LETTER OF TRANSMITTAL

To: Ms. Nancy Ryan
c/o Mr. David Hanson, Program Assistant
Wisconsin Department of Natural Resources
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee, WI 53212-3128

From: Adam Roder
The Sigma Group, Inc.
1300 W. Canal Street
Milwaukee, WI 53233

Date: January 26, 2016
Site Name: Freshwater Plaza Lot 3
Address: NE Corner of S. 1st Street & E. Greenfield Avenue
Milwaukee, WI 53204
FID# 341267960
BRRTS # 02-41-576420

Please check the type(s) of documents you have enclosed. Submittals will be tracked and filed based on the information you provide. **Include the FID *and* BRRTS numbers which have been assigned to this site, and identify the intent of the document(s) you are submitting in order to speed processing.** Please attach any required fees to this checklist.

IS THIS RELEASE PECFA-ELIGIBLE?
☐ YES ☑ NO ☐ UNKNOWN AT THIS TIME

Type of Submittal:
☐ LUST ☑ ERP ☐ VPLE ☐ OTHER

CHECK	Agreements	FEE
	Tax assignment agreement - ss.75.106(2)(d) & 292.55	$700
	Tax cancellation agreement - ss. 75.106(2)(d) & 292.55	$700
	Negotiated agreements - s. 292.11(7)(d)2	$1,400
	Technical Assistance (s. 292.55)	**FEE**
	NR 708 No Further Action Letter	$350
	NR 716 No Further Investigation	$700
	NR 716 Site Investigation Workplan	$700
	NR 716 Site Investigation Report	$1,050
	NR 720 Soil Cleanup Standards/Reports	$1,050
	NR 722 Remedial Action Options Report	$1,050
	NR 724 Remedial Design Report	$1,050
	NR 724 Operation and Maintenance Report	$425
	NR 724 Construction Documentation Reports	$350
	NR 724 Long-Term Monitoring Plan	$425
	NR 726 Case Closure Action	$1,050
	NR 506 Exemption for building on a historic waste site	$700
X	Other Technical Assistance: Soil Management Plan review	$700
	Liability Clarification Letters	**FEE**
	s. 292.13(3) Off-Site Exemption Letters	$700
	s. 292.55 Lease Letters - Single Properties	$700
	s. 292.55 Lease Letters - Multiple Properties	$1,400
	s. 292.55 General Liability Clarification Letters	$700
	s. 292.21(1)(c)1.d. Lender Assessments	$700
	Department Database Fees (ss. 292.12 and 292.57)	**FEE**
	Sites with groundwater contamination that attains or exceeds ch. NR 140	$350
	Sites with soil contamination that attains or exceeds ch. 720 RCLs	$300
	Sites not otherwise addressed in this schedule, where the department imposes any other limitation or condition in accordance with s. 292.12(2)	$350
	Cases submitted for closure with monitoring wells not properly abandoned, without residual groundwater contamination	$350
	Modification or removal of a site or property from the database	$1,050
	Other / Miscellaneous	

Remarks: ***$700 check #68548 from Sigma enclosed for review fee***

8 ; 4 3

T E G A R U I :.
13 W T NA ST ET
.W. KE W 32

PN BA
-2 39, 19

C EC D E
e em e 23 2 5

P Y
Se e H d d n 0 10 D lla s

AMOU T
$ 0 00

T
W co si D R

JTH RIZ SIG TU

⑈0 8 31 C ? 9 1 1 E 6 5 E 7

HE SI W GI OI , IC

8 4

nv ce un er		ate			V ch r	Ch ck at 2/2 20 5		A ou		Dis ou s		P vi s l ly		t A ou t	
il an 41 L 4	1	22 0	00 0	38 4			70 00					$ 00	
sc si N				T T			70 00					$ 00	
IC he in	4		2 00										

R T 2 1- 5 6 12
F) 3 (6

THE SIGMA GROUP
Single Source. Sound Solutions.

January 26, 2015 Project Reference #14160

Ms. Nancy Ryan
c/o David Hanson, Program Assistant
Wisconsin Department of Natural Resources
Remediation & Redevelopment Program
2300 N. Dr. Martin Luther King Jr. Drive
Milwaukee, WI 5321

Subject: **Soil Management Plan - Technical Assistance Request**
Freshwater Plaza Lot 4
Part of Redevelopment Project at Northeast Corner of S. 1st Street & E. Greenfield Avenue, Milwaukee, WI
WDNR BRRTS #02-41-576420
FID #341267960

Dear Ms. Ryan:

On behalf of Freshwater Plaza Corp., The Sigma Group, Inc. (Sigma) has prepared this letter to request Wisconsin Department of Natural Resources (WDNR) approval as a part of the site remedial strategy to reuse impacted soil at the Freshwater Plaza redevelopment project. The Freshwater Plaza redevelopment project consists of an approximately 8.45 acre area of land comprised of four contiguous parcels (Lots 1 through 4 of Certified Survey Map #8731) as described in Sigma's October 2015 update letter[1]. Specifically, this request pertains to shallow soil that is being disturbed during grading work on Lot 4 to prepare the area for an interim greenspace area, and future excavation work associated with an office building and parking garage (refer to **Figure 1**). A $700 check is enclosed for the WDNR's technical review and written approval of this document.

Proposed Soil Reuse

Soil will be disturbed during grading for this redevelopment project in order to slightly change the ground surface elevations in preparation for future construction work at the site. Site-wide, the grading involves cuts of 0 to approximately 3.5 feet deep (excluding a basement excavation in the southwest portion of the redevelopment site on Lot 3); interim soil cuts on Lot 4 range between 0 and approximately 3.3 feet deep. Conversely, fill areas range between 0 and approximately 4.5 feet in thickness across the whole project area; interim fill areas on Lot 4 range between 0 and approximately 2.4 feet thick. Additionally, soil will be excavated in the future for an underground parking level beneath the proposed office building, foundations, utilities, and a ramp in the parking garage leading down to the basement parking level. This building and parking garage will be designed at a future date.

As described in previous environmental reports, most soil samples collected from the redevelopment project site have contained elevated detections of polynuclear aromatic

[1] *Project Status Update - October 2015, Freshwater Plaza: NE Corner of S. 1st Street & E. Greenfield Ave., Milwaukee, WI*...by Sigma (dated October 13, 2015)

hydrocarbons (PAHs) and/or RCRA metals (predominantly arsenic and lead), and smaller areas of petroleum volatile organic compounds (PVOCs), chlorinated volatile organic compounds (CVOCs), and/or polychlorinated biphenyls (PCBs). Based on the factors described below, it is recommended that soil disturbed during the construction activities on Lot 4 be allowed for reuse on the same lot (and under future engineered barriers) in accordance with the Lot 4 Soil Management Plan (**Attachment 1**).

Lot 4 Owner / Developer
Redevelopment Authority of the
City of Milwaukee
809 N. Broadway
Milwaukee, WI 53202
Telephone: (414) 286-5800
Contact: Dan Casanova
Email: dan.casanova@milwaukee.gov

Lot 3 Location Information
SE ¼ of the SE ¼ of Sec 27 T7N R22E

Wisconsin Transverse Mercator '91
X 690355
Y 284920

Lot 4 Responsible Party (to achieve regulatory case closure)
Freshwater Plaza Corp.
c/o Wangard Partners, Inc.
1200 N. Mayfair Road, Suite 310
Milwaukee, WI 53226
Contact: Wayne Wiertzema, President
Telephone: (414) 777-1200
Mobile: (262) 313-8383
Email: wwiertzema@wangard.com

Volume of Soil
An estimated 750 to 1,000 cubic yards of soil will be generated from the interim ground surface grading on the north end of Lot 4. This volume of soil is proposed to be placed further south on Lot 4 to raise the interim ground surface beneath the future parking garage area.

In the future after the planned office building and parking garage are designed and ready for construction, it is estimated that another 5,000 to 6,000 cubic yards of impacted soil may be generated from basement / foundation excavations and utility lines. It is proposed that impacted soil from this excavation be reused under the future parking garage immediately to the north and/or beneath other engineered barriers adjacent to this building if space is available. If on-site reuse is not feasible in the future, soil may be transported off-site to an alternative disposal site (pending appropriate WDNR approval), or hauled to a local licensed landfill facility for disposal.

The approximate soil cut / fill areas and a schematic of the general soil relocation plans are depicted on sheet C 200 - Overall Cut / Fill Plan included with the Lot 4 Soil Management Plan in **Attachment 1**.

