

1844353

Document Number

NOTICE OF CONTAMINATION

Recorded  
July 27, 2009 AT 10:59AM  
OUTAGAMIE COUNTY  
JANICE FLENZ  
REGISTER OF DEEDS  
Fee Amount: \$13.00  
Total Pages 2



Legal Description of the Property:

ALL OF LOT ONE (1) AND THE EAST 23 FEET OF LOT TWO (2), IN BLOCK THIRTY-ONE (31) IN SIXTH WARD PLAT, IN THE CITY OF APPLETON, OUTAGAMIE COUNTY, WISCONSIN, ACCORDING TO THE RECORDED ASSESSOR'S MAP OF SAID CITY.

Recording Area

13.00  
②

STATE OF WISCONSIN )

COUNTY OF WINNEBAGO )

Name and Return Address:

Jennifer Borski  
WDNR  
625 E County Rd Y, STE 700  
Oshkosh, WI 54901-9731

ENVELOPE

I, Jennifer Borski, being first duly sworn, state that:

316093900

Parcel Identification Number (PIN)

1. I am a Hydrogeologist, employed by the Wisconsin Department of Natural Resources (hereinafter "the Department") at its Oshkosh Service Center.
2. I have personal knowledge of the facts herein set forth and believe the same to be true.
3. The Department of Natural Resources has determined that volatile organic compounds (hereinafter "VOCs") discharged to Sterling Enterprises of Wisconsin, Inc, which is located at 304 West Wisconsin Avenue, in the City of Appleton, County of Outagamie, and which has the above legal description, has contaminated soil and groundwater in the vicinity.
4. The Department believes that removal or treatment of the contaminated soil, and/or groundwater monitoring, are required on the property under the authority of s. 292.11(3), Wisconsin Statutes.
5. On August 14, 2008, the Department of Natural Resources sent a letter to Mr. Jae Cho and Sterling Enterprises of Wisconsin, Inc. advising of the statutory requirement to restore the environment at that location. An inadequate response to that letter has been received by the Department. Mr. Cho alleged he is not able to obtain financing to perform the actions necessary and provided written rejections from three financial institutions on May 15, 2009.
6. On May 21, 2009, the Department of Natural Resources sent a letter, by certified mail, to Mr. Jae Cho and Sterling Enterprises of Wisconsin, Inc. advising that a notice of contamination would be recorded if satisfactory action to restore the environment did not commence. That letter requested a written response by June 8, 2009 (10 working days from receipt on May 23, 2009). An inadequate response to that letter has been received by the Department. Mr. Jae Cho was not able to secure financing to perform the actions necessary.
7. On June 15, 2009, the Department sent a letter, by certified mail, to Mr. Jae Cho and Sterling Enterprises of Wisconsin, Inc. advising that the Department has made the decision to record a notice of contamination for the above-described property at the county Register of Deeds office.
8. Because the Department believes that VOCs currently found in the soil and groundwater on the property with the above legal description, will continue to discharge into the environment, subsequent purchasers of the property could be held responsible for investigation and clean-up costs under s. 292.11(3), Wisconsin Statutes.

Jennifer Borski, Hydrogeologist

AFFIDAVIT

In Re: Property Located in the  
City of Appleton,  
Outagamie County, Wisconsin  
Described above.

Subscribed and sworn to before me this 13 day of July, 2009.

Cynthia Redow  
Notary Public, State of Wisconsin

My commission expires on: 16 Aug 2009

This document was drafted by the Wisconsin Department of Natural Resources.

# REFERENCE 7

Lockheed Martin  
Scientific Engineering Response and Analytical Services  
2890 Woodbridge Ave, Building 209  
Edison, NJ 08837-3679  
Telephone: 732-321-4200 Facsimile: 732-494-4021

LOCKHEED MARTIN 

DATE: May 7, 2010

TO: Gary Newhart and Cheryl Hawkins, U.S. EPA/ERT

THROUGH: Dennis Miller, SERAS Program Manager *[Signature]*

FROM: Michael Cartwright, SERAS Task Leader *[Signature]*

SUBJECT: STERLING CLEANERS SITE, APPLETON, WISCONSIN  
MARCH 2010 SUB-SLAB SOIL GAS, INDOOR AIR, SOIL AND GROUND WATER  
SAMPLING  
WORK ASSIGNMENT #SER00068 -TRIP REPORT

## BACKGROUND

The Sterling Cleaners Site (Site) is located at West 304 Wisconsin Avenue in Appleton, Outagamie County, Wisconsin (WI). The Site, which has been operated as a dry cleaning facility since 1977, is located in a mixed commercial and residential area. The Wisconsin Department of Natural Resources (WDNR) was notified of a tetrachloroethene (PCE) release at the Site in 1999. Analysis of the spill area indicated ongoing releases of PCE outside the facility. WDNR also discovered that the previous operator of Sterling Cleaners, So's Custom Tailors & Dry Cleaning, had a fire in the building in the late 1990s. WDNR suspects additional PCE was released during the fire suppression efforts.

In August 2008, the current owner of the facility provided WDNR with a Preliminary Soil and Groundwater Investigation that confirmed previously suspected PCE contamination at the Site. However, the environmental studies conducted by the property owners were limited. The current property owner is unable to finance the necessary additional studies to determine the extent of chlorinated solvent contamination at the Site and in the surrounding areas. Consequently, WDNR has requested assistance from the Environmental Protection Agency (EPA) to determine the extent of soil and ground water contamination resulting from historic PCE releases. WDNR has also asked for EPA assistance determining whether sub-surface vapors are impacting neighboring residences.

At the request of the EPA/Environmental Response Team (ERT), Scientific, Engineering, Response and Analytical Services (SERAS) personnel conducted a study to evaluate potential soil, ground water and indoor air contamination at the Site.

## OBSERVATIONS AND ACTIVITIES

### Mobilizations

From March 7 to 11, 2010, SERAS personnel traveled to the Site to evaluate potential soil, ground water and indoor air contamination. Sub-slab soil gas wells were installed within the interior of one commercial building and one residence, and near the exterior of one residence. A total of two sub-slab soil gas samples, five indoor air samples and two ambient air samples were collected for EPA Toxic Organic (TO-15) method volatile organic compound (VOC) analysis. Also during this mobilization, seven test boreholes were advanced on the Site property; three test boreholes were advanced on an adjacent residential property; and one soil core was advanced below the Sterling Cleaners basement slab. A total of 32 soil samples were collected from these locations for VOC analysis. In



REFERENCE 8

EPA Region 5 Records Ctr.



363609

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5**

**EMERGENCY RESPONSE BRANCH 1  
25089 CENTER RIDGE ROAD  
WESTLAKE, OH 44145**

**JUL 27 2010**

**MEMORANDUM**

**SUBJECT:** Approval and Funding for a Removal Action at the Sterling Cleaners Site, Appleton, Outagamie County, Wisconsin (Site ID# B5VH)

**FROM:** Kathy Clayton, On-Scene Coordinator  
Response Section 1, Emergency Response Branch 1

**THRU:** Jason H. El-Zein  
Emergency Response Branch 1

**TO:** Richard C. Karl, Director  
Superfund Division

**I. PURPOSE**

The purpose of this memorandum is to request and document approval to expend up to \$370,200 to conduct a time-critical removal action at the Sterling Cleaners Site (the Site) located at 304 W. Wisconsin Avenue, in Appleton, Outagamie County, Wisconsin 54911. This removal action is necessary to mitigate the immediate threat to human health and the environment posed by the presence of elevated levels of chlorinated volatile organic compounds (VOCs), tetrachloroethylene (PCE) and its degradation products in the air, soil, and groundwater on Site and downgradient of the Site. PCE and its degradation products are defined as hazardous substances under Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and its implementing regulations at 40 C.F.R. Part 302. Concentrations of the hazardous substances at the Site exceed federal Maximum Contaminant Levels (MCLs), U.S. EPA Preliminary Remediation Goals (PRGs), Wisconsin Groundwater Quality Standards (Chapter NR 140), and Vapor Intrusion Action Levels established by the Wisconsin Department of Health.

