Prepared for:
Marquette University
517 North 14th Street
Milwaukee, Wisconsin

Date:
March 2019

Project Number:
1690005819

FORMER ONE-HOUR VALET DRY CLEANERS SITE

BRRTS NO. 02-41-152248
FID NO. 241086120

REMEDIAL ACTION DOCUMENTATION REPORT

RAMBOLL

ENVIRONMENT
& HEALTH

CONTENTS

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CERTIFICATIONS

I, Abigail M. Reichling, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A–E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A–E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Abigail M Reichling

Abigail M. Reichling, PE
License No. 46055-6

April 1, 2019
Date

I, Jeanne Tarvin, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Jeanne M. Tarvin

Jeanne M. Tarvin, PG, CPG
License No. G-307-13

April 1, 2019
Date

1. INTRODUCTION

Ramboll US Corporation (Ramboll) has prepared the following Remedial Action Documentation Report (Report) for the Former One-Hour Valet Cleaners Site in Milwaukee, Wisconsin (the Site), on behalf of Marquette University (Marquette). This Report has been prepared in accordance with Wisconsin Administrative Code (WAC) Chapter NR 724. Parties currently involved with the project include the following:

Responsible Party/Site Owner:	Marquette University Mr. Joel Smullen, AIA 517 North 14th Street Milwaukee, Wisconsin 53233 (414) 288-4620
Regulatory Agency/Project Manager:	Wisconsin Department of Natural Resources (WDNR) Mr. Issac Ross 2300 North Dr. Martin Luther King, Jr. Drive Milwaukee, Wisconsin 53212-3128 (414) 263-8519
Environmental Consultant:	Ramboll US Corporation Ms. Jeanne Tarvin 175 North Corporate Drive, Suite 160 Brookfield, Wisconsin 53045 (262) 901-0085

1.1 Site Background

The Site is located at 1214-1222 West Wells Street in the southwest ¼ of the northwest ¼ of Section 29, Township 7 North, Range 22 East, City of Milwaukee, Milwaukee County, Wisconsin (Figure 1). The geographic position of the Site in WTM 91 (x, y) coordinates obtained from the Wisconsin Department of Natural Resources (WDNR) Remediation and Redevelopment (RR) interactive Site Map (http://dnrmaps.wi.gov) is 688795, 287401. The Site includes two tax parcels in the City of Milwaukee, including Tax Parcel Nos. 3910218000 and 3910219000.

The Site is bounded on the west by a public alley and Marquette parking structure, on the north by a hospital parking garage, on the east by North 12th Street and on the south by West Wells Street, as shown on Figure 2. The Site is currently owned by Marquette and is enrolled in the WDNR-administered Dry Cleaner Environmental Response Fund (DERF) Program for claimants seeking financial assistance with the site investigation and remediation of dry-cleaning solvent releases to the subsurface.

Prior to the remedial action, the Site included a one-story building with a basement. Marquette previously used a former garage located within the northeastern portion of the Site for storage of landscaping and sidewalk maintenance materials. The former one-story building was bounded to the east by an adjoining vacant brick building with a slab on-grade foundation. Prior to 1961, the Site was reportedly a parking lot. In 1961, a multi-tenant building was erected. Dry cleaning operations started the same year, and three different dry-cleaning tenants operated at the Site ending in 2008. The final dry-cleaning operation was conducted by the One-Hour Valet Cleaners,

which was located on the ground floor of the one-story building and utilized space in the basement for dry cleaning solvent storage and laundering operations. An approximate 300-gallon aboveground storage tank (AST) which contained tetrachloroethene (PCE) was located in the northwest portion of the basement at the location shown on Figure 2. In preparation for site remediation and redevelopment, the adjoining building was demolished in January 2018, and the building which contained the former dry-cleaning operations was demolished in July 2018 by Veit & Company, Inc. (Veit), which was under contract through Marquette's general contractor M.A. Mortenson Company (Mortenson). Marquette's initial interest is to redevelop the Site as a surface parking lot and is in the process of developing those plans. The long-term interest is to expand the adjacent multi-level parking structure across this property.

The Site slopes from the northwest to the east and south, resulting in storm water drainage toward North 12th Street and West Wells Street. The Site is no longer served by utilities. The nearest surface water body is the Menomonee River, which is located approximately one-half mile to the south of the Site. Drinking water for the area is provided by the City of Milwaukee municipal water supply that obtains potable water from Lake Michigan

The Site and adjacent areas to the west (an alleyway and portions of the Marquette parking garage property) have been the subject of several subsurface investigations since 1998. The WDNR has assigned Bureau for Remediation and Redevelopment Tracking System (BRRTS) #02-41-152248 and Federal Identification (FID) #241086120 to the case file. The results of the subsurface investigation activities were presented in GZA GeoEnvironmental, Inc.'s (GZA) 2012 Site Investigation Report (GZA, 2012). In October 2017, Ramboll was retained by Marquette to provide remedial action services. The WDNR approved funding for the remedial action under the DERF fund in a letter dated March 3, 2017.

A Remedial Design (RD) report was prepared by Ramboll and submitted to the WDNR in February 2018 (Ramboll, 2018a). The RD report documented the technical basis, design, and implementation approach for the selected remedial action (*in-situ* enhanced reductive dechlorination). The RD report also presented the results of the WDNR-approved pre-remediation sampling and treatability testing activities. The overall goal of the remedial action is to remediate soil impacts that threaten human health and the environment, reduce source soil concentrations and contaminant mass to minimize leaching of chlorinated volatile organic compounds (CVOCs) through the vadose zone to groundwater, and decrease the persistent groundwater contaminant concentrations at the source and downgradient of the source area.

Soil and groundwater remediation activities were conducted in July 2018 as discussed herein. Backfilling and general site restoration activities were completed in early September 2018. Plans for post-remediation soil and groundwater monitoring activities are described in Section 3.

1.2 Purpose of Remedial Action Documentation Report

The purpose of this Report is to document the remediation activities completed as part of the implementation of the remedial action, including *in-situ* enhanced reductive dechlorination (ERD) using zero valent iron (ZVI) and a carbon amendment (Anaerobic BioChem [ABC®]) to remediate CVOCs found in the soil and groundwater at the Site. Specific objectives of this Report are as follows:

- Document the field activities that were completed during the source area soil and groundwater remediation.
- Document the quantity of amendments used for the soil and groundwater remediation.
- Document any changes to the technical approach and a provide a rationale for those changes.
- Present the plan for post-remediation soil and groundwater monitoring activities.

2. SOIL REMEDIATION ACTIVITIES

The following section documents the field activities that were completed during the source area soil and groundwater remediation and includes a discussion of the quantity of amendments used.

2.1 Subcontractor Identification

The following major services for the remediation were subcontracted by Ramboll and are listed below:

Monitoring Well Abandonment (PZ-1 and PZ-3)

CS Drilling, Inc.
P.O. Box 294
Hinsdale, Illinois 60522

***In-Situ* ERD Soil Blending Operations, Chemical Handling, and Management**

Redox Tech, LLC (Redox Tech)
2609 Crooks Road, #204
Troy, Michigan 48084

The following contractors participated with Site redevelopment and were under direct contract with Marquette:

Site Redevelopment General Contractor

M.A. Mortenson Company (Mortenson)
17975 West Sarah Lane
Brookfield, Wisconsin 53045

Building Demolition, Backfilling, and Site Restoration

Veit & Company, Inc. (Veit)
2445 South 179th Street, Suite E
New Berlin, Wisconsin 53149-2151

Impacted Concrete Transportation and Disposal

Transportation by Veolia Technical Solutions to
US Ecology/EQ Michigan Disposal, Inc.
49350 N I-94 Service Drive
Belleville, MI 48111
US EPA ID MID000724831

2.2 Pre-Treatment Activity

The following sections discuss the pre-treatment activities that were completed prior to the soil and groundwater treatment activities.

2.2.1 Permitting and Approvals

The following permits and waste disposal approvals were obtained prior to implementing the remedial action activities.

Underground Injection Control (UIC) Permit and General Permit for Groundwater Remediation

In accordance with the Wisconsin Pollutant Discharge Elimination System (WPDES) general permit requirements, a temporary exemption for the injection (soil blending) in accordance with WAC NR 140.28(5) and approval to inject materials under WAC NR 812.05 was requested on February 12, 2018. Coverage under the General Permit was secured on March 16, 2018, and the temporary exemption was approved by the WDNR on March 28, 2018. Copies of each permit are included in Appendix A.

Sidewalk Closure Permit

In accordance with the City of Milwaukee Code of Ordinances, Chapter 228 – Safety in Construction, a temporary occupancy permit must be submitted, approved, and issued by the commissioner of public works. The temporary occupancy permit application was submitted on June 25, 2018 and approved on July 16, 2018. A copy of the permit is provided in Appendix A.

Waste Profile for Impacted Concrete Disposal

As described in the RD report (Ramboll, 2018a), based on the results of the basement floor concrete sampling performed in November 2017 and subsequent discussions with the WDNR, a determination was made that the concrete floor in the former PCE storage room would require handling as a listed hazardous waste upon removal. In preparation for the building demolition activities, Marquette completed the waste profile and secured the necessary approval from US Ecology for disposal of the impacted concrete at the US Ecology/EQ Michigan Disposal facility located in Belleville, Michigan. The location of the concrete requiring special handling during the building demolition is shown on Figure 2.

2.2.2 Site Preparation and Building Demolition

The following activities were performed at the Site in preparation for the remediation activities.

2.2.2.1 Site Security and Fencing

A temporary chain-link fence was installed around the Site and the alleyway located to the west of the Site prior to demolition of the eastern site building in January 2018 to secure the work from bystanders or pedestrians walking along the sidewalk. The temporary chain-link fence was installed along North 12th Street, West Wells Street, north property boundary, and along the alleyway. The fencing was approximately 8 feet high with four access gates and was secured in-place using sand bags on pole bases. The temporary fencing remained in-place throughout the duration of demolition activities and remedial activities. The temporary fence remained in place until it was replaced with a permanent fence in September 2018. Jersey barriers were placed along the southern edge of the former building to prevent large vehicles and pedestrians from entering the exposed basement.

2.2.2.2 Monitoring Well Abandonment

Two monitoring wells (PZ-1 and PZ-3) located within the treatment area were abandoned on January 12, 2018 in advance of the building demolition and subsequent remediation activities. Both wells were abandoned by CS Drilling, Inc., in accordance with WAC NR 141. The casing for monitoring well PZ-1 was subsequently completely removed during remedial activities. The abandoned casing for monitoring well PZ-3 was partially removed to 35 feet below ground surface (bgs) during the remedial activities. Copies of the monitoring well abandonment documentation are included in Appendix B.

2.2.2.3 Erosion and Sediment Control

An existing erosion control permit was obtained by Veit with an issue date of December 6, 2017. Erosion and sediment control measures were implemented prior to building demolition by placing silt socks around the perimeters of the property along the temporary chain-link fence and silt fence fabric within a catch basin located on the southwest corner of the Site. Erosion control measures were maintained by Veit throughout the remediation and subsequent site restoration activities. As referenced in the RD report (Ramboll, 2018a), the remediation activities were performed under this existing permit. A copy of the erosion control permit is included in Appendix A.