Soil Quality
Shallow soil needs to be graded for the interim grading work on the north end of Lot 4. Impacted soil has been characterized by shallow soil samples from soil borings SGP-7 and SMW-12 (approximately one sample per 375 to 500 cubic yards; more sampling is not

needed based on the lack of significant impacts as described below). Soil quality data are highlighted in Tables 1D and 2D in the Soil Management Plan in **Attachment 1** and summarized below:

- Volatile organic compounds (VOCs) were analyzed in both soil samples; all concentrations were reported below the laboratory detection limits.

- PAHs were analyzed in both soil samples. PAHs were reported below applicable NR 720 RCLs, except for one PAH detection that was above a direct contact pathway RCL.

- RCRA metals were analyzed in both soil samples. All concentrations were reported below the laboratory detection limits and/or NR 720 RCLs, except for selenium in one sample that was detected above the protection of groundwater RCL.

Similar, or even higher, levels of contaminants are present in the proposed relocation areas on Lot 4 as evidenced by data included on Tables 1D and 2D with the Soil Management Plan in **Attachment 1**.

For the future office building and parking garage on Lot 4, it is anticipated that excavations will approach 8 feet bgs for the basement level and ramp between the parking garage and the basement. Impacted shallow soil in the vicinity of the proposed building footprints has been characterized by soil borings SGP-10, SGP-11, SGP-12, SGP-13, P-2, P-3, and MW-6R (approximately one sampler per 700 to 850 cubic yards; additional soil sampling for the potential on-site reuse is not warranted based on the relatively low and consistent impacts identified across Lot 4). Soil quality data are highlighted in Tables 1D and 2D in the Soil Management Plan in **Attachment 1** and summarized below:

- Volatile organic compounds (VOCs) were analyzed in six of the seven soil samples. Low-level PVOC detections were reported in four of the samples, but all concentrations were below NR 720 RCLs.

- PAHs were analyzed in six of the seven soil samples. One or more PAH compounds exceeded NR 720 RCLs for the protection of groundwater pathway and/or direct contact RCLs in five of the soil samples.

- RCRA metals were analyzed in six of the seven soil samples. Elevated arsenic (one protection of groundwater RCL and direct contact RCL exceedance), lead (two protection of groundwater RCL exceedances), and silver (one protection of groundwater RCL exceedance) concentrations were reported.

- PCBs were analyzed in one of the seven soil samples; results were all below the laboratory detection limits.

Again, similar types and levels of contaminants are present in the proposed relocation areas on Lot 4 as evidenced by data included on Tables 1D and 2D with the Soil Management Plan in **Attachment 1**. At this time, based on the current assumptions about the proposed office building, not all this soil will be able to be reused on Lot 4 due to space constraints. If that is the case, soil may be transported off-site to an alternative disposal

site (pending appropriate WDNR approval), or hauled to a local licensed landfill facility for disposal.

Review of Chapter NR 718.12 Criteria

Based on criteria described in ch. NR 718. 12 the impacted soil may not be placed as follows:

1. *Within a floodplain.* Lot 4, and the entire redevelopment project site, is not located within a floodplain as determined by FEMA. A map showing the site location relative to the floodplain (Zone AE in blue) is presented as **Attachment 2**.

2. *Within 100 feet of any wetland or critical habitat area.* The redevelopment project site is located within urban Milwaukee. There are no documented wetlands located within 100 feet of the property in any direction.

3. *Within 300 feet of any navigable river, stream, lake, pond or flowage.* The nearest navigable water body is the Milwaukee Inner Harbor of Lake Michigan; two canals terminate approximately 300 to 350 feet east and northeast of the redevelopment project site and Lot 4.

4. *Within 100 feet of any on-site water supply well or 300 feet of any off-site water supply well*. The City of Milwaukee obtains water from Lake Michigan. No potable water supply wells are located on-site or within 300 feet of the project site.

5. *Within 3 feet of high groundwater level.* The shallowest measured depth to groundwater in current NR 141-compliant groundwater monitoring wells SMW-12, SMW-15, and SMW-20 on Lot 4 is 6.1 feet. The placement of the reused soil will be at or above the existing ground surface, so the minimum distance above the high groundwater level will be greater than 3 feet. Groundwater elevation data is included in **Attachment 3**.

6. *At a depth greater than the depth of the original excavation from which the contaminated soil is removed.* The soil to be relocated during the interim grading work will be placed at or above the existing ground surface, so it will be placed at depths shallower than from where it originated. If soil is reused within the same excavation from which it originates (e.g., for a utility trench or foundation backfill for the future office building or parking garage), it will also be placed at a shallower depth than from where it was removed.

7. *Where the contaminated soil poses a threat to public health, safety, or welfare or the environment*. Based on analytical data collected from samples of the soil to be relocated, some concentrations exceed NR 720 RCLs for the migration to groundwater and direct contact pathways. However, existing soil contamination is already present in the relocation areas and the entire relocation area will be capped with engineered barriers when the lot is fully redeveloped that will prevent direct contact and minimize precipitation infiltration to protect groundwater quality.

Recommendation

Sigma requests, on behalf of Freshwater Plaza Corp., that the soil generated from the grading and excavation work on Lot 4 as described above be approved by the WDNR for placement elsewhere on Lot 4 below future engineered barriers.

We appreciate your prompt attention to this matter and request that you provide written approval at your earliest availability. Please call us at (414) 643-4200 if you have any questions.

Sincerely,

THE SIGMA GROUP, INC.

Adam J. Roder

Adam J. Roder, P.E.
Senior Engineer

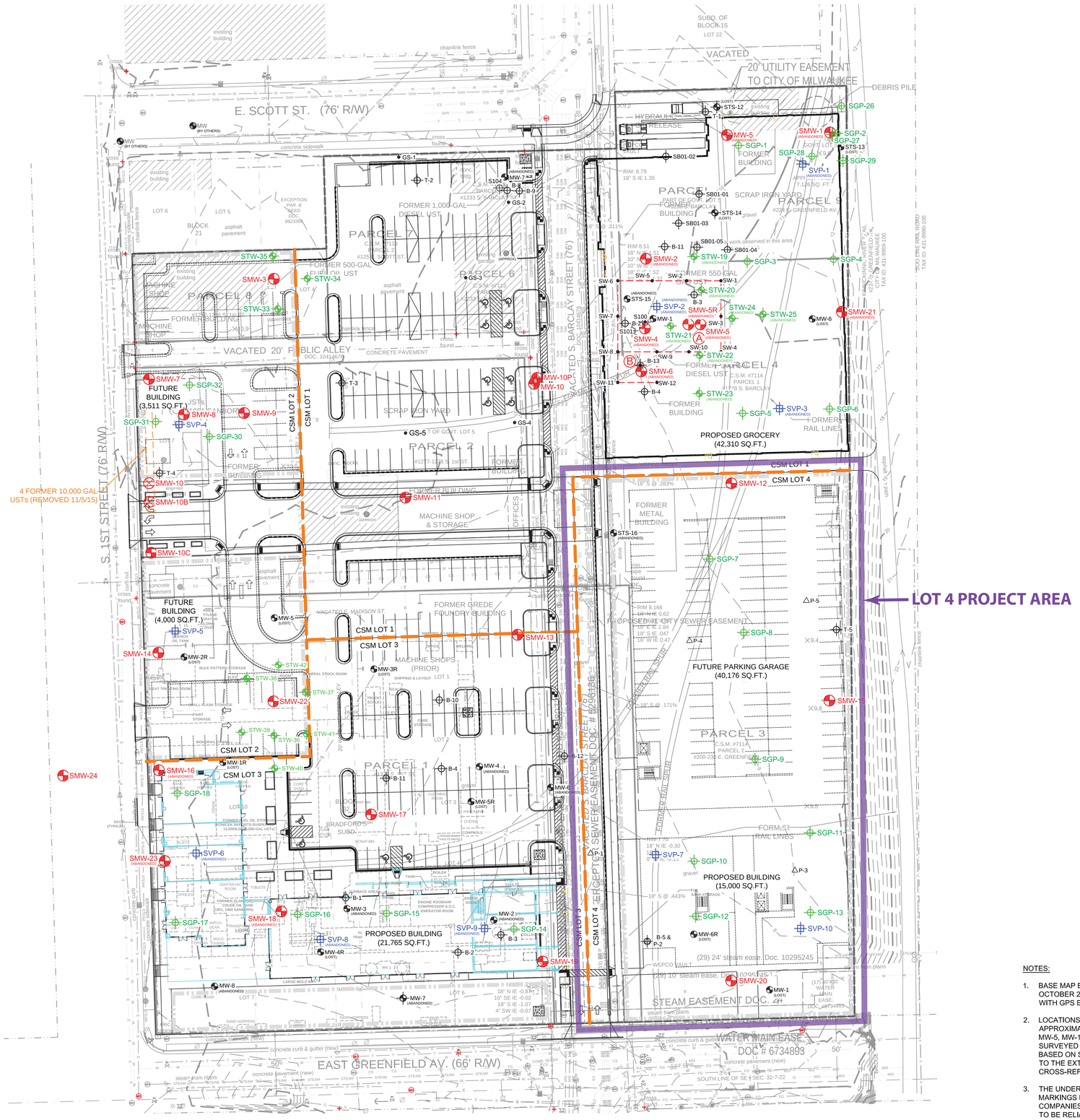
Randy Boness

Randy E. Boness, P.G.
Geoscience Group Leader

Attachments

Figure 1 - Site Plan Map
Attachment 1 - Soil Management Plan
Attachment 2 - Flood Insurance Rate Map
Attachment 3 - Groundwater Elevation Data