The response action proposed herein will mitigate Site conditions by installing vapor abatement systems in structures impacted by PCE subsurface migration and by excavating and disposing of contaminated soil off-site. Because hazardous substances exist in substantial quantities and are uncontrolled, this removal should be classified as time critical. If the source area soil contamination is not addressed through a removal action, continued migration of soil contaminants to groundwater in the shallow aquifer will occur, resulting in additional vapor intrusion impacts to neighboring properties.





Weston Solutions, Inc.  
20 North Wacker Drive, Suite 1210  
Chicago, IL 60606-2901  
312-424-3300 • Fax 312-424-3330  
www.westonsolutions.com

December 6, 2010

Ms. Kathy Clayton  
On-Scene Coordinator  
United States Environmental Protection Agency, Region V  
C/o Wisconsin Department of Natural Resources  
2984 Shawano Avenue  
Green Bay, WI 54307-0448

151

**Subject: Sterling Cleaners Site Removal Action**  
**Appleton, Outagamie County, Wisconsin**  
**Technical Direction Document No.: S05-0001-1008-015**  
**Document Control No.: 1177-2A-AIDZ**  
**Identification No.: B5VH**  
**Work Order No.: 20405.012.001.1177.00**

WPNR BRRTS # 02-45-552133

Dear Ms. Clayton:

The United States Environmental Protection Agency (U.S. EPA) tasked the Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) to provide oversight of removal activities at the Sterling Cleaners Site in Appleton, Outagamie County, Wisconsin (the Site). Under Technical Direction Document (TDD) No. S05-0001-1008-015, U.S. EPA tasked WESTON START to

- Perform general project oversight;
- Collect excavation soil sidewall samples;
- Conduct perimeter air monitoring activities;
- Collect sub-slab vapor probe, indoor, and ambient air samples;
- Conduct a vacuum check on the vapor intrusion abatement system;
- Collect written and photographic documentation; and
- Track disposition of the wastes generated during the removal activities.

From September 22 through 30, 2010, U.S. EPA, WESTON START, and the Emergency and Rapid Response Services (ERRS) contractor, Environmental Restoration, LLC (ER), conducted removal activities at the Site. **Table 1 in Attachment A** lists the agencies and organizations involved in the response.

This letter report discusses the Site description, Site background, removal activities, disposition of waste, the effectiveness of removal activities, difficulties encountered, and conclusions. In addition, this letter report has five attachments. **Attachment A** provides the tables for this letter report. **Attachment B** provides the figures. **Attachment C** provides analytical results for

I:\WO\START3\1177\42392LRPT.DOC

1177-2A-AIDZ

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express written permission of U.S. EPA.

# REFERENCE 10

Lockheed Martin  
Scientific Engineering Response and Analytical Services  
2890 Woodbridge Ave, Building 209  
Edison, NJ 08837-3679  
Telephone: 732-321-4200 Facsimile: 732-494-4021

LOCKHEED MARTIN 

DATE: August 3, 2011  
TO: Gary Newhart, U.S. EPA/ERT  
THROUGH: Dennis Miller, SERAS Program Manager *DM* For Dennis Miller  
FROM: Michael Cartwright, SERAS Task Leader *MC*  
SUBJECT: STERLING CLEANERS SITE, APPLETON, WISCONSIN  
MAY 2011 INDOOR AIR, SOIL AND GROUND WATER SAMPLING  
WORK ASSIGNMENT #SER00068 - TRIP REPORT

received  
8/15/11  
(43)

## BACKGROUND

The Sterling Cleaners Site (Site) is located at West 304 Wisconsin Avenue in Appleton, Outagamie County, Wisconsin (WI). The Site, which has been operated as a dry cleaning facility since 1977, is located in a mixed commercial and residential area. The Wisconsin Department of Natural Resources (WDNR) was notified of a tetrachloroethene (PCE) release at the Site in 1999. Analysis of the spill area indicated ongoing releases of PCE outside the facility. WDNR also discovered that the previous operator of Sterling Cleaners, So's Custom Tailors & Dry Cleaning, had a fire in the building in the late 1990s. WDNR suspects additional PCE was released during the fire suppression efforts.

In August 2008, the current owner of the facility provided WDNR with a Preliminary Soil and Groundwater Investigation that confirmed previously suspected PCE contamination at the Site. However, the environmental studies conducted by the property owners were limited. The current property owner is unable to finance the necessary additional studies to determine the extent of chlorinated solvent contamination at the Site and in the surrounding areas. Consequently, WDNR has requested assistance from the Environmental Protection Agency (EPA) to determine the extent of soil and ground water contamination resulting from historic PCE releases. WDNR has also asked for EPA assistance determining whether sub-surface vapors are impacting neighboring residences.

At the request of the EPA/Environmental Response Team (ERT), Scientific, Engineering, Response and Analytical Services (SERAS) personnel conducted a study to evaluate potential soil, ground water and indoor air contamination at the Site.

## OBSERVATIONS AND ACTIVITIES

### Mobilizations

From March 7 to 11, 2010, SERAS personnel traveled to the Site to evaluate potential soil, ground water and indoor air contamination. Sub-slab soil gas wells were installed within the interior of one commercial building and one residence, and near the exterior of an additional residence. A total of two sub-slab soil gas, five indoor air and two ambient air samples were collected for EPA Toxic Organic (TO-15) method volatile organic compound (VOC) analysis. Also during this mobilization, seven test boreholes were advanced on the Site property; three test boreholes were advanced on an adjacent residential property; and one soil core was advanced below the Sterling Cleaners basement slab. A total of 32 soil samples were collected from these locations for VOC analysis. In addition, temporary ground water monitor wells were installed in the 10 test boreholes, and a total of 13 ground water samples were collected for VOC analysis.

SERAS068-DTR-080311

Rec'd  
8/1/11

July 26, 2011

Scott Hodgson  
Terracon, Inc. - Franklin  
9856 South 57th Street  
Franklin, WI 53132

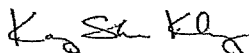
RE: Project: 58117015 FORMER SO'S  
Pace Project No.: 4048343

Dear Scott Hodgson:

Enclosed are the analytical results for sample(s) received by the laboratory on July 14, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kang Khang

kang.khang@pacelabs.com  
Project Manager

Enclosures



**REPORT OF LABORATORY ANALYSIS**

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September 20, 2011

Scott Hodgson  
Terracon, Inc. - Franklin  
9856 South 57th Street  
Franklin, WI 53132

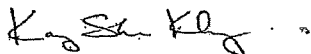
RE: Project: 58117015 SO'S  
Pace Project No.: 4050505

Dear Scott Hodgson:

Enclosed are the analytical results for sample(s) received by the laboratory on September 07, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kang Khang

kang.khang@pacelabs.com  
Project Manager

Enclosures



**REPORT OF LABORATORY ANALYSIS**

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SOIL SURVEY OF

# Outagamie County, Wisconsin

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United States Department of Agriculture  
Soil Conservation Service  
In cooperation with the  
Research Division of the College of Agricultural  
and Life Sciences  
University of Wisconsin

REFERENCE 13



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Location	Latitude (lat)	Longitude (long)	Elevation
Outagamie County, Wisconsin	44.278876°	-88.402329°	787 ft. 239 m.