2.2.2.4 Basement Dewatering

During initial building demolition activities, it was noted by Veit that precipitation runoff from the building roof and adjacent impermeable surfaces had infiltrated into the building basement of the western site building. On June 28, 2018, Ramboll collected a sample of the basement water for waste characterization purposes. The sample was submitted to Pace Analytical Services, Inc. (Pace) for analysis of volatile organic compounds (VOCs; United States Environmental Protection Agency [USEPA] Method 8260). Based on subsequent discussions with Milwaukee Metropolitan Sewage District (MMSD), additional sampling was requested to facilitate disposal of the basement water to the combined sewer system. An additional water sample was collected on July 2, 2018 and submitted to Pace for analysis of Resource Conservation and Recovery Act (RCRA) metals (including mercury) using USEPA Method 6010 and 7470 and oil and grease using USEPA Method 1664. The MMSD Notice of Intent to Discharge (NOI) request was completed by Veit, with assistance from Ramboll, and approved on July 10, 2018. Accumulated water was removed from the basement by Veit using an internal combustion engine trash pump and transferred through a silt filter prior to discharge to a combined storm and sanitary sewer catch-basin on West Wells Street. A copy of the MMSD discharge permit secured by Veit is included as Appendix C.

2.2.2.5 Building Demolition and Impacted Concrete Disposal

After the basement had been dewatered, Veit commenced building demolition of the western site building on July 16, 2018. In January 2018, We Energies abandoned natural gas and electrical connections to the building. In addition, the City of Milwaukee abandoned water and sanitary service to the building in early 2018. To minimize excavation benching requirements and maintain public safety, the foundation wall along the southern portion of the building and extending 60 feet north along the eastern and western foundation walls were preserved. However, on July 20, 2018, approximately 35 feet of the northern portion of the preserved western foundation wall failed, which required removal prior to soil treatment activities. Concrete materials from building demolition activities were placed at the base of the southern foundation wall for additional support. Building demolition was completed on July 24, 2018. All concrete

building materials, except for the floor of the former PCE storage area, and asphalt were stockpiled on the Site for subsequent crushing or recycling activities. All physical obstructions were removed from the soil blending area including concrete, asphalt pavement, and abandoned subsurface utilities.

The previously-identified area of impacted concrete (former PCE storage area floor, as shown on Figure 2) was segregated during the demolition activities and direct loaded into a roll-off container on July 23, 2018. On July 31, 2018, the roll-off container was transported offsite by Veolia Technical Solutions and arrived at the US Ecology/EQ Michigan Disposal facility on August 9, 2018. The waste manifest for the impacted concrete disposal is included in Appendix D.

2.3 Soil Treatment Activity

Following completion of the building demolition activities, the remediation activities were initiated. The soil treatment activities were performed consistent with the approved RD report (Ramboll, 2018a), unless noted otherwise herein. The soil treatment area was partitioned into five treatment cells based on location and treatment depths. The treatment area encompassed approximately 3,280 square feet, with treatment depths ranging from 20 to 35 feet bgs and resulting in a total treatment volume of approximately 1,940 cubic yards. The extent of the treatment area is illustrated on Figure 3, and the volume of each treatment cell is included in Table 1.

In-situ ERD soil blending activities were performed from July 23 through July 31, 2018, by Redox Tech with technical and construction oversight provided by Ramboll. Soil treatment was performed via the application and blending of ZVI and ABC® with impacted saturated and unsaturated soils to facilitate reductive dechlorination of CVOCs. The ZVI was amended in granular form and acts as an electron donor, providing an immediate reduction. The ABC® is a liquid consisting of soluble lactic acid with a phosphate buffer, providing nutrients to facilitate anaerobic growth and a reducing environment in both the short and long term.

Prior to soil blending, the former basement sidewalls were sloped at a ratio of one to one (1:1; horizontal:vertical). Soils from sidewall sloping activities were temporarily stockpiled on plastic within the area of impacts just north of the soil treatment area and then covered to eliminate direct contact and fugitive dust concerns. An access ramp with a slope ratio of 2:1 was also established to allow the operating equipment to reach the former basement grade. Soils from the access ramp were incorporated into the sidewall soil stockpile and covered with plastic. The sloped areas and access ramp are shown on Figure 3.

2.3.1 Soil Blending and Chemical Amendment Methodology

The soil blending activities were completed using an *in-situ* soil blender mounted to a John Deere excavator (Model 200C LC) to effectively distribute chemical amendments throughout the soil matrix and a Link-Belt excavator (Model 300x4) to loosen and excavate treatment cells to the desired treatment depth. Photographs of the Link-Belt excavator and *in-situ* soil blending excavator are presented in Appendix E, Photos 1 and 2. The Link-Belt excavator was also used to remove any subsurface obstructions (i.e., large rocks, demolition debris, abandoned utilities, etc.) which could have caused damage to the blending equipment or otherwise disrupted the *in-situ* soil blending process.

At the start of the remediation work, the soil treatment boundary and treatment cells (Figure 3) were marked, to the extent practicable, for use as a guide during the soil blending work. Treatment cells 3 and 4 were subdivided horizontally to create sub-cells (Cell 3a/3b and Cell 4a/4b) due to site logistics and accessibility issues. The treatment cells were also subdivided vertically into blending lifts, with the depth of each lift based on the total depth of each treatment cell. Treatment Cells 1 and 2 were subdivided vertically into three blending lifts: 0 to 15 feet bgs, 15 to 25 feet bgs, and 25 to 35 feet bgs. Treatment Cells 3, 4, and 5 were located within the former basement footprint, which originates from 15 feet bgs (base of former basement) to varying depths from 20 feet bgs to 35 feet bgs. Treatment Cell 3 was subdivided vertically into two lifts. Due to total treatment depths of 5 and 10 feet, Treatment Cells 4 and 5, respectively, only required one vertical lift per cell. The treatment cell depths are provided in Table 1.

The lift from 0-15 feet bgs at Treatment Cells 1 and 2 were excavated and stockpiled on an adjacent treatment cell in order to access the lower lifts (15 to 25 feet bgs and 25 to 35 feet bgs). Due to the base of the former basement being located at an elevation of 15 feet bgs, the soils from the 0-15 feet bgs lifts at Treatment Cells 1 and 2 were treated over Treatment Cells 3, 4, and 5 in order to maintain a safe excavation. In order to complete *in-situ* soil blending activities for the 25 to 35 feet bgs lift at Treatment Cells 1 and 2, the lift from 15 to 25 feet bgs had to be excavated and stockpiled on an adjacent treatment cell. This similar process was also repeated in Treatment Cell 3. Once the upper lift was excavated, the lower lift was "loosened" using the Link-Belt Excavator, the chemical amendments were applied, and the lower lift was blended using the *in-situ* soil blender (Appendix E, Photo 1). After blending, the stockpiled lift was returned to the original treatment cell location, and the blending methodology was repeated (Appendix E, Photo 2). This process was repeated for each treatment cell.

2.3.2 Chemical Amendment Quantities and Application Methodology

A total of 158,400 pounds of ZVI and 16,200 pounds of ABC® concentrate were applied to the soils at the Site. A total of approximately 4,770 gallons of water were added to the ABC® concentrate during soil blending activities. The original estimate specified in the RD report (Ramboll, 2018a) was 150,000 pounds of ZVI and 17,000 pounds of ABC®. The difference in ZVI quantities was due to a re-evaluation of the desired ratios of ZVI and ABC® to soil based on the bench scale results completed prior to the remedial action and described in the RD report (Ramboll, 2018a). The desired 30% by weight moisture and 2.5% ZVI with ABC® carbon amendment was recalculated using an estimated soil density of 120 pounds per cubic foot. These conditions warranted an additional 8,400 pounds of ZVI. The 800-pound reduction of ABC® was due to clerical error when the order was placed. However, the ratios of the primary ABC® solution component (lactic acid) were not reduced and the error deemed inconsequential to the effectiveness of the chemical amendment. Additionally, during initial soil blending activities, it was noted that the original estimated quantity of water required was oversaturating the subsurface. Water amendments were decreased accordingly based on field observations. A summary of the chemical amendments and water added during the soil blending activities is provided in Table 1.

The chemical amendments were applied directly to each lift. ZVI was delivered to the Site in metric ton (2,200 pounds) woven plastic "Super Sacks®" with a quick release spout bottom for application (Appendix E, Photo 3). A total of 72 ZVI Super Sacks® were delivered to the Site. Treatment cell quantities of ZVI Super Sacks® were calculated prior to soil treatment activities.

The prescribed amount of ZVI was applied to each treatment cell lift prior to the addition of ABC®. ABC® was delivered to the Site in 250-gallon plastic totes (Appendix E, Photo 4). Eight totes were delivered to the Site. A prescribed amount of concentrated ABC® was gravity fed into a 330-gallon tote and diluted with a prescribed amount of water. Water was obtained from the adjacent Marquette parking structure fire sprinkler room and stored in a 6,000-gallon rubber pillow tank. Internal combustion engine driven trash pumps were utilized to transfer the water from the pillow tank to the 350-gallon tote. The ABC® mixture was then transferred to each treatment cell via a hose utilizing a trash pump (Appendix E, Photo 2). Each lift was then blended using the excavator mounted blender.

At the conclusion of the soil treatment activities for each treatment cell, a 5-foot lift of the stockpiled benching soils was spread on the top of the completed treatment cell and blended into the treated soils (Appendix E, Photo 5). No additional chemical amendments were added to the stockpiled benching soil during the blending process.

To help delineate the treated soil from the subsequent backfill material, a geotextile fabric was placed on the surface of the soil treatment area by Redox Tech. The geotextile fabric covered the approximately 3,280 square foot treatment area footprint and was laid in 20-foot widths with a 5-foot overlap. Concrete debris was placed on the corners and along the seams to temporarily secure the geotextile fabric until the backfill material was placed (Appendix E, Photo 6).

2.4 Ambient Air Monitoring and Vapor Control

Air quality at the Site was monitored and documented during soil blending activities to ensure ambient conditions outside of the work area for pedestrians and the general population were below action levels. Redox Tech procured two drums of Rusmar™ vapor suppressant foam prior to the implementation of the remedial activities. The application of Rusmar™ foam was not required based on ambient air monitoring during the remedial action.

Ambient air quality observations were collected in the work zone by Redox Tech and compared to the air action levels for PCE and TCE described in the RD report (Ramboll, 2018a) and the Health and Safety Plan (Ramboll, 2018b). The work zone air action levels were 50 parts per million (ppm) for PCE and 50 ppm for TCE, measured continuously in the breathing zone for 5 minutes. Work zone air quality monitoring was conducted by Redox Tech using a photoionization detector (PID) equipped with a 10.6 eV lamp. The Redox Tech equipment operator elected to don a half-face respirator when VOCs were detected during the soil mixing activities.

Perimeter air quality monitoring was conducted by Ramboll using a PID equipped with a 10.6 eV lamp and a Gasmet DX 4040 (Gasmet). The portable air monitoring equipment was calibrated at the beginning of each work day and used to measure air quality around the fenced perimeter of the Site. Air monitoring observations were documented on dedicated air monitoring forms or the dedicated project field book. Additionally, the Gasmet readings were electronically recorded and the data was downloaded at the end of each work day. Perimeter air quality measurements were recorded hourly during soil treatment activities and compared to the air action levels for PCE and TCE described in the RD report (Ramboll, 2018a) and the Health and Safety Plan (Ramboll, 2018b). The perimeter air action levels were 2.1 milligrams per cubic meter (mg/m^3; 0.31 parts per million by volume [ppm_v]) for PCE and 0.10 mg/m^3 (0.019 ppm_v) for TCE.