cc: Wayne Wiertzema, Freshwater Plaza Corp.
Dan Casanova, Redevelopment Authority of the City of Milwaukee (via email)



ENVIRONMENTAL KEY

- = GRAB SAMPLE
- = SOIL BORING
- = MONITORING WELL (FORMER)
- = TEST PIT
- = GEOPROBE SOIL BORING
- = TEMPORARY WELL
- = HSA SOIL BORING
- = MONITORING WELL
- = VAPOR PROBE

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

LEGEND

SECTION 1/4 SECTION LINE
PROPERTY LINE
EASEMENT
CHAIN LINK FENCE
GUARD RAIL
METAL FENCE
WOOD FENCE
TREE LINE
OVERHEAD UTILITY LINE
ELECTRIC
TELEPHONE
FIBER OPTIC
CABLE TV
SANITARY SEWER
FORCE MAIN
STORM SEWER
WATER MAIN
GAS
EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
MANHOLE
CATCH BASIN
CATCH BASIN (ROUND)
ROOF DRAIN
HYDRANT
WATER VALVE
GAS VALVE
UTILITY POLE
GUY WIRE
GAS METER
ELECTRIC METER
UTILITY PEDESTAL
HANDHOLE
TRAFFIC SIGNAL
IRON PIPE FOUND/SET
REBAR FOUND/SET
CHISELED CROSS FOUND/SET
PK NAIL FOUND/SET
SPIKE/NAIL
MONUMENT
BENCHMARK
SIGN
DECIDUOUS TREE (Diameter)
CONIFEROUS TREE (Diameter)
POST
SOIL BORING
MONITORING WELL
CULVERT END
LIGHT POLE

FRESHWATER PLAZA
N.E.C. OF S. 1ST STREET & E. GREENFIELD AVENUE
MILWAUKEE, WISCONSIN

SITE PLAN MAP

BEARINGS REFERENCED TO THE WEST LINE OF THE SOUTHEAST 1/4 OF SECTION 32-7-22 BEARING N 01°31'36" W

0 40' 80'

NOTES:

1. BASE MAP BASED ON ALTA/ACSM LAND TITLE SURVEY COMPLETED BY SIGMA IN OCTOBER 2013. CURRENT SOIL BORING AND WELL LOCATIONS SURVEYED BY SIGMA WITH GPS EQUIPMENT AT TIME WORK WAS PERFORMED.
2. LOCATIONS OF PREVIOUS SOIL BORINGS AND MONITORING WELLS ARE APPROXIMATE AND ARE BASED ON PREVIOUS CONSULTANTS REPORTS EXCEPT FOR MW-5, MW-10, AND MW-10P IN NORTHEAST PORTION OF SITE WHICH WERE SURVEYED BY SIGMA. LOCATIONS OF HISTORIC BUILDINGS AND SITE FEATURES BASED ON SANBORN MAPS AND/OR CITY OF MILWAUKEE RECORDS CENTER PLANS. TO THE EXTENT POSSIBLE, THE SOIL BORINGS AND WELLS WERE CROSS-REFERENCED WITH MULTIPLE REPORTS TO BEST DETERMINE LOCATIONS.
3. THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD MARKINGS BY DIGGERS HOTLINE AND INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.
4. CONCEPTUAL REDEVELOPMENT PLAN BASED ON 10-15-2014 DRAWING FROM EPPSTEIN UHEN ARCHITECTS.

NO.	REVISION	DATE	BY

DRWNG NO. 14160 Site Plan Map Al Base Dec 2015.pdf
DRAWN BY: FPF / REV. JWK / AJR
DATE: 11-25-2015 / REV 12-30-2015
PROJECT NO: 14160
CHECKED BY:
APPROVED BY:
SHEET NO.:

FIGURE 1

File: I:\Wangard Partners\14160 1st & Greenfield\060 CADIE - Environmental\Site Plan Map\14160-E-SITE.dwg

ATTACHMENT 1

SOIL MANAGEMENT PLAN

SOIL MANAGEMENT PLAN
LOT 4 OF CERTIFIED SURVEY MAP #8731
BRRTS #02-41-576420; FID #341267960

FRESHWATER PLAZA REDEVELOPMENT PROJECT
NORTHEAST CORNER OF S. 1ST STREET & E. GREENFIELD AVENUE, MILWAUKEE, WI
JANUARY 2016

Introduction with General Schedule

This Soil Management Plan (SMP) for Lot 4 is based upon The Sigma Group, Inc.'s (Sigma's) environmental site investigation work completed at the northeast corner of S. 1st Street and E. Greenfield Avenue in Milwaukee (the "site"), historical site investigation data collected by others, and the planned redevelopment of the site. The overall site will be developed with a number of new buildings and infrastructure improvements as shown in **Figure 1**:

- **Lot 4**: An approximately 40,000 square foot parking garage and approximately 15,000 square feet office building (with underground parking level; foundation system TBD) in the southeast portion of the site (future start date TBD) and associated parking lot / drive pavements (future start date TBD). In the interim, a temporary soil cover will be installed with details provided below.

- **Lot 1** (for reference): An approximately 46,280 square foot grocery store (slab on grade; supported on deep piles) in the northeast portion of the site (start date in December 2015 and to be finished in 2016) with associated parking lot / drive pavements (to be completed in 2016).

- **Lot 2** (for reference): An approximately 4,000 square foot commercial-type building (slab on grade; foundation system TBD) and approximately 3,500 square foot commercial-type building (slab on grade; foundation system TBD) along the west edge of the site (future start date TBD) with associated parking lot / drive pavements (start date in 2016 and finish date TBD).

- **Lot 3** (for reference): An approximately 21,765 square foot mixed-use building with retail (1st floor) and residential (2nd through 4th floors) levels (with underground parking level; supported on geopiers) in the southwest portion of the site (start date in December 2015 and to be finished in 2016) with associated parking lot / drive pavements (to be completed in 2016).

- Green space landscaping and bio-infiltration areas within the parking lots and around portions of the buildings as they are finished (to be completed in 2016; greenspace around future buildings TBD).

For the entire project site, analytical testing of soil samples indicates that chlorinated volatile organic compounds (COVCs), petroleum volatile organic compounds (PVOCs), polynuclear aromatic hydrocarbons (PAHs), arsenic, lead, and/or polychlorinated biphenyls (PCBs) are present. ***With respect to Lot 4,*** soil quality data indicate that PVOCs, PAHs, arsenic, and lead are the primary contaminants of concern. Soil quality data for Lot 1 are summarized in **Table 1D** (recent Sigma investigations) and **Table 2D** (previous

investigations by others). The distribution of soil impacts are depicted on attached **Figure 2 - Soil Quality Map - VOCs**, **Figure 3 - Soil Quality Map - PAHs**, and **Figure 4 - Soil Quality Map - Metals & PCBs**. For reference, groundwater impacts are also present at the site as depicted on **Figure 5 - Groundwater Quality Map**. The depth to shallow groundwater on Lot 4 has been measured at approximately 6.7 to 9.2 feet below ground surface (bgs) in the monitoring well network as of October 2015.