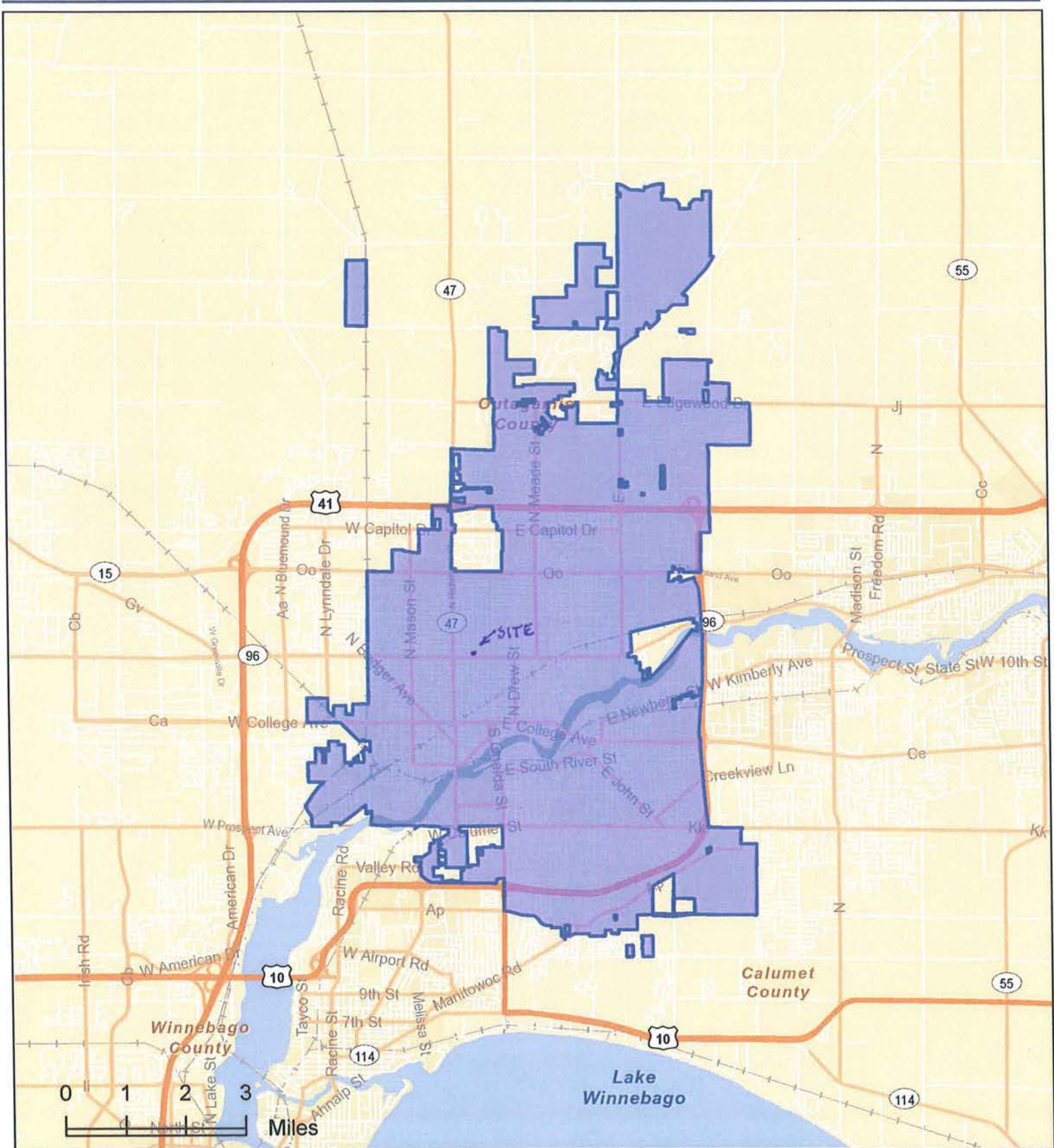
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# Census 2010 Summary Profile

City of Appleton  
 Appleton city, WI (5502375)  
 Geography: Place

	2000	2010	2000-2010 Annual Rate
Population	71,320	72,623	0.18%
Households	27,280	28,874	0.57%
Housing Units	28,166	30,348	0.75%

Population by Race	Number	Percent
<b>Total</b>	72,623	100.0%
Population Reporting One Race	71,184	98.0%
White	63,553	87.5%
Black	1,216	1.7%
American Indian	489	0.7%
Asian	4,279	5.9%
Pacific Islander	25	0.0%
Some Other Race	1,622	2.2%
Population Reporting Two or More Races	1,439	2.0%
Total Hispanic Population	3,643	5.0%

Population by Sex	Number	Percent
Male	35,959	49.5%
Female	36,664	50.5%

Population by Age	Number	Percent
<b>Total</b>	72,623	100.0%
Age 0 - 4	4,996	6.9%
Age 5 - 9	5,062	7.0%
Age 10 - 14	4,941	6.8%
Age 15 - 19	5,349	7.4%
Age 20 - 24	5,064	7.0%
Age 25 - 29	5,345	7.4%
Age 30 - 34	5,233	7.2%
Age 35 - 39	4,540	6.3%
Age 40 - 44	4,919	6.8%
Age 45 - 49	5,586	7.7%
Age 50 - 54	5,456	7.5%
Age 55 - 59	4,474	6.2%
Age 60 - 64	3,429	4.7%
Age 65 - 69	2,330	3.2%
Age 70 - 74	1,720	2.4%
Age 75 - 79	1,464	2.0%
Age 80 - 84	1,351	1.9%
Age 85+	1,364	1.9%
Age 18+	54,463	75.0%
Age 65+	8,229	11.3%

Median Age by Sex and Race/Hispanic Origin	Median Age
<b>Total Population</b>	35.4
Male	34.1
Female	36.9
White Alone	38.0
Black Alone	24.4
American Indian Alone	30.7
Asian Alone	22.0
Pacific Islander Alone	23.2
Some Other Race Alone	23.8
Two or More Races	12.8
Hispanic Population	21.6

**Data Note:** Hispanic population can be of any race. Census 2010 medians are computed from reported data distributions.  
**Source:** U.S. Census Bureau, Census 2010 Summary File 1. Esri converted Census 2000 data into 2010 geography.





Demographic and Income Profile

Sterling Dry Cleaners One Mile  
Donut: 0 - 0.25 miles

Latitude: 44.27317  
Longitude: -88.40895

Summary	2010	2011	2016
Population	1,359	1,335	1,335
Households	577	567	571
Families	314	309	308
Average Household Size	2.35	2.35	2.33
Owner Occupied Housing Units	353	343	346
Renter Occupied Housing Units	224	224	225
Median Age	34.8	34.9	35.2

Trends: 2011 - 2016 Annual Rate	Area	State	National
Population	0.00%	0.45%	0.67%
Households	0.14%	0.60%	0.71%
Families	-0.07%	0.40%	0.57%
Owner HHs	0.17%	0.72%	0.91%
Median Household Income	3.73%	2.95%	2.75%

Households by Income	2011		2016	
	Number	Percent	Number	Percent
<\$15,000	80	14.1%	77	13.5%
\$15,000 - \$24,999	68	12.0%	55	9.6%
\$25,000 - \$34,999	75	13.2%	60	10.5%
\$35,000 - \$49,999	95	16.8%	75	13.1%
\$50,000 - \$74,999	140	24.7%	144	25.2%
\$75,000 - \$99,999	63	11.1%	94	16.5%
\$100,000 - \$149,999	40	7.1%	57	10.0%
\$150,000 - \$199,999	3	0.5%	5	0.9%
\$200,000+	3	0.5%	4	0.7%
Median Household Income	\$43,329		\$52,023	
Average Household Income	\$50,990		\$58,053	
Per Capita Income	\$22,928		\$26,323	

Population by Age	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
0 - 4	105	7.7%	101	7.6%	101	7.6%
5 - 9	93	6.8%	92	6.9%	90	6.7%
10 - 14	75	5.5%	74	5.5%	73	5.5%
15 - 19	80	5.9%	78	5.8%	73	5.5%
20 - 24	85	6.3%	83	6.2%	80	6.0%
25 - 34	247	18.2%	241	18.1%	246	18.4%
35 - 44	200	14.7%	196	14.7%	188	14.1%
45 - 54	187	13.8%	184	13.8%	167	12.5%
55 - 64	149	11.0%	148	11.1%	159	11.9%
65 - 74	69	5.1%	69	5.2%	84	6.3%
75 - 84	45	3.3%	45	3.4%	47	3.5%
85+	24	1.8%	24	1.8%	27	2.0%

Race and Ethnicity	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
White Alone	1,208	88.8%	1,186	88.8%	1,169	87.5%
Black Alone	23	1.7%	22	1.6%	26	1.9%
American Indian Alone	13	1.0%	13	1.0%	14	1.0%
Asian Alone	63	4.6%	62	4.6%	66	4.9%
Pacific Islander Alone	1	0.1%	1	0.1%	1	0.1%
Some Other Race Alone	15	1.1%	15	1.1%	20	1.5%
Two or More Races	37	2.7%	36	2.7%	40	3.0%
Hispanic Origin (Any Race)	47	3.5%	48	3.6%	61	4.6%

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Data. Esri forecasts for 2011 and 2016.