Perimeter action levels were only exceeded once during soil treatment activities. The exceedance occurred on July 26, 2018 when ambient air monitoring observations during the blending of Treatment Cell 2 temporarily exceeded the PCE perimeter action level. A concentration of 0.43 ppm_V PCE was observed using the Gasmet. Approximately 5 minutes after this elevated reading was recorded, soil treatment activities for Treatment Cell 2 were complete, and ambient air monitoring observations immediately returned to below perimeter action levels. No other exceedances were observed during soil treatment activities.

Additional details on the air monitoring procedures and development of the air action levels is provided in the RD report (Ramboll, 2018a) and the Health and Safety Plan (Ramboll, 2018b).

2.5 Site Restoration Activities

Redox Tech and Ramboll demobilized from the Site on July 31, 2018. Veit returned to the Site on August 1, 2018 to complete the remaining demolition work including removal of the retained portions of the eastern and western building foundation walls. The temporarily stockpiled concrete from the January and July 2018 demolition activities was then crushed on Site and used to backfill the depression from the former basement. Veit placed the crushed concrete on top of the geotextile fabric in approximately 2-foot lifts. Each lift was then compacted with a vibratory drum roller. Remaining sections of asphalt pavement were removed and recycled. Approximately 2,700 tons of clean 1.25-inch crushed concrete was placed and compacted in the former basement. The area was then regraded and sloped to the south and east. Photographs of the completed site restoration are provided in Appendix E, as Photographs 7 and 8.

The temporary construction fencing was replaced with permanent chain-link fencing in September 2018. The Site currently has a graveled surface and is being used for construction parking and equipment storage for a neighboring Marquette construction project. Mortenson plans to remove all construction equipment and materials from the Site once construction activities are complete on an adjacent construction project for Marquette University. Marquette's initial interest is to redevelop the Site as a surface parking lot and is in the process of developing those plans. The long-term interest is to expand the adjacent multi-level parking structure across this property.

3. POST-TREATMENT MONITORING PROGRAM

As detailed in the RD report (Ramboll, 2018a), the post-treatment monitored natural attenuation (MNA) groundwater monitoring program will begin approximately five months following completion of the soil treatment activities. Impacted groundwater within and downgradient of the former source treatment area will be monitored for natural attenuation. Soil confirmation sampling will be performed approximately 20 months after completion of the soil treatment activities to document the overall effectiveness.

3.1 Monitoring Well Installation

Per the RD report (Ramboll, 2018a), monitoring wells PZ-1 and PZ-3 were identified to be replaced after soil treatment activities; however, per electronic mail (e-mail) correspondence discussions with the WDNR Project Manager, Issac Ross, the elimination of replacement well PZ-3R was approved on February 11, 2019. Replacement well PZ-3R was eliminated due to high

replacement costs (double casing required) and close proximity to existing monitoring well PZ-4, which is screened at a similar depth as abandoned monitoring well PZ-3. Additionally, PZ-4 is downgradient of PZ-3 and will provide necessary information to evaluate potential groundwater migration.

Replacement monitoring well PZ-1R will be installed prior to initiating the MNA groundwater monitoring program. The replacement monitoring well will be constructed with a screened interval similar to former piezometer PZ-1. Monitoring well installation and development activities are tentatively scheduled for Spring 2019. The approximate well location is illustrated on Figure 4. Due to the use of crushed concrete as backfill material, the well will likely require installation using hollow-stem auger or roto-sonic drilling methods. An additional offsite monitoring well (MW-10) may be installed in the future, pending observed groundwater concentrations from the initial quarterly groundwater sampling events. Monitoring well(s) will be installed and developed in accordance with WAC NR 141 requirements. Monitoring well construction and boring log forms will be completed and provided in the 2019 Annual Groundwater Monitoring Report.

3.2 Monitoring Well Sampling Selection, Frequency, and Parameters

Up to eight quarterly groundwater sampling events will be completed with the initial event occurring in Spring 2019, approximately nine to ten months after completion of the soil blending activities. Monitoring wells MW-4, MW-5, MW-6, PZ-2, and PZ-4 along with replacement well PZ-1R will be sampled quarterly for analysis of VOCs using USEPA Method 8260. Monitoring wells MW-6, PZ-1R, and PZ-2 will also be sampled on a semi-annual basis for the following natural attenuation parameters:

- Ethene/ethane/methane (USEPA Method 8015),
- Dissolved iron (USEPA Method 8146),
- Total organic carbon (USEPA Method 5310),
- Nitrate and nitrite (USEPA Method 353.2), and
- Sulfate (USEPA Method 300).

One quality assurance/quality control (QA/QC) duplicate groundwater sample and QA/QC laboratory trip blank sample will be submitted for analysis of VOCs with each quarterly groundwater monitoring event. Field parameters measurements including dissolved oxygen, oxidation-reduction potential (ORP), pH, specific conductivity, and temperature will also be measured at each monitoring well during each quarterly sampling event.

Groundwater elevations will be measured during each quarterly groundwater event. Groundwater elevation data will be tabulated to develop potentiometric contour maps and estimate groundwater flow and solute transport analysis.

3.3 Groundwater Monitoring Reporting

Annual groundwater monitoring reports will be submitted to the WDNR after the implementation of the MNA groundwater monitoring program. Each monitoring report will summarize the methodology and results of the monitoring activities described above to document the progress of groundwater remediation. The reports will present laboratory analytical data, groundwater

elevation data, and field parameters. Any recommendations or changes to the monitoring program will be addressed in each annual report.

3.4 Soil Confirmation Sampling and Reporting

In accordance with the RD report (Ramboll, 2018a), approximately 20 months after soil treatment activities soil borings will be completed within the treatment area to document remedial performance. Eight soil borings were originally proposed in the RD report; however, per e-mail correspondence discussions with the WDNR Project Manager, Issac Ross, the number of confirmation soil borings was reduced to five due to increased costs associated with installing soil borings through crushed concrete backfill material. Two soil samples will be collected from each boring at two distinct depths per the RD report for analysis of VOCs using USEPA Method 8260. The shallow soil sample will be collected from the 16 to 17 feet bgs interval, and the deeper soil sample will be collected from an interval approximately one to ten feet above the deepest treatment depth. Due to soil compression and Site restoration activities, the geo-textile fabric will be used as a location and depth indicator during each soil boring. As a result of the use of crushed concrete as backfill material, the borings method will need to be changed from direct push to hollow-stem auger or roto-sonic drilling methods. The proposed soil conformation sampling locations are depicted on Figure 4.

The post-treatment soil sampling is tentatively scheduled to be completed in March 2020. The analytical results will be summarized in a separate letter report for submittal to the WDNR. The results of the soil confirmation sampling and previously described groundwater monitoring activities will be utilized to support a future request for case closure in accordance with WAC NR 726.

4. CONCLUSIONS

Approximately 1,940 cubic yards of CVOC impacted soil and groundwater within the source area were treated using *in-situ* ERD soil blending to incorporate ZVI and ABC® into the soil and groundwater matrix. *In-situ* ERD is a remedial treatment which will persist after soil blending activities are complete by developing subsurface conditions favorable to dechlorinating impacted soils and groundwater.

The post-treatment MNA groundwater monitoring program will begin in Spring 2019, following replacement of monitoring well PZ-1 formerly located within the treatment area. Quarterly MNA groundwater monitoring will continue for up to eight quarters and will be performed in accordance with the RD report (Ramboll, 2018a) to monitor the effectiveness of the groundwater treatment activities. Annual groundwater monitoring reports will be developed and submitted to the WDNR to document the post-treatment activities.

In March 2020, approximately 20 months after soil treatment activities, five soil confirmation borings will be completed to document the effectiveness of the remedial action in addressing source soil impacts. Two soil samples per boring at varying depths will be collected for VOCs and the results summarized in a letter report to WDNR.

Following completion of the natural attenuation monitoring and confirmation soil sampling, a closure package will be prepared and submitted to the WDNR in accordance with WAC NR716.

5. REFERENCES

GZA GeoEnvironmental, Inc. 2012. Site Investigation Report Dry Cleaner Solvent Release, Former One-Hour Valet Dry Cleaners Property. February 24.

Ramboll US Corporation. 2018a. *Remedial Design Report.* Former One-Hour Valet Dry Cleaners, Milwaukee, Wisconsin.

Ramboll US Corporation. 2018b. *Health and Safety Plan.* Former One-Hour Valet Dry Cleaners, Milwaukee Wisconsin.

TABLE

Table 1. Treatment Volumes and Chemical Amendment Quantities

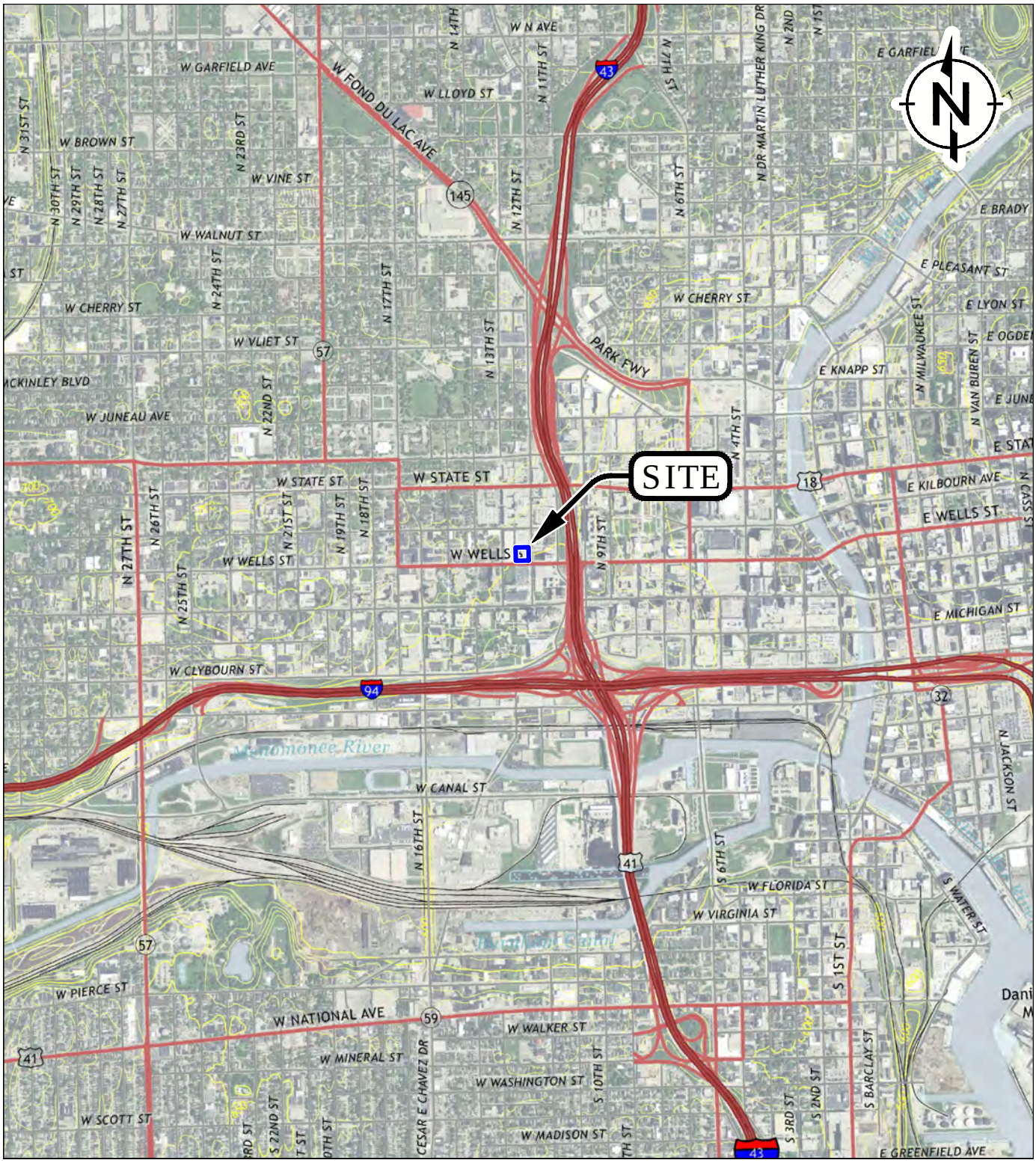
Former One-Hour Valet Dry Cleaners
1214 West Wells Street, Milwaukee, Wisconsin
Marquette University