Lot 4 Owner

Redevelopment Authority of the City of Milwaukee
809 N. Broadway
Milwaukee, WI 53202
Contact: Dan Casanova
Telephone: (414) 286-5800
Email: dan.casanova@milwaukee.gov

Lot 4 Responsible Party (to achieve regulatory case closure)

Freshwater Plaza Corp.
c/o Wangard Partners, Inc.
1200 N. Mayfair Road, Suite 310
Milwaukee, WI 53226
Contact: Wayne Wiertzema, President
Telephone: (414) 777-1200
Mobile: (262) 313-8383
Email: wwiertzema@wangard.com

Environmental Consultant

The Sigma Group, Inc.
1300 W. Canal Street
Milwaukee, WI 53233
Contact: Adam Roder, Senior Engineer
Telephone: (414) 643-4134
Mobile: (414) 588-7016
Email: aroder@thesigmagroup.com

General Conditions

General contractor and earthworks subcontractors shall prepare a site-specific Health & Safety Plan for their respective personnel prior to beginning site work. Sigma will prepare a site-specific Health & Safety Plan for its own personnel.

During the earthmoving and soil excavation activities, the earthworks subcontractor's heavy equipment operator(s) shall be 40-hour OSHA trained. Truck drivers do not need to be 40-hour OSHA trained provided they do not exit their vehicles at the site. General contractor is responsible to making all site workers aware of the environmental conditions at the site.

Prior to subsurface excavation activities, the general contractor or earthworks subcontractor will obtain all necessary City of Milwaukee and/or State of Wisconsin

permits relating to erosion control and storm water management unless otherwise specified by Freshwater Plaza Corp. and Sigma.

Silt fences, storm sewer inlet protection, and other erosion control measures will be implemented and maintained at the site in accordance with an approved Erosion Control Plan. Erosion control measures shall be inspected by the general contractor and/or earthworks subcontractor in accordance with the Erosion Control Plan and permit.

Lot 4 Soil Management

Soil conditions will be evaluated and managed in accordance with this SMP under the direction and guidance of Sigma on behalf of Freshwater Plaza Corp. Sigma will provide a 40-hour OSHA trained environmental professional on-site during soil excavation activities. Sigma will provide the general contractor with a copy of this SMP (who must in turn distribute to subcontractors that will be involved with subsurface work) and will provide on-site services, including screening soils with a photoionization detection (PID) in the field, observing and documenting the management of areas of known or unknown contamination, monitoring soil excavation areas, collecting soil samples as needed, directing trucks to the appropriate off-site disposal location after being loaded with soil, and/or providing on-call services as mentioned within this SMP.

General excavation work will be performed for mass grading / subgrade preparation in 2016, and then excavation work for future building foundations and utilities will be conducted at a later date. Conceptual rough grading soil movement is depicted on figure **C 200 - Overall Cut/Fill Plan**. Figure **C 200 - Overall Grading Plan** is also included for reference. In general, soil cut areas include:

- North end of Lot 4 - Up to 3.3 feet of soil will be stripped in the northern portion of Lot 4 as part of an interim grading plan until the proposed office building and parking garage are designed in the future and ready for construction. The volume of soil for this work is estimated to be on the order 750 to 1,000 cubic yards. Soil from this grading work will be reused further to the south on Lot 4 to raise the subgrade elevations. Shallow soil data from borings SGP-7 and SMW-12 are representative of disturbed soil from this area (approximately one soil sample per 375 to 500 cubic yards of soil). Similar, or even higher, levels of contaminants are present in the proposed relocation areas further south on Lot 4.

- Future parking garage and office building - At a future date, PVOC-, PAH-, and lead-impacted soil will be excavated from the footprint of the office building for construction of the basement parking level and foundations and for the ramp in the parking garage leading down to this basement parking level. The volume of soil for this work is estimated to be on the order of 5,000 to 6,000 cubic yards. It is proposed that impacted soil from this general excavation be reused under the future parking garage immediately to the north and/or beneath other engineered barriers adjacent to this building if space is available; similar levels of contaminants are present elsewhere on Lot 4. If on-site reuse is not feasible in the future, soil may be transported off-site to an alternative disposal site (pending appropriate WDNR approval), or hauled to a local licensed landfill facility for disposal.

If concrete rubble, asphalt rubble, or wood is encountered during excavations, this material shall be segregated (if possible) for off-site recycling and/or hauled to a local licensed landfill facility for disposal.

- Asphalt pavement is present at the ground surface across portions of Lot 4. Pavement should be stripped, segregated from underlying soil, and transported off-site for recycling (or crushed on-site for beneficial reuse if feasible for the redevelopment project).

If building debris is encountered during any excavation that may potentially contain asbestos containing materials (ACMs), work will be stopped in that area, the work area will be restricted with caution tape and/or signage, and the general contractor/earthworks contractor shall contact Freshwater Plaza Corp. The earthworks subcontractor may continue work in another location if feasible. Freshwater Plaza Corp. shall contact Sigma to evaluate the building debris by a state-licensed Asbestos Inspector and direct the transportation to a licensed landfill facility for disposal as conditions merit.

Unknown underground storage tanks (USTs) may be encountered during excavation activities. If a UST is discovered, work will be stopped in that area, access to the work area will be restricted with caution tape and/or signage, and the general contractor/earthworks contractor shall contact Freshwater Plaza Corp. The earthworks subcontractor may continue work in another location if feasible. Freshwater Plaza Corp. shall contact Sigma to notify the appropriate authorities and coordinate with a licensed tank removal contractor to clean and remove the UST in accordance with current State of Wisconsin rules and regulations, including the completion of a Tank System Site Assessment. Waste materials generated during the UST removal and cleaning process will be disposed of in accordance with local, state, and federal requirements. The UST closure process will be documented by Sigma. Sigma will coordinate any over-excavation services required of the tank removal contractor and the proper disposal of waste materials (e.g., tank sludge).

Soil excavated for foundation structures and utility lines may be reused as backfill in the same excavation, pending geotechnical soil qualities and project specifications. If the soil cannot be reused in the same excavation, Sigma shall be contacted to see if the soil may be used on-site beneath the proposed parking lot or disposed of at an alternative disposal site (pending appropriate WDNR approval). If these options are not feasible, the soil will be disposed of at a local licensed landfill facility.

Any temporary stockpiles of impacted soil/historic fill shall be placed on 10-mil thick (minimum) plastic sheeting and covered with 10-mil thick (minimum) plastic sheeting that is secured at the end of each work day to prevent water infiltration, dust, odors, and erosion. Temporary stockpiles shall be limited to less than 2,500 cubic yards of material and stored for less than 15 days unless the general storage requirements as outlined in NR 718.05(2) are followed or exemptions to parts of NR 718.05(2) are obtained.

<u>Engineered Barriers</u>
All soil reused from Lot 4 will be placed in locations that will be beneath future engineered barriers, including asphalt and concrete pavements, sidewalks, and potentially clean soil

barriers in any greenspace areas (20 inches clean clay / 4 inches vegetated topsoil) for the permanent soil cover system. The interim soil cover for Lot 4 will consist of 6 inches of clean clay and/or topsoil that is vegetated with grass; this cover will remain in place until the future office building and parking garage are designed and ready for construction.

Imported Fill

Imported engineered fill may be needed as backfill for the structural subgrade preparation beneath buildings, parking lots, roadways, sidewalks, and/or utilities. Engineered fill shall originate from quarries that mine native granular soils. Clean, recycled concrete may also be acceptable if the material meets the structural / civil project specifications.

Imported clean soil, including topsoil, must be pre-approved by Freshwater Plaza Corp., Sigma, and possibly the WDNR prior to use at the site for the green space / engineered soil cover areas. Contractor shall provide Sigma with at least 60 days notice prior to importing soil to begin the soil approval process. Sigma will perform due diligence on the borrow material source(s) and request any necessary approval(s) from the WDNR as needed.

Water Management

Groundwater or storm water that accumulates in excavations may be discharged to the local sanitary sewer system in accordance with jurisdictional permitting requirements.

- Impacted groundwater disposal via the sanitary sewer system is considered the most feasible option. General contractor and/or subcontractor shall prepare a MMSD Notice of Intent form, submit the requisite permit application fees, and obtain permit approval. The MMSD permit holder shall abide by the limitations set forth in MMSD's approval letter.

- Other water disposal options may be acceptable if performed in accordance with local, state, and/or federal regulations. Alternative water disposal options shall be approved by Freshwater Plaza Corp. and Sigma prior to implementation.