# Demographic and Income Profile

Sterling Dry Cleaners One Mile  
Donut: 0.25 - 0.5 miles

Latitude: 44.27317  
Longitude: -88.40895

Summary	2010	2011	2016
Population	4,378	4,382	4,480
Households	2,029	2,034	2,105
Families	1,032	1,033	1,054
Average Household Size	2.13	2.12	2.10
Owner Occupied Housing Units	1,164	1,151	1,194
Renter Occupied Housing Units	865	883	911
Median Age	34.6	34.7	34.8
Trends: 2011 - 2016 Annual Rate	Area	State	National
Population	0.44%	0.45%	0.67%
Households	0.69%	0.60%	0.71%
Families	0.40%	0.40%	0.57%
Owner HHs	0.74%	0.72%	0.91%
Median Household Income	4.31%	2.95%	2.75%

Households by Income	2011		2016	
	Number	Percent	Number	Percent
<\$15,000	353	17.3%	365	17.3%
\$15,000 - \$24,999	244	12.0%	196	9.3%
\$25,000 - \$34,999	307	15.1%	240	11.4%
\$35,000 - \$49,999	327	16.1%	276	13.1%
\$50,000 - \$74,999	411	20.2%	448	21.3%
\$75,000 - \$99,999	220	10.8%	334	15.9%
\$100,000 - \$149,999	132	6.5%	188	8.9%
\$150,000 - \$199,999	14	0.7%	23	1.1%
\$200,000+	27	1.3%	35	1.7%
Median Household Income	\$39,090		\$48,265	
Average Household Income	\$49,887		\$57,820	
Per Capita Income	\$22,842		\$26,717	

Population by Age	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
0 - 4	325	7.4%	320	7.3%	328	7.3%
5 - 9	303	6.9%	303	6.9%	305	6.8%
10 - 14	243	5.5%	243	5.5%	250	5.6%
15 - 19	259	5.9%	258	5.9%	247	5.5%
20 - 24	292	6.7%	294	6.7%	291	6.5%
25 - 34	800	18.3%	801	18.3%	833	18.6%
35 - 44	596	13.6%	596	13.6%	583	13.0%
45 - 54	608	13.9%	606	13.8%	566	12.6%
55 - 64	503	11.5%	507	11.6%	553	12.3%
65 - 74	207	4.7%	211	4.8%	264	5.9%
75 - 84	151	3.4%	151	3.4%	156	3.5%
85+	92	2.1%	93	2.1%	103	2.3%

Race and Ethnicity	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
White Alone	3,800	86.8%	3,798	86.7%	3,812	85.1%
Black Alone	103	2.4%	102	2.3%	121	2.7%
American Indian Alone	62	1.4%	62	1.4%	67	1.5%
Asian Alone	225	5.1%	226	5.2%	246	5.5%
Pacific Islander Alone	2	0.0%	2	0.0%	2	0.0%
Some Other Race Alone	75	1.7%	80	1.8%	104	2.3%
Two or More Races	111	2.5%	112	2.6%	129	2.9%
Hispanic Origin (Any Race)	185	4.2%	195	4.5%	251	5.6%

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Data. Esri forecasts for 2011 and 2016.

May 01, 2012

Made with Esri Business Analyst





# Demographic and Income Profile

Sterling Dry Cleaners One Mile  
Donut: 0.5 - 1 mile

Latitude: 44.27317  
Longitude: -88.40895

Summary	2010	2011	2016
Population	12,313	12,443	12,972
Households	4,869	4,931	5,225
Families	2,767	2,796	2,911
Average Household Size	2.30	2.30	2.27
Owner Occupied Housing Units	3,354	3,362	3,562
Renter Occupied Housing Units	1,515	1,569	1,663
Median Age	33.7	33.7	34.2

Trends: 2011 - 2016 Annual Rate	Area	State	National
Population	0.84%	0.45%	0.67%
Households	1.17%	0.60%	0.71%
Families	0.81%	0.40%	0.57%
Owner HHs	1.16%	0.72%	0.91%
Median Household Income	3.49%	2.95%	2.75%

Households by Income	2011		2016	
	Number	Percent	Number	Percent
<\$15,000	597	12.1%	611	11.7%
\$15,000 - \$24,999	523	10.6%	420	8.0%
\$25,000 - \$34,999	673	13.6%	529	10.1%
\$35,000 - \$49,999	851	17.3%	739	14.1%
\$50,000 - \$74,999	1,104	22.4%	1,202	23.0%
\$75,000 - \$99,999	634	12.9%	952	18.2%
\$100,000 - \$149,999	412	8.4%	574	11.0%
\$150,000 - \$199,999	59	1.2%	96	1.8%
\$200,000+	78	1.6%	102	2.0%
Median Household Income	\$45,938		\$54,537	
Average Household Income	\$56,399		\$65,166	
Per Capita Income	\$24,273		\$28,161	

Population by Age	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
0 - 4	771	6.3%	767	6.2%	806	6.2%
5 - 9	730	5.9%	736	5.9%	756	5.8%
10 - 14	691	5.6%	695	5.6%	723	5.6%
15 - 19	1,024	8.3%	1,027	8.3%	1,005	7.7%
20 - 24	1,196	9.7%	1,211	9.7%	1,215	9.4%
25 - 34	1,997	16.2%	2,035	16.4%	2,156	16.6%
35 - 44	1,516	12.3%	1,525	12.3%	1,523	11.7%
45 - 54	1,687	13.7%	1,690	13.6%	1,616	12.5%
55 - 64	1,287	10.5%	1,315	10.6%	1,470	11.3%
65 - 74	675	5.5%	696	5.6%	877	6.8%
75 - 84	510	4.1%	515	4.1%	556	4.3%
85+	230	1.9%	233	1.9%	268	2.1%

Race and Ethnicity	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
White Alone	10,673	86.7%	10,771	86.6%	11,017	84.9%
Black Alone	300	2.4%	303	2.4%	364	2.8%
American Indian Alone	119	1.0%	121	1.0%	132	1.0%
Asian Alone	719	5.8%	727	5.8%	808	6.2%
Pacific Islander Alone	10	0.1%	10	0.1%	10	0.1%
Some Other Race Alone	242	2.0%	257	2.1%	344	2.7%
Two or More Races	251	2.0%	254	2.0%	297	2.3%
Hispanic Origin (Any Race)	532	4.3%	563	4.5%	741	5.7%

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Data. Esri forecasts for 2011 and 2016.

May 01, 2012

Made with Esri Business Analyst<sup>®</sup>



# Demographic and Income Profile

Sterling Dry Cleaners Four Mile  
Donut: 1 - 2 miles

Latitude: 44.27317  
Longitude: -88.40895

Summary	2010	2011	2016
Population	31,429	31,445	32,380
Households	12,997	12,993	13,489
Families	7,736	7,746	7,941
Average Household Size	2.33	2.33	2.32
Owner Occupied Housing Units	7,950	7,894	8,258
Renter Occupied Housing Units	5,047	5,099	5,231
Median Age	36.6	36.7	37.1

Trends: 2011 - 2016 Annual Rate	Area	State	National
Population	0.59%	0.45%	0.67%
Households	0.75%	0.60%	0.71%
Families	0.50%	0.40%	0.57%
Owner HHs	0.91%	0.72%	0.91%
Median Household Income	3.68%	2.95%	2.75%

Households by Income	2011		2016	
	Number	Percent	Number	Percent
<\$15,000	1,263	9.7%	1,199	8.9%
\$15,000 - \$24,999	1,383	10.6%	1,042	7.7%
\$25,000 - \$34,999	1,539	11.8%	1,187	8.8%
\$35,000 - \$49,999	1,955	15.0%	1,595	11.8%
\$50,000 - \$74,999	2,810	21.6%	2,882	21.4%
\$75,000 - \$99,999	1,877	14.4%	2,658	19.7%
\$100,000 - \$149,999	1,463	11.3%	1,923	14.3%
\$150,000 - \$199,999	359	2.8%	585	4.3%
\$200,000+	345	2.7%	419	3.1%
Median Household Income	\$52,098		\$62,402	
Average Household Income	\$64,823		\$75,967	
Per Capita Income	\$27,768		\$32,672	