Treatment Cell	Area (ft^2)	Volume (yd^3)	Treatment Depth (ft bgs)	Number of Lifts	ZVI (lbs per cell)	ABC® Concentrate (lbs per cell)	ABC® Concentrate (Gallons per cell)	Approximate Water Applied to ABC® Concentrate (Gallons)	ABC® Solution (Gallons of ABC® and Water per cell)
1	433	561	0 - 35	3	46,200	4,653	530	1,250	1,780
2	282	366	0 - 35	3	30,800	3,073	350	1,100	1,450
3a	450	333	15 - 35	2	28,600	2,810	320	280	600
3b	337	250	15 - 35	2	22,000	2,108	240	1,000	1,240
4a	805	149	15 - 20	1	11,000	1,229	140	270	410
4b	479	89	15 - 20	1	6,600	746	85	550	635
5	497	184	15 - 25	1	13,200	1,581	180	320	500
TOTAL:	**3,283**	**1,932**	**--**	**13**	**158,400**	**16,200**	**1,845**	**4,770**	**6,615**

Notes:

Dosing and chemical quantities were calculated and provided by Redox Tech, LLC.
ZVI = Zero Valent Iron
ft^2 = square feet
yd^3 = cubic yards
ABC® = Anaerobic Biochem®
ft bgs = feet below ground surface
lbs = pounds

FIGURES



CONTOUR INTERVAL 10 FEET

0 1/2 1 MILE

0 2000 4000 FEET

LEGEND:

PROPERTY BOUNDARY (APPROXIMATE)

SOURCE:
2016 USGS 7.5 Minute Series Milwaukee, Wisconsin Topographic Quadrangle.
Site Location; N: 43.040537° W: 87.927706 WGS84

QUADRANGLE LOCATION

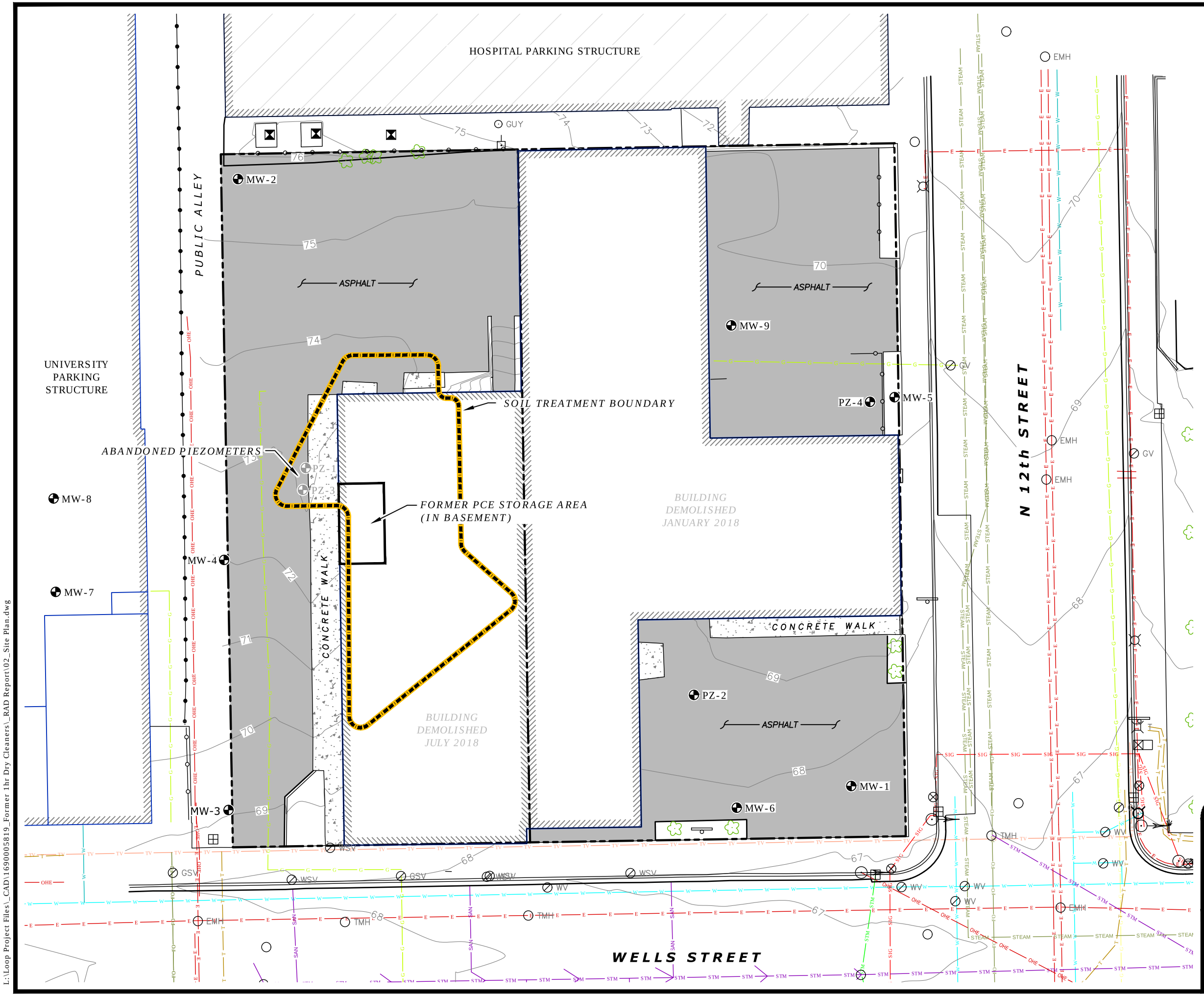
RAMBOLL

SITE LOCATION MAP
FORMER ONE-HOUR VALET DRY CLEANERS
1214 WEST WELLS STREET
MILWAUKEE, WISCONSIN

FIGURE
1

DRAFTED BY: APR | DATE: 2/1/18 | 1690005819

E:_CAD\1690005819_Former 1hr Dry Cleaners_Design Report\01_Site Location Map.dwg



LEGEND

- PROPERTY BOUNDARY
- BUILDING FOOTPRINT
- ASPHALT
- CONCRETE
- FENCE LINE
- GUARD RAIL
- 75 — 1-FT ELEVATION CONTOUR
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- WATER LINE
- GAS
- CABLE TV
- FIBER OPTIC
- STORMWATER SEWER
- SANITARY SEWER
- STEAM
- SOIL TREATMENT BOUNDARY
- CATCH BASIN
- MANHOLE
- VALVE
- TRAFFIC LIGHT
- TRANSFORMER
- LIGHT POLE
- GUY UTILITY POLE / GUY
- TREE
- FIRE HYDRANT
- T TELEPHONE PEDESTAL
- CONTROL BOX
- MONITORING WELL
- ABANDONED MONITORING WELL

REFERENCE: THE SITE LAYOUT, SITE FEATURES, ELEVATIONS, UTILITIES, AND OTHER FEATURES NEAR THE PROPERTY WERE OBTAINED FROM GRAEF-USA IN DECEMBER 2017.

0 25
SCALE IN FEET

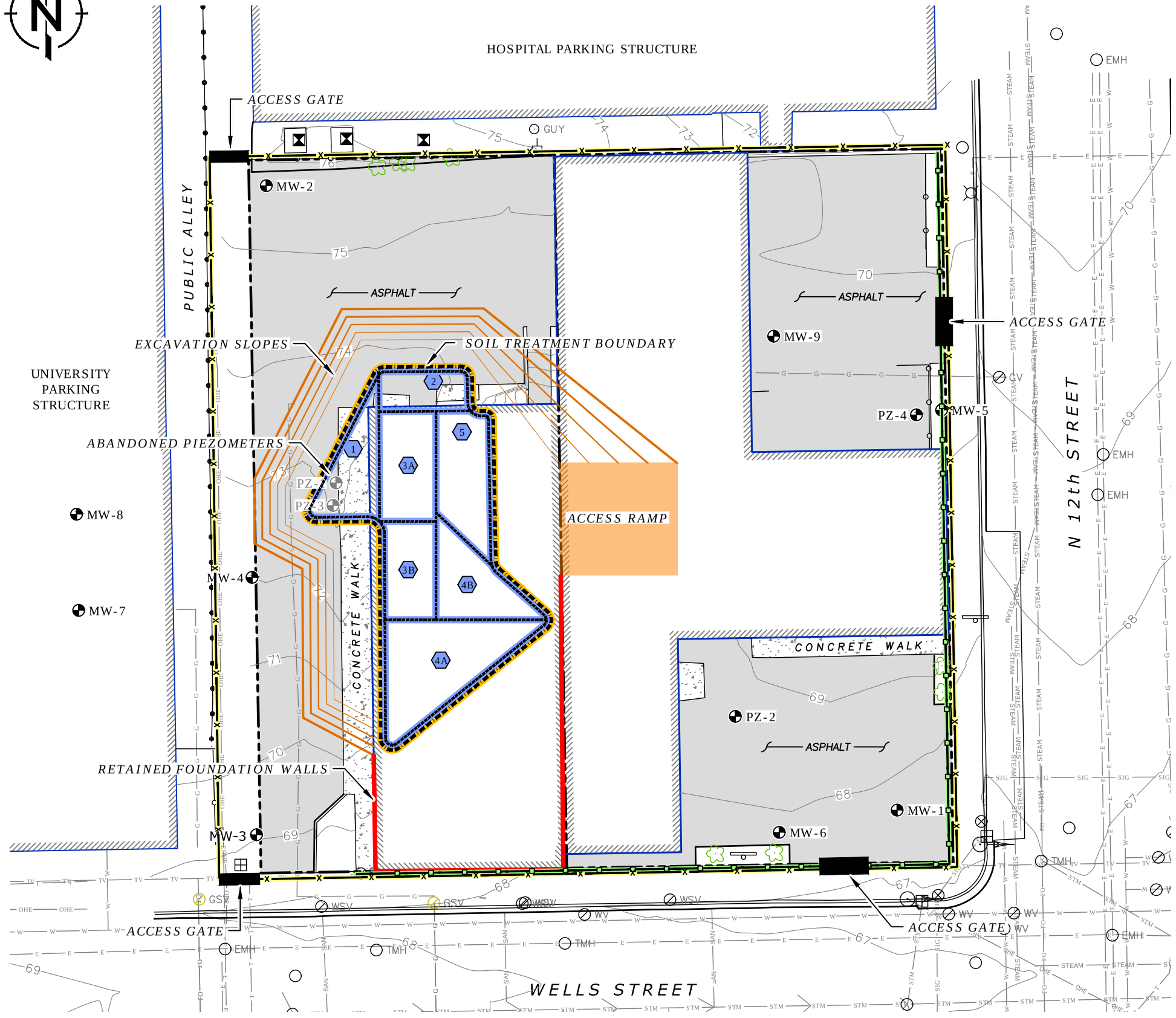
SITE PLAN
FORMER ONE-HOUR VALET DRY CLEANERS
1214 WEST WELLS STREET
MILWAUKEE, WISCONSIN