Attachments

Table 1D - Soil Analytical Data (Sigma Investigations) [Lot 4 soil data]
Table 2D - Soil Analytical Data (Previous Investigations) [Lot 4 soil data]
Figure 1 - Soil Management Plan Map
Figure 2 - Soil Quality Map - VOCs
Figure 3 - Soil Quality Map - PAHs
Figure 4 - Soil Quality Map - Metals & PCBs
Figure 5 - Groundwater Quality Map
C 200 - Overall Cut/Fill Plan
C 200 - Overall Grading Plan

Table 1D
Soil Analytical Data (Sigma Investigations)
Freshwater Plaza - Lot 4, CSM #8731: Northeast Corner of S. 1st Street & E. Greenfield Avenue, Milwaukee, Wisconsin
Sigma Project No. 14160

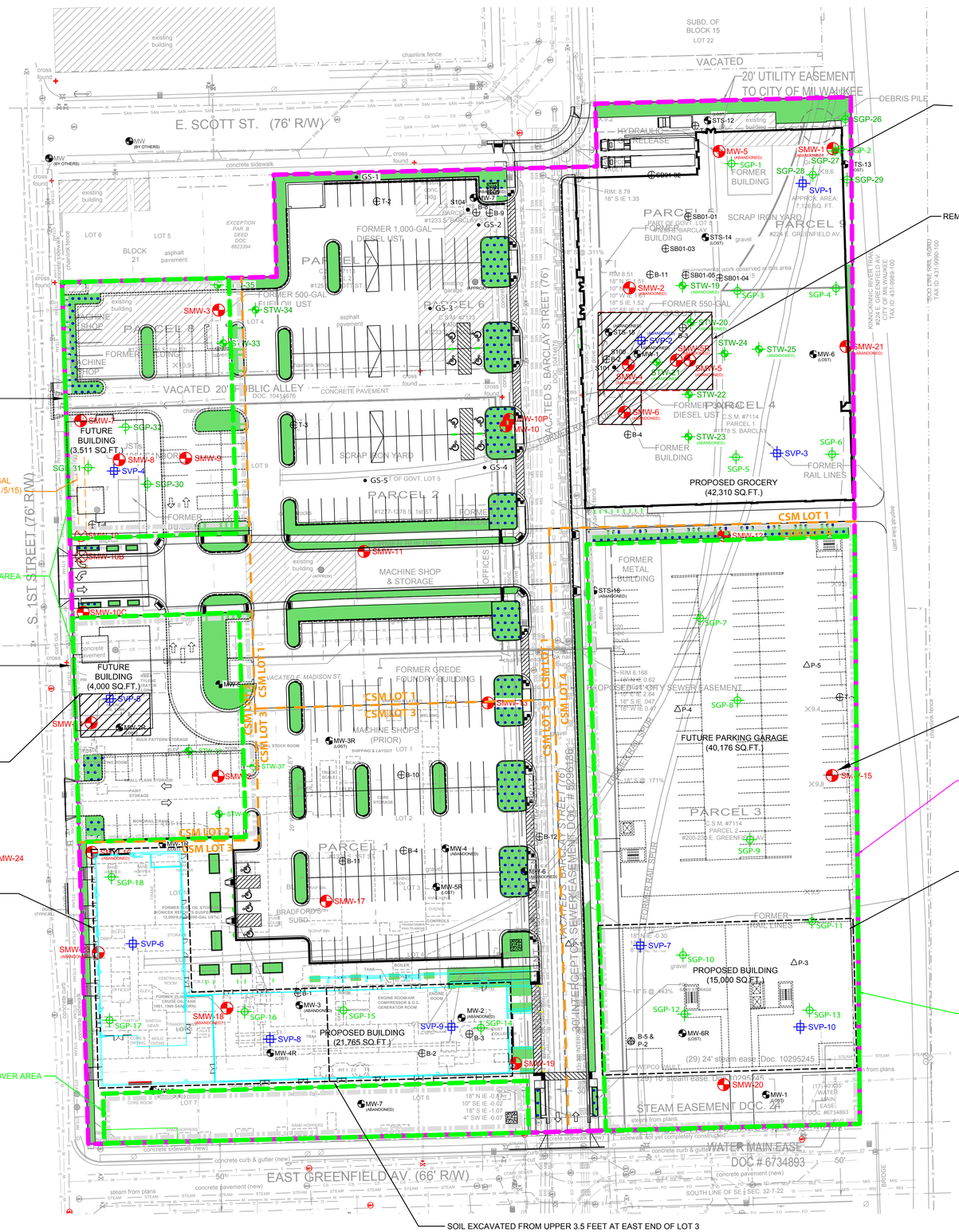
Soil Sample Location:		SGP-7		SGP-8		SGP-9		SGP-10		SGP-11		SGP-12	SGP-13		SMW-12		SMW-15		SMW-20		Groundwater Pathway RCL [4]	Non-Industrial Direct Contact RCL [5]
Sample Depth (feet bgs):		2 - 4	6 - 8	2 - 4	6 - 8	2 - 4	6 - 8	2 - 4	6 - 8	2 - 4	8 - 10	2 - 4	0 - 2	4 - 6	2 - 4	6 - 8	2 - 4	6 - 8	2 - 4	4 - 6		
Sample Collection Date:		3/17/14		3/17/14		3/17/14		3/17/14		3/18/14		3/18/14	3/18/14		8/7/14		8/7/14		8/7/14			
Depth to Groundwater (feet bgs):		7.8 +/-		8.3 +/-		8.7 +/-		7.5 +/-		8.5 +/-		7.5 +/-	7.5 +/-		7.9		8.7		6.2			
Unsaturated/Smear Zone (U) or Saturated (S):		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
Organic Vapor Monitor	ppm	0	2	0	20	0	0	0	18	0	1	12	46	48	0.1	0.2	0.2	0.3	0.2	2.4	NS	NS
PVOCs & Detected VOCs																						
Benzene	µg/kg	<9.2	**43**	<9.2	**26.7 "J"**	<9.2	**21 "J"**	<9.2	<9.2	<9.2	<9.2	<9.2	<9.2	<9.2	<9.2	**231**	<9.2	<9.2	<9.2	<9.2	5.1	1,490
tert-Butylbenzene	µg/kg	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	NS	183,000
sec-Butylbenzene	µg/kg	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	43 "J"	<41	<41	<41	<41	NS	145,000
n-Butylbenzene	µg/kg	<26	57 "J"	<26	47 "J"	<26	58 "J"	<26	<26	<26	<26	<26	63 "J"	26.9 "J"	<26	147	<26	<26	<26	<26	NS	108,000
1,2-Dichlorobenzene	µg/kg	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	1,168	376,000
Ethylbenzene	µg/kg	<10	122	<10	51	<10	13.3 "J"	<10	<10	<10	11.4 "J"	<10	12.5 "J"	<10	<10	630	<10	15.6 "J"	<10	<10	1,570	7,470
Isopropylbenzene	µg/kg	<25	34 "J"	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	77 "J"	<25	<25	<25	<25	NS	NS
p-Isopropyltoluene	µg/kg	<31	<31	<31	<31	<31	<31	<31	<31	<31	<31	<31	<31	<31	<31	34 "J"	<31	<31	<31	<31	NS	162,000
Methylene chloride	µg/kg	<57	<57	<57	<57	<57	<57	<57	<57	<57	<57	<57	<57	<57	<221	<221	<221	<221	<221	<221	2.6	60,700
Methyl-tert-butyl-ether	µg/kg	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	27	59,400
Naphthalene	µg/kg	<114	219 "J"	<114	<114	<114	<114	<114	<114	<114	<114	<114	<114	<114	<114	233 "J"	<114	<114	<114	<114	658.2	5,150
n-Propylbenzene	µg/kg	<24	55 "J"	<24	39 "J"	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24	232	<24	<24	<24	<24	NS	264,000
1,1,2,2-Tetrachloroethane	µg/kg	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	0.2	753
1,1,1,2-Tetrachloroethane	µg/kg	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	53.4	2,590
Tetrachloroethene (PCE)	µg/kg	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49	4.5	30,700
Toluene	µg/kg	<20	305	<20	73	<20	46 "J"	20.7 "J"	<20	<20	<20	<20	31.2 "J"	<20	<20	850	<20	35 "J"	30.3 "J"	<20	1,107.2	818,000
1,2,4-Trichlorobenzene	µg/kg	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	<79	408	22,000
1,2,3-Trichlorobenzene	µg/kg	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	<129	NS	62,600
1,1,1-Trichloroethane	µg/kg	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	<38	140.2	640,000
1,1,2-Trichloroethane	µg/kg	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23	3.2	1,480
Trichloroethene (TCE)	µg/kg	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	3.6	1,260
Trichlorofluoromethane	µg/kg	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	<86	NS	1,120,000
1,2,4-Trimethylbenzene	µg/kg	<26	320	<26	33 "J"	<26	41 "J"	<26	<26	<26	<26	27.9 "J"	99	36 "J"	<26	820	<26	55 "J"	41 "J"	<26	1,382.1	89,800
1,3,5-Trimethylbenzene	µg/kg	<26	155	<26	<26	<26	48 "J"	<26	<26	<26	<26	<26	61 "J"	<26	<26	420	<26	<26	<26	<26		182,000
Xylenes (total)	µg/kg	<99	779	<99	36 "J"	<99	<99	<99	<99	<99	<99	<99	62 "J"	<99	<89	1,490	<99	43 "J"	38 "J"	<99	3,940	258,000
PAHs																						
Acenaphthene	µg/kg	<21.1	<21.1	<21.1	<21.1	<21.1	34 "J"	<21.1	<21.1	<21.1	84	<21.1	28.8 "J"	<21.1	<21.1	35 "J"	<21.1	40 "J"	33 "J"	<21.1	NS	3,440,000
Acenaphthylene	µg/kg	<19.5	<19.5	<19.5	<19.5	<19.5	<19.5	<19.5	<19.5	<19.5	32 "J"	<19.5	124	<19.5	<19.5	<19.5	<19.5	<19.5	<19.5	<19.5	NS	NS
Anthracene	µg/kg	<18.5	36 "J"	<18.5	55 "J"	<18.5	93	18.5 "J"	28 "J"	63	285	21 "J"	96	51 "J"	<18.5	144	31.4 "J"	154	123	57 "J"	197,727.3	17,200,000
Benzo(a)anthracene	µg/kg	20.5 "J"	66	<18.4	61	18.6 "J"	139	127	63	[500]	550	97	[490]	610	65	267	122	306	[490]	173	NS	147
Benzo(a)pyrene	µg/kg	<19	41 "J"	<19	30 "J"	<19	96	[116]	35 "J"	[510]	**470**	[88]	[540]	**560**	[67]	246	[142]	281	[560]	156	470	15
Benzo(b)fluoranthene	µg/kg	<18	66	<18	38 "J"	<18	144	[190]	71	[950]	**650**	139	[790]	**890**	116	380	[211]	440	[890]	235	479.3	148
Benzo(ghi)perylene	µg/kg	<23	25.3 "J"	<23	<23	<23	55 "J"	90	25.2 "J"	510	350	86	410	430	49 "J"	115	85	147	330	71 "J"	NS	NS
Benzo(k)fluoranthene	µg/kg	<20.6	23.3 "J"	<20.6	<20.6	<20.6	48 "J"	73	22.3 "J"	320	219	68	262	330	32 "J"	109	59 "J"	132	390	110	NS	1,480
Chrysene	µg/kg	<18.5	63	<18.5	50 "J"	<18.5	**148**	134	75	**540**	**480**	96	**520**	**770**	78	**295**	**155**	**360**	**620**	**207**	144.6	14,800
Dibenzo(a,h)anthracene	µg/kg	<22.4	<22.4	<22.4	<22.4	<22.4	<22.4	<22.4	<22.4	[136]	86	<22.4	[126]	119	<22.4	32 "J"	<22.4	35 "J"	[74]	<22.4	NS	15
Fluoranthene	µg/kg	29.1 "J"	107	<18.1	105	19.3 "J"	246	203	137	680	1,040	138	610	1,000	143	520	320	880	1,230	450	88,877.8	2,290,000
Fluorene	µg/kg	<20	<20	<20	<20	<20	35 "J"	<20	20.6 "J"	<20	110	<20	61 "J"	<20	<20	37 "J"	<20	53 "J"	26.7 "J"	<20	14,802.7	2,290,000
Indeno(1,2,3-cd)pyrene	µg/kg	<24.4	<24.4	<24.4	<24.4	<24.4	49 "J"	81	<24.4	[450]	312	72 "J"	[380]	380	40 "J"	110	77 "J"	127	[293]	62 "J"	NS	148
1-Methylnaphthalene	µg/kg	28.3 "J"	206	<19.5	120	<19.5	177	23.8 "J"	112	<19.5	71	<19.5	141	<19.5	<19.5	315	<19.5	90	55 "J"	<19.5	NS	15,600
2-Methylnaphthalene	µg/kg	25.7 "J"	256	<20.4	145	<20.4	184	22.8 "J"	125	<20.4	67	<20.4	128	<20.4	<20.4	400	<20.4	90	38 "J"	22.9 "J"	NS	229,000
Naphthalene	µg/kg	<21.1	160	<21.1	58 "J"	<21.1	96	<21.1	73	<21.1	44 "J"	<21.1	58 "J"	29.9 "J"	<21.1	294	<21.1	92	32 "J"	<21.1	658.2	5,150
Phenanthrene	µg/kg	87	210	<24.7	320	<24.7	570	93	162	234	800	70 "J"	314	252	58 "J"	650	180	850	760	302	NS	NS
Pyrene	µg/kg	31.4 "J"	112	<20	133	<20	256	179	122	560	900	119	580	770	124	460	262	700	1,010	430	54,132.2	1,720,000
RCRA Metals																						
Arsenic	mg/kg	<1.44	**10.3**	<1.44	**20.7**	<3.6	**3.83 "J"**	<1.44	<1.44	<1.44	<1.44	<1.44	<1.44	<1.44	<0.65	**4.2**	[1.2 "J"]	**2.1**	[3.8]	**5.0**	0.584	0.613
Barium	mg/kg	21.3	86.7	7.39	54.5	11.5	45.0	18.4	11.9	9.37	16.7	28.7	35.2	13.6	18	98	44	34	33	**840**	164.8	15,300
Cadmium	mg/kg	<0.16	**1.19**	<0.16	<0.4	<0.16	<0.4	<0.16	**1.03**	<0.16	<0.16	<0.16	0.20 "J"	<0.16	<0.07	**1.1**	0.12 "J"	0.57	0.30 "J"	**0.94**	0.752	70
Chromium, total	mg/kg	7.76	12.9	4.08	16.9	5.02	8.83	4.77	6.30	3.78	7.54	149	9.60	6.78	7.5	12	7.9	7.9	9.5	11	360,000	NS
Lead	mg/kg	2.95	**91.5**	1.71 "J"	**199**	2.02	**53.8**	**59.6**	9.69	6.67	20.5	18.0	**47.6**	4.67	9.1	**130**	**72**	**52**	**61**	**330**	27	400
Mercury	mg/kg	<0.0031	0.093	<0.0031	0.089	0.005 "J"	0.063	0.065	0.026	0.029	0.048	0.020	0.082	0.156	0.027	0.034	0.12	0.052	0.074	0.047	0.208	3.13
Selenium	mg/kg	<1.4	<1.4	<1.4	<3.5	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	0.92 "J"	**2.8**	**0.89 "J"**	**1.9 "J"**	**1.2 "J"**	**1.4 "J"**	0.52	391
Silver	mg/kg	<0.68	<0.68	<0.68	<1.7	<0.68	<0.68	<0.68	<0.68	<0.68	<0.68	**6.58**	<0.68	<0.68	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	0.85	391
PCBs																						
PCB-1016	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.4	3,930
PCB-1221	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.4	171
PCB-1232	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.4	170
PCB-1242	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.4	213
PCB-1248	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.4	208
PCB-1254	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.4	213
PCB-1260	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.4	216
Cumulative DC RCL Exceeded (Y/N)?		N	> 4 ft	N	> 4 ft	N	> 4 ft	**Y**	> 4 ft	**Y**	> 4 ft	**Y**	**Y**	> 4 ft	**Y**	> 4 ft	**Y**	> 4 ft	**Y**	> 4 ft	---	---