Population by Age	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
0 - 4	2,010	6.4%	1,985	6.3%	2,065	6.4%
5 - 9	1,975	6.3%	1,966	6.3%	2,002	6.2%
10 - 14	1,893	6.0%	1,897	6.0%	1,963	6.1%
15 - 19	2,210	7.0%	2,199	7.0%	2,114	6.5%
20 - 24	2,452	7.8%	2,458	7.8%	2,430	7.5%
25 - 34	4,590	14.6%	4,605	14.6%	4,820	14.9%
35 - 44	3,739	11.9%	3,719	11.8%	3,664	11.3%
45 - 54	4,524	14.4%	4,496	14.3%	4,231	13.1%
55 - 64	3,501	11.1%	3,551	11.3%	3,888	12.0%
65 - 74	2,032	6.5%	2,076	6.6%	2,576	8.0%
75 - 84	1,683	5.4%	1,678	5.3%	1,739	5.4%
85+	820	2.6%	817	2.6%	888	2.7%

Race and Ethnicity	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
White Alone	27,636	87.9%	27,625	87.8%	27,974	86.4%
Black Alone	489	1.6%	488	1.6%	580	1.8%
American Indian Alone	178	0.6%	180	0.6%	189	0.6%
Asian Alone	1,833	5.8%	1,831	5.8%	2,003	6.2%
Pacific Islander Alone	20	0.1%	20	0.1%	21	0.1%
Some Other Race Alone	731	2.3%	760	2.4%	981	3.0%
Two or More Races	542	1.7%	543	1.7%	632	2.0%
Hispanic Origin (Any Race)	1,656	5.3%	1,720	5.5%	2,214	6.8%

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Data. Esri forecasts for 2011 and 2016.

May 01, 2012

Made with Esri Business Analyst





# Demographic and Income Profile

Sterling Dry Cleaners Four Mile  
Donut: 2 - 4 miles

Latitude: 44.27317  
Longitude: -88.40895

Summary	2010	2011	2016			
Population	62,012	62,620	65,635			
Households	25,373	25,630	27,164			
Families	16,752	16,932	17,766			
Average Household Size	2.43	2.43	2.40			
Owner Occupied Housing Units	16,525	16,542	17,712			
Renter Occupied Housing Units	8,848	9,088	9,452			
Median Age	37.1	37.2	37.5			
Trends: 2011 - 2016 Annual Rate	Area	State	National			
Population	0.95%	0.45%	0.67%			
Households	1.17%	0.60%	0.71%			
Families	0.97%	0.40%	0.57%			
Owner HHs	1.38%	0.72%	0.91%			
Median Household Income	4.15%	2.95%	2.75%			
Households by Income	2011		2016			
	Number	Percent	Number	Percent		
<\$15,000	1,694	6.6%	1,630	6.0%		
\$15,000 - \$24,999	2,287	8.9%	1,710	6.3%		
\$25,000 - \$34,999	2,512	9.8%	1,855	6.8%		
\$35,000 - \$49,999	3,690	14.4%	2,991	11.0%		
\$50,000 - \$74,999	5,547	21.6%	5,779	21.3%		
\$75,000 - \$99,999	4,033	15.7%	5,600	20.6%		
\$100,000 - \$149,999	3,695	14.4%	4,583	16.9%		
\$150,000 - \$199,999	1,137	4.4%	1,659	6.1%		
\$200,000+	1,036	4.0%	1,357	5.0%		
Median Household Income	\$59,282		\$72,642			
Average Household Income	\$74,998		\$87,791			
Per Capita Income	\$30,610		\$36,200			
Population by Age	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
0 - 4	4,203	6.8%	4,185	6.7%	4,430	6.7%
5 - 9	4,358	7.0%	4,380	7.0%	4,565	7.0%
10 - 14	4,277	6.9%	4,309	6.9%	4,541	6.9%
15 - 19	4,225	6.8%	4,238	6.8%	4,144	6.3%
20 - 24	3,723	6.0%	3,787	6.0%	3,824	5.8%
25 - 34	8,571	13.8%	8,683	13.9%	9,279	14.1%
35 - 44	8,257	13.3%	8,276	13.2%	8,322	12.7%
45 - 54	9,991	16.1%	10,018	16.0%	9,576	14.6%
55 - 64	7,160	11.5%	7,330	11.7%	8,192	12.5%
65 - 74	3,759	6.1%	3,900	6.2%	4,964	7.6%
75 - 84	2,353	3.8%	2,374	3.8%	2,538	3.9%
85+	1,134	1.8%	1,140	1.8%	1,260	1.9%
Race and Ethnicity	2010		2011		2016	
	Number	Percent	Number	Percent	Number	Percent
White Alone	55,212	89.0%	55,709	89.0%	57,431	87.5%
Black Alone	828	1.3%	833	1.3%	1,009	1.5%
American Indian Alone	345	0.6%	345	0.6%	386	0.6%
Asian Alone	2,750	4.4%	2,772	4.4%	3,112	4.7%
Pacific Islander Alone	17	0.0%	17	0.0%	19	0.0%
Some Other Race Alone	1,721	2.8%	1,795	2.9%	2,295	3.5%
Two or More Races	1,139	1.8%	1,148	1.8%	1,383	2.1%
Hispanic Origin (Any Race)	3,445	5.6%	3,597	5.7%	4,601	7.0%

Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Data. Esri forecasts for 2011 and 2016.

May 01, 2012


Made with Esri Business Analyst

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Solutions Guide for Business



Understanding our world.

Home Industries

### GIS for Retail

- GIS for Business
- Overview

### Industry Focus


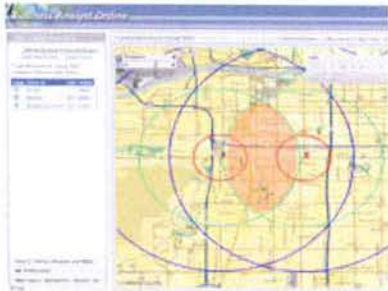
- Real Estate
- Supply Chain
- Marketing
- Merchandising

### Community

- News for Business Newsletter
- Get Connected

Ask Our Experts

[Business Analyst Online](#) from Esri is a Web-based GIS analysis and reporting solution that provides immediate access to reports and maps based on a variety of datasets including demographics, consumer spending, market potential, business, labor, and traffic data. Within minutes, you can generate reports and maps that will help you understand the lifestyle and buying behaviors of households in your market and answer questions such as where to find optimal sites for new store locations, how to market effectively to specific customer segments, and how to profile your best customers and find more like them.



Done, but with errors on page. Internet 100%

**Borski, Jennifer - DNR**

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**From:** Clayton.Kathy-CI@epamail.epa.gov  
**Sent:** Friday, February 25, 2011 3:44 PM  
**To:** Borski, Jennifer - DNR  
**Subject:** RE: Update on Sterling Cleaners, Appleton  
**Attachments:** SERAS-068-DAR-022311.pdf

Pencil us in for the first week of May. Let's start negotiations on the sampling... How many? Soil and groundwater - or soil only? Where?

Here's the final analytical results for the recent air sampling. I'll send the NFA letters out to Piepkorns and Nonns next week.