RAMBOLL

FIGURE 2

DRAFTED BY: APR/HJW | DATE: 10/9/18 | 1690005819

L:\Loop Project Files_CAD\1690005819_Former 1hr Dry Cleaners_RAD Report\02_Site Plan.dwg



LEGEND

- PROPERTY BOUNDARY
- FORMER BUILDING FOOTPRINT
- ASPHALT
- CONCRETE
- FENCE LINE
- GUARD RAIL
- 1-FT ELEVATION CONTOUR
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- WATER LINE
- GAS
- CABLE TV
- FIBER OPTIC
- STORMWATER SEWER
- SANITARY SEWER
- STEAM
- CATCH BASIN
- MANHOLE
- VALVE
- TRAFFIC LIGHT
- TRANSFORMER
- LIGHT POLE
- GUY UTILITY POLE / GUY
- TREE
- FIRE HYDRANT
- T TELEPHONE PEDESTAL
- CONTROL BOX
- MONITORING WELL
- ABANDONED MONITORING WELL
- SOIL TREATMENT BOUNDARY
- TEMPORARY FENCE
- SILT FENCE
- ACCESS GATE
- SOIL BLENDING TREATMENT AREA
- RETAINED FOUNDATION WALLS
- EXCAVATION SLOPES
- ACCESS RAMP

Treatment Area	Treatment Depth (feet below ground surface)	Area (square feet)
1	0-35 feet below ground surface	433
2	0-35 feet below ground surface	282
3A	15-35 feet below ground surface	450
3B	15-35 feet below ground surface	337
4A	15-20 feet below ground surface	805
4B	15-20 feet below ground surface	479
5	15-25 feet below ground surface	497

REFERENCE: THE SITE LAYOUT, SITE FEATURES, ELEVATIONS, UTILITIES, AND OTHER FEATURES NEAR THE PROPERTY WERE OBTAINED FROM GRAEF-USA IN DECEMBER 2017.

0 30

SCALE IN FEET

SOIL BLENDING TREATMENT AREA LAYOUT

FORMER ONE-HOUR VALET DRY CLEANERS
1214 WEST WELLS STREET
MILWAUKEE, WISCONSIN

RAMBOLL

FIGURE 3

DRAFTED BY: APR/HJW | DATE: 10/17/18 | 1690005819

L:\Loop Project Files_CAD\1690005819_Former 1hr Dry Cleaners_RAD Report\03_Soil Blending Treatment Area Layout.dwg

HOSPITAL PARKING STRUCTURE

UNIVERSITY PARKING STRUCTURE

PUBLIC ALLEY

N 12th STREET

WELLS STREET

GRAVEL

ASPHALT

SOIL TREATMENT BOUNDARY

MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
PZ-1R
PZ-2
PZ-3
PZ-4
C1
C2
C3
C4
C5
GUY

LEGEND

- PROPERTY BOUNDARY
- BUILDING FOOTPRINT
- FENCE LINE
- GUARD RAIL
- 1-FT ELEVATION CONTOUR
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- WATER LINE
- GAS
- CABLE TV
- FIBER OPTIC
- STORMWATER SEWER
- SANITARY SEWER
- STEAM
- CATCH BASIN
- MANHOLE
- VALVE
- TRAFFIC LIGHT
- TRANSFORMER
- METER
- LIGHT POLE
- UTILITY POLE / GUY
- TREE
- FIRE HYDRANT
- TELEPHONE PEDESTAL
- CONTROL BOX
- MONITORING WELL
- REPLACEMENT MONITORING WELL
- ABANDONED MONITORING WELL
- SOIL TREATMENT BOUNDARY
- TEMPORARY FENCE
- POST REMEDIATION SOIL SAMPLING LOCATION

NOTE: CONCEPTUAL REDEVELOPMENT PLAN MAY BE A PARKING LOT, OR THE SITE MAY REMAIN A VACANT LOT FOR A PERIOD OF TIME FOLLOWING COMPLETION OF ACTIVE REMEDIAL SITE WORK.

REFERENCE: THE SITE LAYOUT, SITE FEATURES, ELEVATIONS, UTILITIES, AND OTHER FEATURES NEAR THE PROPERTY WERE OBTAINED FROM GRAEF-USA IN DECEMBER 2017.

0 25
SCALE IN FEET

POST-TREATMENT MONITORING LOCATIONS

FORMER ONE-HOUR VALET DRY CLEANERS
1214 WEST WELLS STREET
MILWAUKEE, WISCONSIN

RAMBOLL

FIGURE 4

DRAFTED BY: HJW | DATE: 10/09/18 | 1690005819

L:\Loop Project Files_CAD\1690005819_Former 1hr Dry Cleaners_RAD Report\2019-02\04_Post-Treatment Monitoring Locations.dwg

APPENDIX A
PERMITS

City of Milwaukee

Department of Neighborhood Services

Erosion Control Permit

Permit Number: ECP-17-00381 **Issue Date:** 12/06/2017

Project Location: 1200 W WELLS ST, MILWAUKEE, WI 532331304

Application Name: Raze

Description of Work: Erosion control measures for garage & store front. This permit is specific to these buildings & this demolition site. Call Inspector Kraus at 286-8003.

Issued to:

Herb Pundsack
2445 S 179th Street
New Berlin, WI 53046

Owner:

MARQUETTE UNIVERSITY
PO BOX 1881
MILWAUKEE, WI 53201

Issued By: WSPARA

No asbestos project, as defined in Ch. 66 of the Milwaukee Code of Ordinances, is included in the work performed under this permit. I understand that any falsification or misinformation may result in penalties prescribed in the Milwaukee Code of Ordinances

To obtain more information about this permit or to schedule a required inspection log on to: www.Milwaukee.gov/LMS or call (414) 286-2513

Permits expire if work is not started within 6 months of issuance or if new construction ceases more than 3 months.

Permits are non-transferrable.
There is no refund for a minimum fee permit.

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
2300 N. Dr. Martin Luther King Jr. Drive
Milwaukee WI 53212-3128

Scott Walker, Governor
Daniel L. Meyer, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

March 16, 2018

(via email to: joel.smullen@marquette.edu)
Joel Smullen
Marquette University
517 North 14th Street
Milwaukee, WI 53233

SUBJECT:	Coverage under General Permit WI-0046566-06, Contaminated Groundwater from Remedial Action Operations
FACILITY:	Former One-Hour Valet Dry Cleaners
LOCATION:	1214-1222 West Wells St, Milwaukee, WI
FIN:	61933

Dear Mr. Smullen,

The Wisconsin Department of Natural Resources, hereafter the Department, has reviewed your application for approval of chemical and biological reduction for in-situ treatment of chlorinated volatile organic compounds (CVOCs) detected in the soil and groundwater at 1214-1222 W Wells St., Milwaukee, WI (Former One Hour Dry Cleaners). The presence of CVOCs are likely attributable to previous improper storage, handling, and disposal of dry cleaning solvents at the Former One Hour Dry Cleaners site (WDNR BRRTS #02-41-152248).

Marquette University is authorized by this letter for in-situ treatment of CVOCs in contaminated soil and groundwater at the addresses stated above. According to the management plan Ramboll US Corporation has proposed, enhanced reductive dechlorination will be implemented using a combined in-situ chemical and biological reduction approach through soil blending with zero-valent iron and carbon amendment (ABC+). The soil blending technique will be used onsite within a grid pattern of 20-foot by 20-foot treatment cells by the remediation contractor. The application and approach will use approximately 167,000 pounds of ABC+ to treat the target CVOC-impacted soil and groundwater. Additional treatment events will be based on the effectiveness of the soil blending at reducing contaminant levels at the site and the contaminated area is not significantly expanded as a result of the in-situ remedial activities. Any significant plan changes will require Department approval.

Your proposed discharge is eligible for coverage under the general Wisconsin Pollutant Discharge Elimination System (WPDES) permit WI-0046566-06 for Discharge of Contaminated Groundwater from Remedial Action Operations. You are responsible for compliance with the conditions contained in this permit. The permit and fact sheet should be downloaded from the DNR website at http://dnr.wi.gov/topic/wastewater/generalpermits.html.

Discharges under this permit are required to be consistent with a discharge management plan that has been approved by the Department. Your application submitted will be considered as the required discharge management plan. All of your contaminated wastewater treatment, discharges, and remedial actions must be done according to the terms and conditions of the permit, specifically sections 1, 2, 6 and 8.

General Requirements

1. **Effective Term:** Permit Coverage begins on March 16, 2018. The general permit expired on June 30, 2017, however it will remain in effect until a new general permit is reissued. This permit applies only to the sites described in the Request for Coverage.

2. **Additives:** The discharge of other water or soil treatment additives is prohibited unless their use is approved in writing by the DNR.

3. **Monitoring requirements:** Monitoring requirements for discharges designed to enhance the remediation of in-situ contaminants are found in Section 6 of the permit.
   - **Monitoring:** A record must be kept of the total daily amounts of ABC+ used.
   - **Parameters:** Binyoti Amungwafor, DNR Remediation & Redevelopment, may require additional monitoring and reporting.

4. **Reporting:**
   - Records of volume and chemical monitoring data shall be submitted on discharge monitoring report (DMR) forms following the soil mixing activities. All monitoring results must be reported on the DMR. Reports are due on the 15th day of the month following the completion of the soil mixing activities. The owner must sign the DMRs. DMRs should be sent to the address indicated on the DMR. Please make copies of the enclosed DMR for your use.
   - Records required by this permit must be kept for the duration of the permit and made available for inspection by Department staff upon request.
   - **Any exceedances of the permit limits shall be reported to the Department within 24 hours of the permittee becoming aware of the exceedance.**

Limits based on groundwater quality protection are set at the preventive action limits in ch. NR 140, Wis. Adm. Code. These limits are based on substances reported to be in the discharge, but may not necessarily include all substances of public health or welfare concern, which are in the discharge. However, nothing in this permit allows the permittee to discharge any substance in a concentration that would cause groundwater standards in Ch. NR 140 to be exceeded.

If you have any questions about permit requirements or the contents of this letter, please feel free to contact me at (414) 263-8713.