Notes:
1. Unsaturated/smear zone versus satured soil conditions based on: (1) soil moisture conditions recorded on soil boring logs, and/or (2) measured water levels in adjacent/nearby temporary wells and/or monitoring wells.
2. Analytical units: µg/kg = micrograms per kilogram (equivalent to parts per billion, ppb)
mg/kg = milligrams per kilogram (equivalent to parts per million, ppm)
3. NA = not analyzed
4. Groundwater Pathway RCL = Residual Contaminant Level for protection of groundwater as described in NR 720.10. Current RCLs based on WDNR's RCL Spreadsheet (dated July 2015) as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated June 2014.
5. Non-Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at a non-industrial property as described in NR 720.12. Current RCLs based on WDNR's RCL Spreadsheet (dated July 2015) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated June 2014.
6. NS = no standard established
7. Laboratory flags: "J" = Analyte detected between Limit of Detection and Limit of Quantitation
8. Exceedances: **BOLD** = Concentration exceeds Groundwater Pathway RCL (unsaturated soil samples only)
[ ] = Concentration exceeds **Non-Industrial** Direct Contact RCL (soil samples within 4 feet of ground surface)
9. Red highlighting = soil to be graded / excavated and relocated on same lot per Lot 4 Soil Management Plan
10. Yellow highlighting = soil to be excavated for future building basement & reused on-site, hauled to alternative disposal site (pending further WDNR approval), or hauled to a licensed landfill for disposal