Thanks,  
Kathy

ANALYTICAL REPORT


Prepared by  
Lockheed Martin Information Systems and Global Services/Environmental Services  
Scientific, Engineering, Response and Analytical Services

Sterling Cleaners Site  
Appleton, Wisconsin

February 2011

EPA Work Assignment No. SERAS-068  
LOCKHEED MARTIN Work Order SER00068  
EPA Contract No. EP-W-09-031

Submitted to  
G. Newhart  
EPA-ERT  
26 West Martin Luther King Drive  
Cincinnati, OH 45268

  
\_\_\_\_\_  
V. Katsal  
Analytical Support Leader

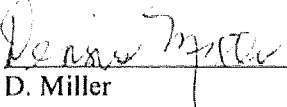
2/23/11  
Date

Analysis by:  
ERT/SERAS

  
\_\_\_\_\_  
D. Killeen  
QA/QC Officer

2/21/11  
Date

Prepared by:  
Y. Mehra

  
\_\_\_\_\_  
D. Miller  
Program Manager

2/22/11  
Date

Validated by:  
A.LoSurdo

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**REPORT OF LABORATORY ANALYSIS**  
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**Borski, Jennifer - DNR**

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**From:** Clayton.Kathy-CI@epamail.epa.gov  
**Sent:** Friday, October 22, 2010 1:14 PM  
**To:** Thiboldeaux, Robert L - DHS; Borski, Jennifer - DNR; Eggebrecht, Kurt;  
tim.mirkes@appleton.org  
**Subject:** Sterling Cleaners - September 2010 SUMMA results  
**Attachments:** SERAS-068-DAR-101810.pdf; Unit005 Aug and Sep 2010.pdf

Hi:

Please see attached for the results of the air sampling conducted at 1319 Superior. Curiously, the indoor air results are still higher than the basement and the ambient air, but not as dramatically different as in August. What are your thoughts on how to proceed? My inclination is to continue to monitor the house - I would like ask the owners if we can sample again in the spring.

Thanks!  
Kathy

ANALYTICAL REPORT

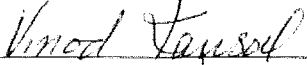
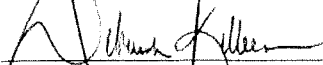
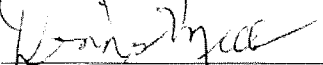
Prepared by  
Lockheed Martin Information Systems and Global Services/Environmental Services  
Scientific, Engineering, Response and Analytical Services

Sterling Cleaners Site  
Appleton, Wisconsin

October 2010

EPA Work Assignment No. SERAS-068  
LOCKHEED MARTIN Work Order SER00068  
EPA Contract No. EP-W-09-031

Submitted to  
G. Newhart  
EPA-ERT  
26 West Martin Luther King Drive  
Cincinnati, OH 45268

	<u>10/15/10</u>
V. Kansal Analytical Support Leader	Date
	<u>10/15/10</u>
D. Killeen QA/QC Officer	Date
	<u>10/16/10</u>
D. Miller Program Manager	Date

Analysis by:  
ERT/SERAS

Prepared by:  
Y. Mehra

Validated by:  
J. Soroka

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**Borski, Jennifer - DNR**

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**From:** Halbur.Kathy@epamail.epa.gov  
**Sent:** Tuesday, October 25, 2011 1:35 PM  
**To:** Borski, Jennifer - DNR; Thiboldeaux, Robert L - DHS; Eggebrecht, Kurt; Tim Mirkes  
**Subject:** Sterling Cleaners - Performance Sampling Results  
**Attachments:** SERAS-068-DAR-101211\_September Sampling Final.pdf; 1315 Superior NFA.docx; Unit002 Sep 2011.pdf

Hi:

Please see attached for the results of the final sampling at 1315 N. Superior. It appears to me that the remedies succeeded in reducing the PCE concentrations inside the home to below the action level. Do you all concur? Also attached is a proposed no further action letter for the Piepkorns. It mirrors the one we sent to the other homeowners in the area. I think it works, but I'm also open to suggestions if you think more specific information regarding the actions taken at the residence are needed in the letter. The primary purpose of the letter is to provide them something to attach to their disclosure statement in the event they want to sell.

I look forward to your comments. Thanks everyone for your help making this a successful removal action!  
Kathy

Kathy (Clayton) Halbur, On-Scene Coordinator  
U.S. EPA Region 5  
Emergency Response Branch  
c/o WDNR  
2984 Shawano Ave  
Green Bay, WI 54313-6727  
Phone: 920-662-5424  
Cell: 920-634-9072  
Email: [halbur.kathy@epa.gov](mailto:halbur.kathy@epa.gov)

Air Sampling Results - March and November 2010; January, May and September 2011  
Sterling Cleaners Site  
Appleton, WI

Sample Number	0-068-0010	0-068-0011	52343	1432	1363	1364	52352
Address	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior
Sub Location	Living Room	Living Room	Living Room	Living Room	Living Room	Living Room	Living Room
Sample Date	3/10/2010	3/10/2010	11/4/2010	1/26/2011	5/4/2011	5/4/2011	9/15/2011
Unit	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
Chemical	Result	Result	Result	Result	Result	Result	Result
1,1,1-Trichloroethane	0.15 U	0.145 U	0.164 U	0.164 U	0.164 U	0.164 U	0.164 U
1,1,2-Trichloroethane	0.15 U	0.145 U	0.164 U	0.164 U	0.164 U	0.164 U	0.164 U
1,1-Dichloroethane	0.111 U	0.108 U	0.121 U	0.121 U	0.195	0.121 U	0.121 U
1,1-Dichloroethene	0.109 U	0.105 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U
Carbon Tetrachloride	0.461	0.445	0.579	0.572	0.474	0.539	0.46
cis-1,2-Dichloroethene	0.161	0.171	0.119 U	0.119 U	0.227 U	0.321 U	0.119 U
Methylene Chloride	0.559 J	0.486 J	0.33	0.417	0.4	0.441	0.216
Tetrachloroethene	15.1	15.7	9.29	6.58	6.34	6.57	1.16
trans-1,2-Dichloroethene	0.109 U	0.105 U	0.119 U	0.119 U	0.119 U	0.119 U	0.119 U
Trichloroethene	0.779	0.838	0.188	0.489	0.395	0.477	0.161 U
Vinyl Chloride	0.0703 U	0.068 U	0.0767 U	0.0767 U	0.0767 U	0.0767 U	0.0767 U

Sample Number	52342	1433	52350	0-068-0009	52340	1431	1362	52351
Address	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior
Sub Location	Kitchen Counter	Kitchen Counter	Kitchen Counter	Basement Top of Freezer	Basement Top of Freezer	Basement Top of Freezer	Basement Top of Freezer	Basement Top of Freezer
Sample Date	11/4/2010	1/26/2011	9/15/2011	3/10/2010	11/4/2010	1/26/2011	5/4/2011	9/15/2011
Unit	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
Chemical	Result	Result	Result	Result	Result	Result	Result	Result
1,1,1-Trichloroethane	0.164 U	0.164 U	0.164 U	0.185 U	0.164 U	0.164 U	0.164 U	0.164 U
1,1,2-Trichloroethane	0.164 U	0.164 U	0.164 U	0.14 U	0.164 U	0.164 U	0.164 U	0.164 U
1,1-Dichloroethane	0.121 U	0.121 U	0.121 U	0.104 U	0.121 U	0.121 U	0.121 U	0.121 U
1,1-Dichloroethene	0.119 U	0.119 U	0.119 U	0.102 U	0.119 U	0.119 U	0.119 U	0.119 U
Carbon Tetrachloride	0.589	0.567	0.444	0.632	0.561	0.566	0.528	0.459
cis-1,2-Dichloroethene	0.119 U	0.119 U	0.119 U	0.326	0.119 U	0.26	0.342 U	0.893
Methylene Chloride	0.334	0.417	0.222	0.393 J	0.224	0.354	0.38	0.211
Tetrachloroethene	9.22	6.73	1.18	24.1	9.16	6.61	8.59	1.53
trans-1,2-Dichloroethene	0.119 U	0.119 U	0.119 U	0.102 U	0.119 U	0.119 U	0.119 U	0.119 U
Trichloroethene	0.219	0.487	0.161 U	1.28	0.161 U	0.822	0.468	1.47
Vinyl Chloride	0.0767 U	0.0767 U	0.0767 U	0.0657 U	0.0767 U	0.0767 U	0.0767 U	0.0767 U