Sincerely,

Karl Knutson
Wastewater Specialist

cc: Trevor Moen, General Permit Coordinator, WDNR (via email)
Binyoti Amungwafor, R&R, WDNR (via email)
Trevor Nobile, R&R Project Manager, WDNR (via email)
Jeanne Tarvin, Ramboll US (via email)
Susan Petrofske, Ramboll US (via email)

LEGAL AUTHORITIES AND APPEAL RIGHTS

Section 283.35, Wisconsin Statutes, authorizes the Department to issue general permits for discharges from categories or classes of point sources. If a permittee believes coverage of a facility under a general WPDES permit is not appropriate, the permittee may apply for issuance of an individual WPDES permit pursuant to section 283.35(2) and may petition the Department for withdrawal of coverage under the general permit. The individual permit application should indicate which site specific factors would justify alternate WPDES limits for the operation. Issuance of such a site specific WPDES permit will provide for a 30 day public comment period, and potentially a public informational hearing and/or an adjudicatory hearing. The Department may withdraw a facility from coverage under a general permit if it is determined that a discharge is a significant contributor of pollutants to waters of Wisconsin, or in certain other cases set out in s. 283.35, Stats. In lieu of general permit withdrawal, the Department may refer any violation of this permit to the Department of Justice for enforcement under s. 283.89, Stats. In order to avoid any enforcement action, **please read the WPDES permit carefully and comply with the permit requirements.**

If you believe you have a right to challenge the Department decision to cover this facility with a WPDES general permit, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. To request a contested case hearing pursuant to section 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. Such a petition should identify pollutant(s) that are believed to be not appropriately regulated by the general permit for the specific site. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the time period for filing a petition for judicial review.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. A petition for judicial review must name the Department of Natural Resources as the respondent.

Department decisions must be filed. To request a contested case hearing pursuant to section 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. Such a petition should identify pollutant(s) that are believed to be not appropriately regulated by the general permit for the specific site. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the time period for filing a petition for judicial review.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. A petition for judicial review must name the Department of Natural Resources as the respondent.

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee WI 53212-3128

Scott Walker, Governor
Daniel L. Meyer, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

March 28, 2018

Mr. Joel Smullen
Marquette University
517 North 14th Street
Milwaukee, WI 53213

Subject: Temporary Injection Exemption Request for Former One-Hour Valet Dry Cleaners
1214-1222 West Wells St., Milwaukee, WI
BRRTS # 02-41-152248
FID # 241086120

Dear Mr. Smullen:

The purpose of this letter is to provide a temporary exemption for the injection of a remedial material into the soils and groundwater. On February 14, 2018, the Wisconsin Department of Natural Resources (WDNR) received a request for a temporary exemption for the enhanced reductive dechlorination of a combined in-situ chemical and biological reduction approach through in-situ blending of zero-valent iron (ZVI) and carbon amendment at the Former One-Hour Valet Dry Cleaners, 1214-1222 West Wells St., Milwaukee, WI. The request was submitted by Ramboll US Corporation (Ramboll) the project's environmental consultant, on behalf of the Former One-Hour Valet Dry Cleaners.

The submittal included a $700 review fee for Technical Assistance. Ramboll also made a request for a Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit for contaminated groundwater for remedial action operations at the site. A WDNR injection approval and a WPDES permit are required prior to the injection of remedial materials into the subsurface. This temporary exemption provides assurance to the City of Milwaukee that the proposed injection of an enhanced reductive dechlorination of a combined in-situ chemical and biological reduction approach through in-situ blending of ZVI and carbon amendment in the soils and groundwater proposed for the environmental cleanup conforms to s. 292.12, Wis. Stats. The WDNR approved the remedial action report for this site on March 3, 2017.

Ramboll has proposed an in-situ chemical blending of ZVI and carbon amendment. Blending will be performed in gridded treatment cells measuring 20 feet by 20 feet. A proprietary system blender that is mounted on a large excavator which has a modified diesel engine and a hydraulic system will be used for blending the soils, ZVI and the carbon amendment. The in-situ blender uses a 28-inch diameter mixing drum which has specially designed teeth that rotate at speeds up to 120 revolutions per minute with a torque in excess of 20,000 foot-pounds. The mixing drum penetrates all soil types including bricks, rebars and small rocks. The excavator excavates soils as needed and loosens the soils, separates boulders and debris prior to blending the upper lifts with a predetermined ZVI and carbon amendment (ABC+). The treatment volume of each cell is further divided into lifts. It is estimated that 167,000 pounds of ZVI will be used to treat the target chlorinated volatile organic compounds (CVOCs) impacted soils and groundwater. The ZVI content that will be applied on-site will be equivalent to approximately 2.5 percent of the weight of the target treatment volume.

Determination on the NR 812 Wis. Adm. Code Injection Prohibitions:

The injection prohibition under s. NR 812.05, Wis. Adm. Code, is not applicable in this case because the proposed action is a WDNR-approved activity necessary for the remediation of soils and groundwater. This letter serves as your approval from the WDNR for the enhanced reductive dechlorination of a combined in-situ chemical and biological reduction approach through in-situ blending of ZVI and carbon amendment at the Former One-Hour Valet Dry Cleaners, 1214-1222 West Wells St., Milwaukee, WI.

NR 140 Wis. Adm. Code Temporary Exemptions:

The WDNR approval is hereby granted to Ramboll for the enhanced reductive dechlorination of a combined in-situ chemical and biological reduction approach through in-situ blending of ZVI and carbon amendment at the Former One-Hour Valet Dry Cleaners, 1214-1222 West Wells St., Milwaukee, WI., with certain terms and conditions. The expiration date of this temporary exemption must be less than 2-years, per NR 140.28(5)(e) (1). from the date of this letter.

The need to obtain a temporary exemption for the injection of a remedial material for which a groundwater quality standard has not been established is required under s. NR 140.28 (1) (d), Wis. Adm. Code. Based on the information provided by your consultant, it appears the requirements for a temporary exemption for the injection of a remedial material for which a groundwater quality has not been established under s. NR 140.28 (I) (d) have been or will be met in accordance with s. NR 140.28 (5) (c) and (d), Wis. Adm. Code.

Department approval is granted with the following terms and conditions:

A. General:

1. The remedial action for restoring contaminated groundwater or soil, and any infiltrated or injected contaminated water and remedial materials, shall achieve the applicable response objectives required by s. NR 140.24 (2) or s. NR 140.26 (2), Wis. Adm. Code, within reasonable period.
2. The type, concentration and volume of substances or remedial material to be infiltrated or injected shall be minimized to the extent that is necessary for restoration of contaminated groundwater.
3. Any infiltration or injection of contaminated water or remedial material into the groundwater shall not significantly increase the threat to public health, or welfare, or to the environment
4. No uncontaminated or contaminated groundwater, substance or remedial material shall be infiltrated or injected into an area where a floating non-aqueous liquid is present in the contaminated groundwater.
5. There shall be no expansion of soil or groundwater contamination, or migration of an infiltrated or injected contaminated water or remedial material, beyond the edge of previously contaminated areas, except that infiltration or injection into previously uncontaminated areas may be allowed if the Department determines that expansion into adjacent, previously uncontaminated areas is necessary for the restoration of the contaminated groundwater, and the requirements of s. NR 140.18 (1), Wis. Adm. Code will be met.
6. All necessary federal, state and local licenses, permits and other approvals are obtained and compliance with all applicable environmental protection requirements is required. A WPDES general permit for Discharge of Contaminated Groundwater from remedial action operation is required for this action.

B. Specific:

7. The remedial materials to be injected to the soils and groundwater shall be limited to the treatment of CVOCs.

8. The remedial material and injection project shall be as described in Ramboll's request.
9. Ramboll will notify the Southeast Region WDNR Project Manager, Trevor Noble of field activities, no less than one (1) week before starting the injection.
10. Include soil vapor screening, using a PID, as a best management practice as part

of the monitoring plan.

11. Remediation progress reports shall be submitted semi-annually, and shall include the groundwater monitoring results. The first report should be submitted not more than three months after the first injection. Recommendations as to the next phase of sampling and/or the need for additional treatment shall be included in a future report. This report shall be submitted prior to the expiration date of this temporary approval.
12. Any significant changes to the injection process, based on information from the injection groundwater monitoring reports or results, shall be submitted to the WDNR for approval prior to the changes being implemented to the injection and treatment of CVOCs in the groundwater and soils at the Former One-Hour Valet Dry Cleaners, 1214-1222 West Wells St., Milwaukee, WI. This includes, but is not limited to adjustments to the volume/mass of the media injected.
13. Modifications to the sampling schedule may be requested.
14. The responsible party may apply to the WDNR for an extension of this approval in the event that future injection/delivery activities are required, and the WDNR must receive any extension request before the expiration date of this approval.
15. The WDNR will review all permit extension requests, site-specific data and or any other necessary information.
16. Upon completion of the project, the placement monitoring wells must be abandoned in accordance with s. NR 141.25, Wis. Adm. Code, and later topped off with grout or native soils if settling occurs, unless converted to NR141 complying monitoring wells, or through an alternative approved by the WDNR Project Manager.

Monitoring Conditions:

In addition to your plan, it is your responsibility to meet all the following approval conditions during your proposed injection procedures at this site. The conditions are:

1. Maintain and follow the Site-Specific Health and Safety Plan in accordance with the Occupation Safety and Health Administration (OSHA) and the United States Environmental Protection Agency (USEPA) health and safety standards for hazardous waste workers.
2. If a chlorinated water source (i.e. municipal water) is used as the make-up water, it shall be filtered through an activated carbon filter or method proposed in your report to remove chlorine.
3. Record the start and stop times and the actual volume of the enhanced treatment of CVOCs injected into each injection or delivered to each placement monitoring well.

4. Monitor the ambient air in and around the work area during the proposed enhanced treatment of CVOCs injection process using in-situ blending methods.
5. Monitor the headspace of all injection points prior to the proposed treatment of CVOCs, using in-situ blending methods.
6. Monitor the headspace of all groundwater monitoring wells prior to each groundwater monitoring event.
7. Conduct vapor monitoring at the closest proposed monitoring locations, including a measurement of percent (%) LEL every 15 minutes during the first hour of each infiltration event.
8. Immediately notify the WDNR if any new groundwater quality enforcement standards are exceeded during monitoring.
9. Notify digger's hotline and all owners of utility lines if your project requires notification. Also, notify the local fire department prior to injection activities, and ensure that any representatives of these entities be allowed to observe the injection activities as needed. After completing the injection, sample all monitoring wells for applicable parameters quarterly.
10. Ensure that the injection is performed at less than 100 psi or at a reasonable psi which minimizes solution mounding in the aquifer, and plume disfigurement.
11. Maintain a log of all field monitoring results and injection/delivering activities.
12. Document and report all project activities and all test results to the WDNR within 60 days of completing the injection activities.

Failure to adhere to the provisions of this temporary exemption may result in WDNR requiring revisions to the remedial action design, operation or monitoring procedures, or the revocation of this exemption and the implementation of an alternative remedial action to restore soil or groundwater quality, or both.

WPDES Permit:

Your proposed discharge is eligible for coverage under the general Wisconsin Pollutant Discharge Elimination System (WPDES) permit WI-0046566-06 for Discharge of Contaminated Groundwater from Remedial Action Operations. You are responsible for compliance with the conditions contained in this permit. The permit and an accompanying facts sheet can be downloaded from the WDNR website at http://dnr.wi.gov/topic/wastewater/GeneralPermits.html. The amended water will be injected into the groundwater. No pollutants shall be injected into the groundwater.