Table 2D
Soil Analytical Data (Previous Investigations)
Freshwater Plaza - Lot 4, CSM #8731: Northeast Corner of S. 1st Street & E. Greenfield Avenue, Milwaukee, Wisconsin
Sigma Project No. 14160

Soil Sample Location:		STS-16			B-5	P-1	P-2	P-3	P-4	P-5	MW-1		MW-6R		T-5	Groundwater Pathway RCL [4]	Non-Industrial Direct Contact RCL [5]
Sample Depth (feet bgs):		5 - 6.5	17.5 - 19	14 - 16	---	0 - 5	0 - 4	0 - 11	0 - 8	0 - 8	2 - 4	6 - 8	2 - 4	6 - 8	---		
Sample Collection Date:		4/8/92			9/14/04	9/14/04	9/14/04	9/14/04	9/14/04	9/14/04	3/17/05		3/7/07		12/21/12		
Depth to Groundwater (feet bgs):		6.5+/-			10+/- ?	>5	10+/- ?	>11	>8	>8	9.5+/-		7.5+/-		---		
Unsaturated/Smear Zone (U) or Saturated (S):		U	S	S	---	U	U	U	U	U	U	U	U	U	---		
Organic Vapor Monitor	ppm	<1	<1	2	---	<5	<5	<5	<5	<5	<5	<5	---	---	---	NS	NS
TPH as Diesel	mg/kg	23.2	<5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS
TPH as Gasoline	mg/kg	<5.9	<5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS
TPH as Kerosene	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS
TPH as Fuel Oil	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS
TRPH	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS
Gasoline Range Organics	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS
Diesel Range Organics	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS
PVOCs & Detected VOCs																	
Benzene	µg/kg	<3.1	<3.1	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	5.1	1,490
tert-Butylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	NS	183,000
sec-Butylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	NS	145,000
n-Butylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	26.6	<25.0	<40	<40	NA	NS	108,000
Ethylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	147	<25.0	<25	56 "J"	NA	1,570	7,470
Isopropylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	NS	NS
p-Isopropyltoluene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	NS	162,000
Methylene chloride	µg/kg	<7.6	8.7	NA	NA	NA	NA	NA	NA	NA	<100	<100	<25	<25	NA	2.6	60,700
Methyl-tert-butyl-ether	µg/kg	<31	<31	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	27	59,400
Naphthalene	µg/kg	36.7	<15	NA	NA	NA	NA	NA	NA	NA	282	210	<25	55 "J"	NA	658.2	5,150
n-Propylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	101	56	<25	<25	NA	NS	264,000
1,1,2,2-Tetrachloroethane	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	0.2	753
1,1,1,2-Tetrachloroethane	µg/kg	<7.6	<7.6	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	53.4	2,590
Tetrachloroethene (PCE)	µg/kg	<7.6	<7.6	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	4.5	30,700
Toluene	µg/kg	<15	16.3	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	41 "J"	NA	1,107.2	818,000
1,2,4-Trichlorobenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	408	22,000
1,2,3-Trichlorobenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	NS	62,600
1,1,1-Trichloroethane	µg/kg	<7.6	<7.6	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	140.2	640,000
1,1,2-Trichloroethane	µg/kg	<7.6	<7.6	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	3.2	1,480
Trichloroethene (TCE)	µg/kg	<3.1	<3.1	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	3.6	1,260
Trichlorofluoromethane	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	<25.0	<25.0	<25	<25	NA	NS	1,120,000
1,2,4-Trimethylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	149	29.9	<25	51 "J"	NA	1,382.1	89,800
1,3,5-Trimethylbenzene	µg/kg	<15	<15	NA	NA	NA	NA	NA	NA	NA	37.1	<25.0	<25	<25	NA		182,000
Xylenes (total)	µg/kg	<15	16.3	NA	NA	NA	NA	NA	NA	NA	421	77.1	<75	154 "J"	NA	3,940	258,000
PAHs																	
Acenaphthene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	<3.1	5.7 "J"	NA	NS	3,440,000
Acenaphthylene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<232	<239	<3.0	3.6 "J"	NA	NS	NS
Anthracene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	<3.7	17	NA	197,727.3	17,200,000
Benzo(a)anthracene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<57.9	<59.8	<5.5	29	NA	NS	147
Benzo(a)pyrene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	[51.1]	66.1	3.3 "J"	24	NA	470	15
Benzo(b)fluoranthene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<57.9	<59.8	7.6 "J"	20	NA	479.3	148
Benzo(ghi)perylene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	4.2 "J"	15	NA	NS	NS
Benzo(k)fluoranthene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	4.3 "J"	19	NA	NS	1,480
Chrysene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	5.9 "J"	29	NA	144.6	14,800
Dibenzo(a,h)anthracene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.79	<5.98	<2.8	4.2 "J"	NA	NS	15
Fluoranthene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	180	6.6 "J"	56	NA	88,877.8	2,290,000
Fluorene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	<3.5	4.7 "J"	NA	14,802.7	2,290,000
Indeno(1,2,3-cd)pyrene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	80.3	90.3	3.2 "J"	12	NA	NS	148
1-Methylnaphthalene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	7.0	86	NA	NS	15,600
2-Methylnaphthalene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	<3.2	110	NA	NS	229,000
Naphthalene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	<4.1	60	NA	658.2	5,150
Phenanthrene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	4.5 "J"	93	NA	NS	NS
Pyrene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<116	<120	5.0 "J"	52	NA	54,132.2	1,720,000
RCRA Metals																	
Arsenic	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2.90	<2.99	[**0.98 "J"**]	**3.2 "J"**	NA	0.584	0.613
Barium	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	29.3	<29.9	6.4	50	NA	164.8	15,300
Cadmium	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.579	<0.598	<0.052	0.40	NA	0.752	70
Chromium	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.49	5.15	4.2	8.8	NA	360,000	NS
Lead	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	**35.0**	**59.2**	1.8	**30**	NA	27	400
Mercury	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0727	0.108	0.0051 "J"	0.034	NA	0.208	3.13
Selenium	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2.90	<2.99	<0.84	<0.97	NA	0.52	391
Silver	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2.90	<2.99	<0.25	<0.29	NA	0.85	391
PCBs																	
PCB-1016	µg/kg	NA	NA	NA	NA	<49.3	<53.7		NA	NA	NA	NA	NA	NA	NA	9.4	3,930
PCB-1221	µg/kg	NA	NA	NA	NA	<49.3	<53.7		NA	NA	NA	NA	NA	NA	NA	9.4	171
PCB-1232	µg/kg	NA	NA	NA	NA	<49.3	<53.7		NA	NA	NA	NA	NA	NA	NA	9.4	170
PCB-1242	µg/kg	NA	NA	NA	NA	<49.3	<53.7		NA	NA	NA	NA	NA	NA	NA	9.4	213
PCB-1248	µg/kg	NA	NA	NA	NA	<49.3	<53.7		NA	NA	NA	NA	NA	NA	NA	9.4	208
PCB-1254	µg/kg	NA	NA	NA	NA	<49.3	<53.7		NA	NA	NA	NA	NA	NA	NA	9.4	213
PCB-1260	µg/kg	NA	NA	NA	NA	<49.3	<53.7		NA	NA	NA	NA	NA	NA	NA	9.4	216
Cumulative DC RCL Exceeded (Y/N)?		> 4 ft	> 4 ft	> 4 ft	---	N	N	N	---	---	**Y**	> 4 ft	**Y**	> 4 ft	---	---	---