Sample Number	52345	0-068-0012	52344	1437	1361	52353
Address	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior	1315 N. Superior
Sub Location	Basement By Subslab	Outside	Outside	Outside	Outside	Outside
Sample Date	11/4/2010	3/10/2010	11/4/2010	1/26/2011	5/4/2011	9/15/2011
Unit	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
Chemical	Result	Result	Result	Result	Result	Result
1,1,1-Trichloroethane	0.164 U	0.109 U	0.164 U	0.164 U	0.164 U	0.164 U
1,1,2-Trichloroethane	0.164 U	0.109 U	0.164 U	0.164 U	0.164 U	0.164 U
1,1-Dichloroethane	0.121 U	0.0809 U	0.121 U	0.121 U	0.121 U	0.121 U
1,1-Dichloroethene	0.119 U	0.0793 U	0.119 U	0.119 U	0.119 U	0.119 U
Carbon Tetrachloride	0.541	0.415	0.521	0.569	0.528	0.455
cis-1,2-Dichloroethene	0.119 U	0.0793 U	0.119 U	0.119 U	0.119 U	0.119 U
Methylene Chloride	0.022	1.04 J	0.189	0.319 J	0.395	0.188
Tetrachloroethene	7.39	7.05	2.49	0.203 U	6.15	0.203 U
trans-1,2-Dichloroethene	0.119 U	0.0793 U	0.119 U	0.119 U	0.119 U	0.119 U
Trichloroethene	0.161 U	0.11	0.161 U	0.161 U	0.161 U	0.161 U
Vinyl Chloride	0.0767 U	0.0511 U	0.0767 U	0.0767 U	0.0767 U	0.0767 U

ANALYTICAL REPORT

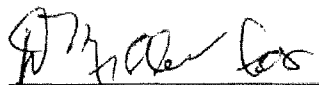
Prepared by  
Lockheed Martin Information Systems and Global Services/Environmental Services  
Scientific, Engineering, Response and Analytical Services

Sterling Cleaners Site  
Appleton, Wisconsin

October 2011

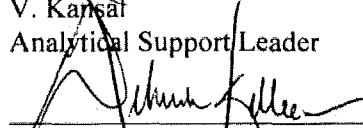
EPA Work Assignment No. SERAS-068  
LOCKHEED MARTIN Work Order SER00068  
EPA Contract No. EP-W-09-031

Submitted to  
G. Newhart  
EPA-ERT  
26 West Martin Luther King Drive  
Cincinnati, OH 45268

  
V. Kansal  
Analytical Support Leader

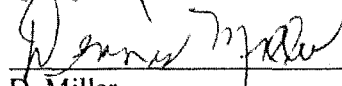
10/11/11  
Date

Analysis by:  
ERT/SERAS

  
D. Killeen  
QA/QC Officer

10/7/11  
Date

Prepared by:  
Y. Mehra

  
D. Miller  
Program Manager

10/11/11  
Date

Validated by:  
A. LoSurdo

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**Borski, Jennifer - DNR**

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**From:** Clayton.Kathy-CI@epamail.epa.gov  
**Sent:** Thursday, September 23, 2010 8:21 AM  
**To:** Borski, Jennifer - DNR  
**Cc:** Eggebrecht, Kurt; Thiboldeaux, Robert L - DHS; Tim Mirkes; Barton.Kasey@epamail.epa.gov; Woodfork.Ruth@epamail.epa.gov; marcus.muccianti@westonsolutions.com  
**Subject:** Sterling Trip Report - Second Assessment  
**Attachments:** SERAS-068-DAR-091410\_2nd Final Trip Report.pdf;  
068\_SoilGas\_Air\_Sample\_Locations\_Aug2010\_f1rev001.pdf;  
068\_Ground\_water\_Sample\_Location\_Aug2010\_f2rev001.pdf

Hi:

Please see attached for the ERT/SERAS Trip Report of the expanded site assessment we conducted last month. I will be meeting with the home owners over the course of the next week to give them their results. Rob - please remind me the recommended action level(s) in microgram/meter<sup>3</sup>. I have already talked briefly to the owners of 1319 Superior about resampling their home next week. We are meeting them Saturday at 12:30 to do a more detailed interferant check (using ppBRAE) prior to re-sampling.

Our meeting last night with the owners of 1315 Superior re: the SSDS design went well. They are comfortable with the plan and we are tentatively scheduled to do the installation next Wednesday (9/29). Also, I did follow up on all questions you guys sent me regarding the SSDS design and feel confident that they'll be addressed by the contractor team.

Any additional questions or concerns?

Thanks,  
kc

09/23/2010

ANALYTICAL REPORT

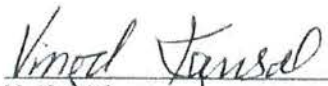
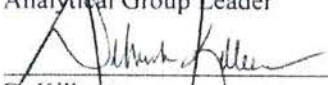
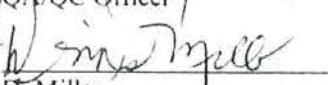
Prepared by  
Lockheed Martin Information Systems and Global Services/Environmental Services  
Scientific, Engineering, Response and Analytical Services

Sterling Cleaners Site  
Appleton, Wisconsin

September 2010

EPA Work Assignment No. SERAS-068  
LOCKHEED MARTIN Work Order SER00068  
EPA Contract No. EP-W-09-031

Submitted to  
G. Newhart  
EPA-ERT  
26 West Martin Luther King Drive  
Cincinnati, OH 45268

 V. Karsal Analytical Group Leader	<u>9/14/10</u> Date
 D. Killeen QA/QC Officer	<u>9/10/10</u> Date
 D. Miller Program Manager	<u>9/14/10</u> Date

Analysis by:  
ERT/SERAS

Prepared by:  
Y. Mehra

Validated by:  
J. Soroka

---

**REPORT OF LABORATORY ANALYSIS**  
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SERAS-068-DAR-091410





Reference 16

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National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:

Current Conditions

Geographic Area:

United States

[News](#) - updated July 2012

## USGS 04084445 FOX RIVER AT APPLETON, WI

### PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site Time-series: [Current/Historical Observations](#)

**LOCATION.**--Lat 44°14'53", long 88°25'23" in NW 1/4 SE 1/4 sec.34, T.21 N., R.17 E., Outagamie County, Hydrologic Unit 04030204, on left bank at south end of Lutz Park, approximately 2,600 ft upstream of Memorial Drive bridge at Appleton.

**DRAINAGE AREA.**--5,950 square miles.

**PERIOD OF RECORD.**--July 1986 to present.

**GAGE.**--Acoustic Velocity Meter (AVM) system. A two-path transducer installation was used to collect velocity data from 1986 to August 2002. In August 2002, a side-looking doppler current meter was installed to collect velocity data. Stage is monitored using a non-submersible pressure transducer. Datum of gage is 731.15 +/- 0.10 NAVD88.

**REMARKS.**--Gage-height telemeter at station.

**OPERATED IN COOPERATION WITH:**



U.S. Army Corps of Engineers - [Detroit District](#)

**Additional Information:**



[National Weather Service Flood Forecast Page](#)

**The water temperature data for this station are temporary and will only be displayed for 30 days.** Water temperature instrumentation may not be calibrated, and other quality assurance measures may not be performed that would make the data acceptable for archival, retrieval, or future use in general scientific or interpretive studies.

**Boating safety tips**

This station managed by the USGS Wisconsin Water Science Center - Middleton WI.

Available Parameters	Available Period	Output format	Days (7)	
<input type="checkbox"/> All 4 Available Parameters for this site		<input checked="" type="radio"/> Graph		<input type="button" value="GO"/>
<input checked="" type="checkbox"/> 00065 Gage height	2012-05-13 2012-09-10	<input type="radio"/> Graph w/ stats	-- or --	
<input checked="" type="checkbox"/> 00060 Discharge	2007-10-01 2012-09-10	<input type="radio"/> Graph w/o stats	<b>Begin date</b>	