Discharges under this permit are required to be consistent with a discharge management plan that has been approved by the WDNR. Your plan, Ramboll's February 12, 2018 request will be considered as the required discharge management plan, which specifies

analytical sampling of the discharge for CVOCs treatment will be provided by injection/delivering of the proposed in-situ enhanced reductive dechlorination using in-situ blending methods to soil and groundwater. The facility must immediately notify the WDNR if any treated groundwater will be discharged to surface water. Any significant system changes will require WDNR approval.

The WDNR hereby authorizes your pollutant discharge under the general WPDES permit for Discharge of Contaminated Groundwater from Remedial Action Operations (WI-0046566-06) that was granted on March 16, 2018. The following conditions are highlighted for your information:

Section 283.35, Wisconsin Statutes, authorizes the WDNR to issue general permits for discharges from categories or classes of point sources. If a permittee believes coverage of a facility under a general WPDES permit is not appropriate, the permittee may apply for issuance of an individual WPDES permit pursuant to section 283.35 (2) and may petition the WDNR for withdrawal of coverage under the general permit. The individual permit application should indicate which site-specific factors would justify alternate WPDES limits for the operation, issuance of such a site specific WPDES permit will provide for a 30-day public comment period, and potentially a public informational hearing and/or an adjudicatory hearing. The WDNR may withdraw a facility from coverage under a general permit if it is determined that a discharge is a significant contributor of pollutants to waters of Wisconsin, or in certain other cases set out in s. 283.35, Stats. In lieu of general permit withdrawal, the WDNR may refer any violation of this permit to the Department of Justice for enforcement under s. 283.89, Stats. In order to avoid any enforcement action, please read the WPDES permit carefully and comply with the permit requirements.

If you believe you have a right to challenge the WDNR's decision to cover this facility with a WPDES general permit, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review WDNR decisions must be filed. To request a contested case hearing pursuant to section 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the WDNR, to serve a petition for hearing on the Secretary of the Department of Natural Resources. Such a petition should identify pollutant(s) that are believed to be not appropriately regulated by the general permit for the specific site. All requests for contested case hearings must be made in accordance with section NR 2.05 (5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the time for filing a petition for judicial review.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the WDNR, to file your petition with the appropriate circuit court and serve the petition on the WDNR. A petition for judicial review must name the Department of Natural Resources as the respondent.

If you have any questions regarding this letter, please contact me either at 414-263-8607 or e-mail: Binyoti.Amungwafor@Wisconsin.gov.

Sincerely,

Binyoti F. Amungwafor
Hydrogeologist
Remediation & Redevelopment Program

Cc: Ms. Jeanne Tarvin, Ramboll US Corporation.
Mr. Trevor Noble, RR/SER
Mr. Karl Knutson, Wastewater Specialist/WI-DNR SER General Wastewater Permits
Mr. Brian Austin, WDNR DG/5
Mr. Bill Phelps, WDNR DG/5
Case File # 241086120

Public Way Occupancy Permit

Call (414) 286-3435 for inspection 48 hours before work starts.

Milwaukee Development Center
809 North Broadway
Milwaukee, WI 53202
(414) 286-8211 fax: (414) 286-0251

Type of Permit	Permittee	Date Issued	Permit No.
ROW Occupancy	PAUL LINDQUIST	06/25/2018	PWOP-18-00922
	BROOKFIELD, WI 53045	Effective Date 07/16/2018	Permit Expires in 11 days
Work Location		Expiration Date	Work Order#
1214-1214 W WELLS ST		07/27/2018	

Original plans called for full walk occupancy, revised plans sent for temp ped walkway in documents, updated summary 7/13/18 90' TEMPORARY OCCUPANCY - ON NORTH SIDE OF W WELLS ST - WEST OF N 12TH ST - FOR SOIL REMEDIATION ON PRIVATE PROPERTY.

Date Started	07/16/2018	Permit Fee	$531.00
Date Closed	07/27/2018	Inspection Fee	$60.00
Inspector		Process Fee	$6.00
		Total Fee	$597.00

Applicant Signature

Issued By

This permit is granted on condition that the Permittee will obey all sections of Chapter 115 of the Milwaukee Code of Ordinances and all specifications, rules and regulations for the Department of Public Works pertaining to this permit. The acceptance of this permit constitutes an acknowledgement and acceptance of the conditions and regulations noted below.

Barricading and signing: Barricades and signs shall comply with City of Milwaukee Dept. of Public Works manual “Traffic Control for Construction & Maintenance Work” and Part VI of the State of Wisconsin “Manual of Uniform Traffic Control Devices”.

Occupying street: Materials must be kept at least 2 feet away from any tree, alarm box, manhole and catch basin. Materials and equipment must be kept at least 10 feet from fire hydrants, 15 feet from crosswalks, and in accordance with other restrictions of the Code of Ordinances.

Drainage and erosion control: Gutters and drainage ditches shall be kept open at all times and shall be restored to their original condition. Perform all work necessary to conform to Ch. 290, Erosion Control, Milwaukee Code of Ordinances.

Blocking roadway: Unless the permit specifically allows, you may not block the entire roadway.

Revocation of permit: The Commissioner of Public Works reserves the right to revoke this permit at any time if, in his or her judgment, it is in the best interest of the City of Milwaukee.

Guarantee: You must reimburse the City of Milwaukee for all damages to any city property resulting from you work. You must hold the City of Milwaukee harmless in case of any accident or any damages arising through the issuance of this permit, regardless of whether such damage or accident is done by you, your agents, employees, or sub-contractors. In addition to the aforesaid provisions, said bond shall guarantee all work for 3 years from the date of completion thereof.

Lawn restoration: Where excavations in the sidewalk area or median destroy, disturb or damage the established lawn, the permittee or contractor shall restore the area with top grade nursery sod approved by the Commissioner of Public Works laid over 3 inches of screened top soil spread evenly over the entire area.

New pavement: Permit will be issued to excavate any street pavement or resurfaced street less than 3 years old only upon showing that an emergency exists.

Emergency services: Any person who fails to keep the location for which this permit is issued in a safe condition at any time will be billed for any emergency work performed by city forces in order to make the location safe.

Damage during excavation: Use care during excavation to avoid damage to existing structures or facilities. If any underground structure or facility is damaged, notify the owner of the structure or facility immediately, and report the damage to the owner in writing within 24 hours. If the owner is the City of Milwaukee, report damage to the Commissioner, Dept. of Public Works, (414) 286-3300.

Obstructions: Unless you have permission to remove or relocate underground structures or facilities, you must work in a manner that minimizes disturbance of underground structures or facilities. Protect and support such facilities in accordance with the current specifications on file in the office of the commissioner and all applicable laws.

Backfilling: All sand or gravel used to backfill the excavations must meet current City specifications. All backfill in excavations must be controlled compacted or concrete aggregate slurry backfill can be used.

Temporary surfacing: The top 3” of excavations in any public way shall be a bituminous material. Place the bituminous material flush with the surrounding surface within 72 hours after backfilling has been completed.

Excavated material: Do not place excavated material on double seal, single seal, crushed stone, graded aggregate, or gravel pavements.

Restoration of street: Perform the work promptly and professionally. Remove all refuse and excess dirt and material from the surface of the public was as the work progresses or immediately upon its completion. Restoration must be done in accordance with current specifications.

Guarantee (roadway excavation): THE PERMITTEE MUST GUARANTEE THE MAINTENANCE OF THE TEMPORARY SURFACING ON ALL EXCAVATIONS BETWEEN

Except for emergency excavations, excavation permit is void if permitee does not contact Diggers Hotline (Call 811 or 1-800-242-8511) at least three working days prior to digging. Notify fire department dispatcher any time road is closed: 286-8999. Call traffic operations 286-3632 for "temporary parking" signs.

APPENDIX B

MONITORING WELL ABANDONMENT FORMS (PZ-1 AND PZ-3)

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats , and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment ☐ Waste Management ☐ Other: _____

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Milwaukee		

Latitude / Longitude (see instructions) _____ N _____ W | Format Code ☐ DD ☐ DDM | Method Code ☐ GPS008 ☐ SCR002 ☐ OTH001

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #			N	☐ E ☐ W

Well Street Address: 1214 W. Wells St.

Well City, Village or Town: Milwaukee | Well ZIP Code: 53233

Subdivision Name: | Lot #:

Reason for Removal from Service: | WI Unique Well # of Replacement Well:

2. Facility / Owner Information

Facility Name: Former 1-hour Valet Dry Cleaners

Facility ID (FID or PWS):

License/Permit/Monitoring #:

Original Well Owner:

Present Well Owner:

Mailing Address of Present Owner:

City of Present Owner: | State: | ZIP Code:

3. Filled & Sealed Well / Drillhole / Borehole Information

☒ Monitoring Well ☐ Water Well ☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 2011

If a Well Construction Report is available, please attach

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify): _____

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in)
35	
Lower Drillhole Diameter (in.)	**Casing Depth (ft)**
4	

Was well annular space grouted? ☒ Yes ☒ No ☐ Unknown

If yes, to what depth (feet)? | Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

SEE NOTE

Pump and piping removed?	☐ Yes	☒ No	☐ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☒ No	☐ N/A
Casing left in place?	☒ Yes	☐ No	☐ N/A
Was casing cut off below surface?	☒ Yes	☐ No	☐ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☒ Yes	☐ No	☐ N/A

Required Method of Placing Sealing Material: ☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped ☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials: ☐ Neat Cement Grout ☐ Concrete ☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only: ☒ Bentonite Chips ☐ Bentonite - Cement Grout ☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

From (ft)	To (ft)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Asphalt			
Surface	0-5		
Bentonite	0.5	35	

6. Comments

PZ-1

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Ramboll		01/11/2018

Street or Route: 175 N. Corporate Dr. | Telephone Number: (262) 901-0129

City: Brookfield | State: WI | ZIP Code: 53045

Signature of Person Doing Work: | Date Signed: 01/12/2018

DNR Use Only

Date Received	Noted By

Comments:

NOTE: Please note that PZ-1 abandoned PVC pipe and sand pack was removed through the soil mixing process. Soil mixing activities extended to 35 feet below ground surface.

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Milwaukee		

Latitude / Longitude (see instructions) _____ N _____ W — Format Code: ☐ DD ☐ DDM — Method Code: ☐ GPS008 ☐ SCR002 ☐ OTH001

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #			N	☐ E ☐ W

Well Street Address: 1214 W. Wells St.

Well City, Village or Town	Well ZIP Code
Milwaukee	53233

Subdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well

2. Facility / Owner Information

Facility Name: Former 1-hour Valet Dry Cleaners

Facility ID (FID or PWS):

License/Permit/Monitoring #:

Original Well Owner:

Present Well Owner:

Mailing Address of Present Owner:

City of Present Owner	State	ZIP Code

3. Filled & Sealed Well / Drillhole / Borehole Information

☒ Monitoring Well ☐ Water Well ☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 2011

If a Well Construction Report is available, please attach

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify): _____

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
50	

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
4	

Was well annular space grouted? ☐ Yes ☒ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

SEE NOTE

Pump and piping removed?	☐ Yes	☒ No	☐ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☒ No	☐ N/A
Casing left in place?	☒ Yes	☐ No	☐ N/A
Was casing cut off below surface?	☒ Yes	☐ No	☐ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☒ Yes	☐ No	☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☒ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Asphalt	Surface	0.5		
Bentonite	0.5	50		

6. Comments

PZ-3 PZ-3

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Gamboa		01/11/2018

Street or Route	Telephone Number
175 N. Corporate Dr.	(262) 901-0129

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Brookfield	WI	53045		01/12/2018

DNR Use Only

Date Received	Noted By

Comments:

NOTE: Please note that PZ-3 abandoned PVC pipe and sand pack was removed to 35 feet below ground surface through the soil mixing process. Soil mixing activities extended to 35 feet below ground surface.