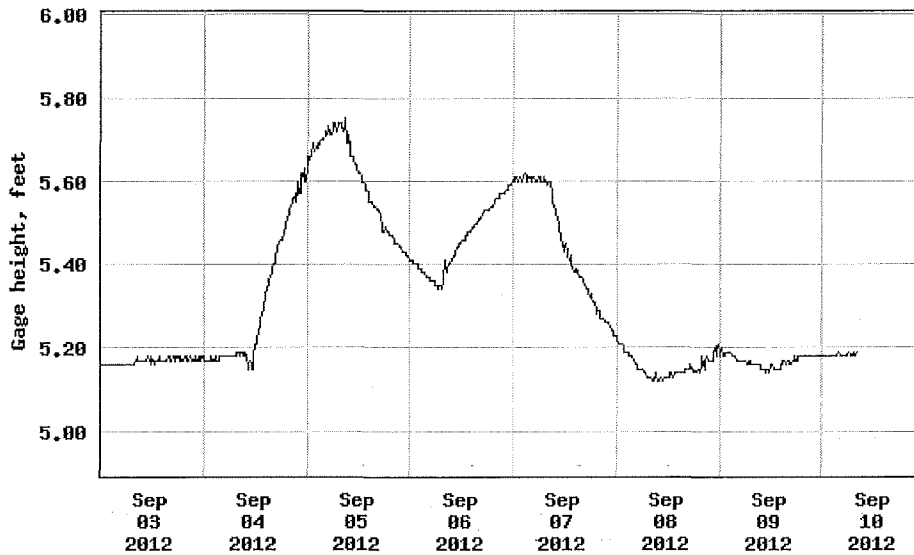
<b>Available Parameters</b> <input checked="" type="checkbox"/> 00055 Stream velocity, X <input checked="" type="checkbox"/> 00010 Temperature, water	<b>Available Period</b> 2012-05-13 2012-09-10 2012-06-07 2012-09-10	<input type="radio"/> Table <input checked="" type="radio"/> Tab-separated	2012-09-03 <b>End date</b> 2012-09-10
---	---	---	---

**Summary of all available data for this site**  
**Instantaneous-data availability statement**

**Gage height, feet**

Most recent instantaneous value: 5.19 09-10-2012 08:00 CDT

USGS 04084445 FOX RIVER AT APPLETON, WI



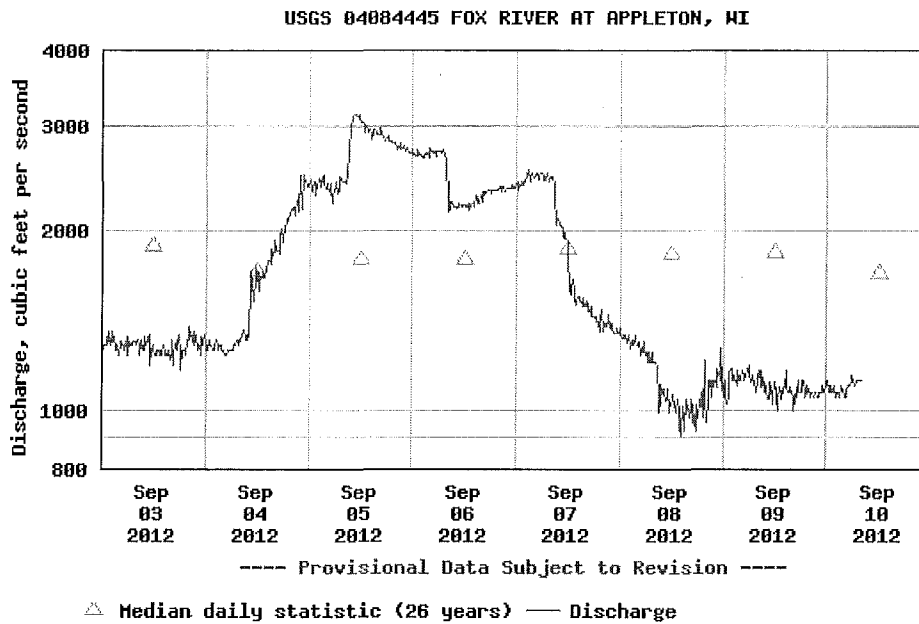
---- Provisional Data Subject to Revision ----

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**Discharge, cubic feet per second**

Most recent instantaneous value: 1,126 09-10-2012 08:00 CDT



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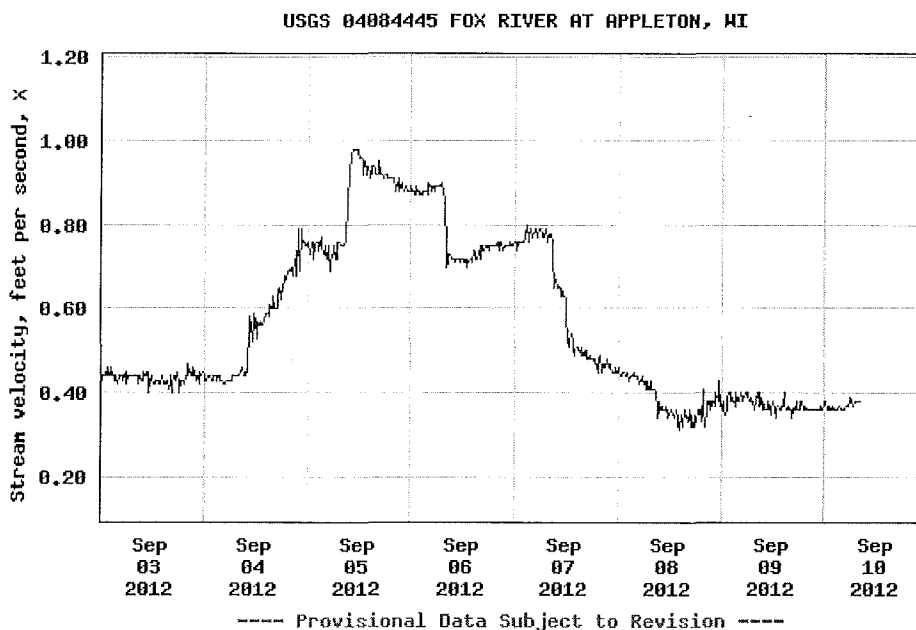
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**Daily discharge, cubic feet per second -- statistics for Sep 10**  
 based on 26 years of record [more](#)

Min (1988)	Most Recent Instantaneous Value Sep 10	25th percentile	Median	Mean	75th percentile	Max (2000)
1020	1126	1420	1700	2020	2380	4700

**Stream velocity, feet per second, X**

Most recent instantaneous value: 0.38 09-10-2012 08:00 CDT

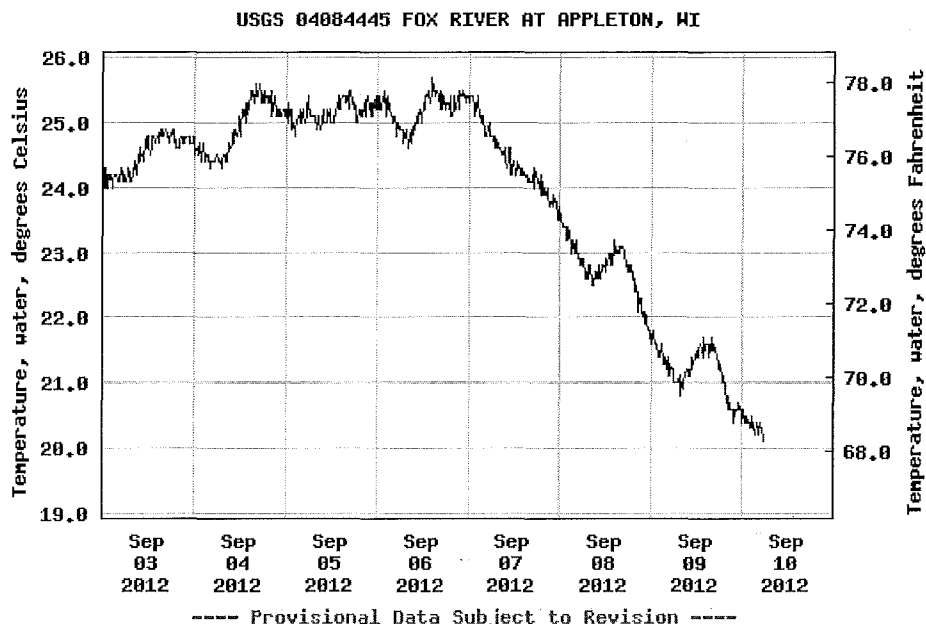


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### Temperature, water, degrees Celsius

Most recent instantaneous value: 20.1 09-10-2012 05:45 CDT



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**Title: USGS Current Conditions for the Nation**

**URL: <http://waterdata.usgs.gov/nwis/uv?>**



Page Contact Information: [Wisconsin Water Data Support Team](#)

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