APPENDIX C

MMSD DISCHARGE APPROVAL (VEIT)

MMSD
PARTNERS FOR A CLEANER ENVIRONMENT

July 10, 2018

Mr. Herb Pundsack
Project Manager
Marquette University
1214 W. Wells St.
Milwaukee, WI 53233

Subject: *Discharge of Contaminated Stormwater – Marquette University*
Notice of Intent to Discharge 18.039

Dear Mr. Pundsack:

The Milwaukee Metropolitan Sewerage District (District) received the Notice of Intent to Discharge (NOI) request on July 6, 2018, to discharge contaminated stormwater. The project is located at 1214 W. Wells Street.

The NOI proposes a one-time discharge (up to 100,000 gallons) for dewatering contaminated stormwater which contains low concentrations of VOCs and metals that has accumulated over time inside the basement floor. The discharge will be to the combined sanitary/storm sewer grate located on the west curb of 12th St. near Wells Street, as indicated in the provided map.

Based on the information provided in the NOI, the discharge is approved with the following conditions:

1) All groundwater or stormwater that is discharged must comply with the prohibitions and limits established by secs. 11.202 and 11.203, MMSD Rules, which are enclosed. In addition, the total concentration of volatile and semi-volatile organic compounds may not exceed 5 mg/L at any time and the concentration of total suspended solids may not exceed 100 mg/L at any time.

2) Implement settling, filtration, or other techniques to minimize the amount of solids discharged. Also, if oil or floating solids are present, implement the use of booms, skimmers, or other techniques to prevent the discharge of the oil or floating solids into the sanitary sewer. Discharging wastewater with a visible sheen is prohibited.

3) Discharge is prohibited during rain and within 24 hours after the site receives one-half inch or more of rain.

4) The total volume discharged must be reported to the District within five days after the conclusion of discharges.

5) If the total volume discharged exceeds 50,000 gallons, then the District must receive sewer user charges at a rate of $2.50 per thousand gallons, per the *Cost Recovery Procedures Manual*, page 11-5. The District will issue a bill after receiving the report required by Condition (4) above.

6) At any time when groundwater or stormwater treatment or discharge is occurring, the District must have access to the site for inspection or sampling. If the District does collect samples, the costs of sample collection and analysis is as established by the District's *Cost Recovery Procedures Manual*, pages 11-3 to 11-4.

7) Mr. Dave Wozniak of the District's sampling staff must receive notice 48-hours prior to the initial commencement of discharge. Contact Mr. Wozniak at 414-325-5136 or dwozniak@mmsd.com

If you have questions, please contact Song Tran at 414-225-2164 or stran@mmsd.com. Thank you for your cooperation.

Sincerely,

Sharon K. Mertens
Director, Water Quality Protection
Milwaukee Metropolitan Sewerage District

Enclosures

c: Dave Wozniak, MMSD

Subchapter II – Discharge Regulations

11.201 General Prohibitions

(1) Compliance with Rules

Users may not discharge to the sewerage system except in compliance with this chapter.

(2) Interference

Users may not discharge any pollutant to the sewerage system in a quantity or concentration that, alone or in conjunction with other discharges:

(a) inhibits or disrupts the sewerage system or its sludge processes; and

(b) 1. causes a violation of the District's WPDES permits or air pollution control permits;

2. increases the magnitude or duration of a violation;

3. prevents the use or disposal of sewage sludge in compliance with any applicable local, state or federal statutes, ordinances regulations, permits, or other requirements; or

4. inhibits the marketing of treated sewage sludge.

(3) Pass Through

Users may not discharge to the sewerage system any pollutant in a quantity or concentration that, alone or in conjunction with other discharges, is a cause of a discharge from the sewerage system to waters of the state that violates the District's WPDES permits or increases the magnitude or duration of a violation.

11.202 Prohibited Discharges

Users may not discharge to the sewerage system:

(1) pollutants that create a fire or explosion hazard in the sewerage system, including but not limited to pollutants that result in wastewater with a closed cup flashpoint of less than 140 F or 60C;

(2) pollutants that will cause corrosive structural damage to the sewerage system, including but not limited to discharges with a pH lower than 5.0 s.u.;

(3) solid or viscous pollutants that will obstruct the flow in the sewerage system;

(4) heat in amounts that will cause interference by inhibiting the biological activity in the treatment plant, including but not limited to heat in an amount that causes the influent of the treatment plant to exceed 40 C (104 F);

(5) used motor vehicle anti-freeze, motor oil, brake fluid, transmission fluid, hydraulic fluid, oil-based paint, and paint thinners if the material is in a collectable and recyclable quantity or if the discharge would result in a violation of the oil and grease limit set forth in sec. 11.203(1);

(6) pollutants that result in the presence of toxic gases, vapors, or fumes within the sewerage system in a quantity that may cause acute worker health and safety problems, including, but not limited to, pollutants that cause a vapor-phase hydrogen sulfide concentration equal to or greater than 10 ppmv in any part of the sewerage system;

(7) (a) hauled waste, except for hauled waste that:

1. consists only of domestic wastewater, and

2. is discharged at a point designated by the District.

(b) This prohibition does not apply to wastewater hauled:

1. to facilities not owned by the District, or

2. to the South Shore Water Reclamation Facility and added to anaerobic digesters to increase gas production;

(8) any substance that will cause the sewerage system's treatment residues, sludge's, or scum's to be unsuitable for reclamation and reuse, that causes interference with the reclamation process, or that inhibits the marketing of treated sewage sludge;

(9) any wastewater that contains radioactivity in amounts greater than a drinking water standard established by the U.S. Environmental Protection Agency or the Department;

(10) at any site that is either served by a separate storm water conveyance system or riparian to waters of the state:

(a) storm water, surface water, or groundwater, except when a remedial action undertaken according to the requirements of the Department or the U.S. Environmental Protection Agency requires the removal of this type of water and a direct discharge to waters of the state would impose unreasonable costs or delays;

(b) roof runoff;

(c) subsurface drainage;

(11) any non-domestic wastewater before the District has approved a *Notice of Intent* submitted according to sec. 11.401;

(12) any mass, concentration, or volume of a substance in excess of the amount allowed in the user's Wastewater Discharge Permit; and

(13) The following pollutants, except as provided in pars. (b), (c), and (d):

Acrolein	Furans
Alkylated lead	Heptachlor
Benzo(a)Pyrene	Hexachlorobenzene
Chlordane	Lindane (BHC)
Dieldrin	Mirex
Dioxins	Pentachlorobenzene
3,3'-Dichlorobenzidine	Polybrominated biphenyl ethers
4,4'-Dichlorodiphenyltrichloroethane (DDT)	Polychlorinated biphenyls (PCBs)
Endosulfan	1,2,4,5-Tetrachlorobenzene
Endrin	Toxaphene
Fluoranthene	2,4,6-Trichlorophenol

(b) amounts allowed by an applicable categorical pretreatment standard;

(c) amounts occurring in landfill leachate after implementation of the best available treatment technology economically achievable, according to a limit established in a wastewater discharge permit;

(d) amounts caused by sources beyond the reasonable control of the user, such as contamination in the water supply, air deposition, or raw materials

11.203 Local Limits

(1) (a) Users may not discharge into the sewerage system any process wastewater containing concentrations of pollutants greater than the following limits, except as provided in sec. 11.213 and sec. 11.214(12):

Pollutant [1]	Limit (mg/L)
Arsenic, total	0.6
Cadmium, total	1.5
Chromium, total	64
Copper, total	6.0
Lead, total	2.0
Mercury, total	0.0026
Molybdenum, total	12
Nickel, total	4.0
Silver, total	5.8
Zinc, total	8.0
Cyanide, total	2.9
Hexane extractable materials[1]	300

(1) This limit applies to results obtained using Method 1664, as established by 40 CFR 136.

APPENDIX D

CONCRETE DISPOSAL MANIFEST

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: WID053684478
2. Page 1 of: 1
3. Emergency Response Phone: (877) 518-0087
4. Manifest Tracking Number: 001481411 VES

GENERATOR

5. Generator's Name and Mailing Address: DENNIS DAYE
MARQUETTE UNIVERSITY
ACADEMIC SUPPORT FACILITY, 110 P.O. BOX 1881
MILWAUKEE, WI 53201
Generator's Phone:

Generator's Site Address (different than mailing address):
1214 WEST WELLS STREET
MILWAUKEE, WI 53233

6. Transporter 1 Company Name: VEOLIA ES TECHNICAL SOLUTIONS
U.S. EPA ID Number: NJD080631369

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: EQ MICHIGAN DISPOSAL, INC
49350 N I-94 SERVICE DRIVE
BELLEVILLE, MI 48111
Facility's Phone: 800 592-5489
U.S. EPA ID Number: MID000724831

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. NA3077, HAZARDOUS WASTE, SOLID, n.o.s., (TETRACHLOROETHYLENE), 9, III, RQ (F002)	1	CM	30	Y	F002		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information: ER Service Contracted by VESTS + ER SERVICES CONTRACTED BY VESTS OU 36190 WI FIELD SERVICES + Contract retained by generator confers agency authority on initial transporter to add or substitute additional transporters on generator's behalf. + 1) ERG:171 W:210161 A:B1[illegible]22MDI
VE3027

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Kenneth Gruennert on behalf of — Signature: [signature] — Month: 7 — Day: 31 — Year: 18

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Kenneth Gruennert — Signature: [signature] — Month: 7 — Day: 31 — Year: 18

Transporter 2 Printed/Typed Name: — Signature: — Month: — Day: — Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☑ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
actual volume/strength Manifest Reference Number: 33/10/13

18b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H110 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Michael Main — Signature: [signature] — Month: 8 — Day: 9 — Year: 18

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 001481411VES

have been properly disposed of in accordance with all local, state and federal regulation.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40CFR et sea.

FACILITY NAME: (Please check one)

☒ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831)

☐ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Bellville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: _____

APPENDIX E

PHOTOGRAPHIC LOG

Photo 1: Excavating treatment cell 2 and preparing to blend chemical amendments. Covered stockpiled slope and access ramp soils in background-left. Photograph looking east.

Photo 2: Soil blending and chemical amendment application within treatment cell 4. Photograph looking east-southeast.

RAMBOLL

Site Photographs
Former One-Hour Valet Dry Cleaners
1214 West Wells Street, Milwaukee, Wisconsin
July 2018

Photo 3: Typical zero valent iron woven plastic “Super Sack®”.

Photo 4: Typical 250-gallon tote of Anaerobic BioChem (ABC®) substrate.

Photo 5: Blending stockpiled slope and access ramp soils into the top five feet of the treatment area. Photograph looking east.

Photo 6: Geo-textile fabric placed on soil treatment area. Photograph looking east.

Photo 7: Completed backfilling and compaction activities of soil treatment area. Photograph looking northeast.

Photo 8: Completed backfilling and compaction activities of soil treatment area. Photograph looking southeast.