Notes:
1. Unsaturated/smear zone versus satured soil conditions based on: (1) soil moisture conditions recorded on soil boring logs, and/or (2) measured water levels in adjacent/nearby temporary wells and/or monitoring wells.
2. Analytical units: µg/kg = micrograms per kilogram (equivalent to parts per billion, ppb)
mg/kg = milligrams per kilogram (equivalent to parts per million, ppm)
3. NA = not analyzed
4. Groundwater Pathway RCL = Residual Contaminant Level for protection of groundwater as described in NR 720.10. Current RCLs based on WDNR's RCL Spreadsheet (dated July 2015) as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated June 2014.
5. Non-Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at a non-industrial property as described in NR 720.12. Current RCLs based on WDNR's RCL Spreadsheet (dated July 2015) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated June 2014.
6. NS = no standard established
7. Laboratory flags: "J" = Analyte detected between Limit of Detection and Limit of Quantitation
8. Exceedances: **BOLD** = Concentration exceeds Groundwater Pathway RCL (unsaturated soil samples only)
[ ] = Concentration exceeds Non-Industrial Direct Contact RCL (soil within 4 feet of ground surface)
9. Yellow highlighting = soil to be excavated for future building basement & reused on-site, hauled to alternative disposal site (pending further WDNR approval), or hauled to a licensed landfill for disposal



EXCESS SOIL FROM LOT 1 GRADING / EXCAVATING TO BE MOVED SOUTH END OF LOT 1 AND NORTH END OF LOT 3 TO RAISE THE SUBGRADE BENEATH THE FUTURE PARKING LOT. IF REUSE NOT FEASIBLE, SOIL TO BE TRASNPORTED OFF-SITE TO LICENSED LANDFILL FACILITY FOR DISPOSAL.

REMEDIAL SOIL EXCAVATION COMPLETED IN MAY 2015

EXCESS SOIL FROM LOT 2 GRADING / EXCAVATING TO BE REUSED BENEATH ENGINEERED BARRIERS ADJACENT TO EACH BUILDING AND/OR SOUTH END OF LOT 2 TO RAISE THE SUBGRADE. IF REUSE NOT FEASIBLE, SOIL TO BE TRASNPORTED OFF-SITE TO LICENSED LANDFILL FACILITY FOR DISPOSAL.

INTERIM SOIL COVER AREA

FUTURE REMEDIAL SOIL EXCAVATION FOR LOT 2
- SOIL TO BE HAULED TO LICENSED LANDFILL FACILITY FOR DISPOSAL UNDER DIRECTION OF SIGMA PRIOR TO BUILDING CONSTRUCTION.
- EXCAVATION DEPTH TO 4 FEET; APPROX. 225 CY

EXCAVATED SOIL FROM WESTERN 2/3 +/- OF LOT 3 BUILDING BASEMENT AND FOUNDATIONS TO BE TRANSORTED OFF-SITE TO LICENSED LANDFILL FACILITY FOR DISPOSAL.

INTERIM SOIL COVER AREA

SOIL EXCAVATED FROM UPPER 3.5 FEET AT EAST END OF LOT 3 BUILDING BASEMENT TO BE REUSED UNDER PARKING LOT TO NORTH AND CONCRETE SIDEWALKS ADJACENT TO THIS BUILDING TO RAISE SUBGRADE TO REQUIRED ELEVATIONS. DEEPER SOIL EXCAVATED FOR BASEMENT AND FOUNDATIONS TO BE TRANSPORTED OFF-SITE TO LICENSED LANDFILL FACILITY FOR DISPOSAL.

SEE NOTE 3 (TYPICAL)

VOC, PAH, LEAD, ARSENIC AND/OR PCB SOIL IMPACTS PRESENT THROUGHOUT SITE. EXCAVATIONS FOR UTILITIES, FOOTINGS/FOUNDATIONS, BASEMENTS, ETC. SHALL FOLLOW SIGMA'S SOIL MANAGEMENT PLAN.

EXCAVATED SOIL FROM LOT 4 BUILDING BASEMENT TO BE REUSED UNDER FUTURE PARKING GARAGE AND/OR BENEATH ENGINEERED BARRIERS ADJACENT TO BUILDING IF SPACE AVAILABLE. IF REUSE NOT FEASIBLE, SOIL TO BE TRANSPORTED OFF-SITE TO AN ALTERNATIVE DISPOSAL SITE (PENDING WDNR APPROVAL) OR LOCAL LICENSED LANDFILL FACILITY FOR DISPOSAL.

INTERIM SOIL COVER AREAS: AREAS OF SITE TO BE DEVELOPED IN LATER PHASES TO BE COVERED WITH APPROXIMATELY 6 INCHES OF CLEAN CLAY AND/OR TOPSOIL AND SEEDED WITH GRASS.

ENVIRONMENTAL KEY

- = GRAB SAMPLE
- = SOIL BORING
- = MONITORING WELL (FORMER)
- = TEST PIT
- = GEOPROBE SOIL BORING
- = TEMPORARY WELL
- = HSA SOIL BORING
- = MONITORING WELL
- = VAPOR PROBE

SOIL MANAGEMENT KEY

= MINIMUM OF 20" COMPACTED CLAY AND 4" VEGETATED TOPSOIL TO SERVE AS ENGINEERED BARRIER. SEE NOTE 6

= PROPOSED BIOFILTRATION AREA (REFER TO CIVIL SHEET C403 FOR FURTHER DETAILS)

SPECIAL CONSIDERATIONS:

1. ALL SOILS ARE CONSIDERED TO CONTAIN CONTAMINATION. UNLESS OTHERWISE SPECIFIED BY SIGMA IN WRITING, ALL SOIL GENERATED DURING EXCAVATION ACTIVITIES MUST BE (1) REUSED UNDER PAVEMENT AREAS AT A MINIMUM OF 20' FROM NEW BUILDINGS (PENDING GEOTECHNICAL APPROVAL); (2) HAULED TO A LOCAL LICENSED LANDFILL AS APPROVED BY SIGMA AND WANGARD PARTNERS; AND/OR (3) HAULED TO AN ALTERNATIVE DISPOSAL SITE AS APPROVED BY SIGMA, WANGARD PARTNERS, AND THE WDNR. MAJOR EXCAVATIONS FOR BASEMENTS AND FOUNDATIONS SHALL BE COORDINATED WITH SIGMA FOR APPROPRIATE OBSERVATION AND DOCUMENTATION PER THE SOIL MANAGEMENT PLAN.

2. IF GROSSLY IMPACTED SOIL (IE. FREE PRODUCTS, STRONG ODORS, DISCOLORATION, OR ELEVATED FIELD SCREENING RESULTS) IS ENCOUNTERED DURING EXCAVATION ACTIVITIES, SIGMA MUST BE NOTIFIED. THE SOIL WILL BE EVALUATED BY SIGMA, AND IF APPROPRIATE, EXCAVATED, TEMPORARILY STOCKPILED, CHARACTERIZED AND POSSIBLY DISPOSED OF OFF-SITE.

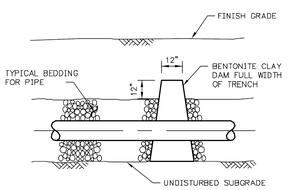
3. ALL MONITORING WELLS DEPICTED ON THIS FIGURE MUST BE PROTECTED. COORDINATE THE WELL PROTECTION WITH ADAM RODER (414-643-4200). SIGMA WILL ADJUST THE WELL HEIGHT TO MATCH FINAL GRADE FOLLOWING THE GRADING ACTIVITIES.

4. PROVIDE CLAY PLUG ON ALL WATER, STORM SEWER, AND SANITARY SEWER LATERALS ENTERING NEW BUILDINGS. CLAY PLUG SHALL BE LOCATED 5' TO 10' EXTERIOR OF BUILDING FOOTPRINT. SEE "UTILITY CLAY PLUG DETAIL" ON THIS SHEET.

5. IN THE EVENT THAT UNDERGROUND STORAGE TANKS (USTS) ARE DISCOVERED, SIGMA MUST BE NOTIFIED IMMEDIATELY. SIGMA WILL DIRECT THE REMOVAL AND OFF-SITE DISPOSAL IN ACCORDANCE WITH CURRENT REGULATIONS.

6. ALL SOIL IMPORTED TO SITE, INCLUDING TOPSOIL, MUST BE PRE-APPROVED BY SIGMA AND WISCONSIN DEPARTMENT OF NATURAL RESOURCES. CONTACT SIGMA AT LEAST 60 DAYS BEFORE TO BEGIN APPROVAL PROCESS.

UTILITY CLAY PLUG DETAIL



NOTES:

1. BASE MAP BASED ON ALTA/ACSM LAND TITLE SURVEY COMPLETED BY SIGMA IN OCTOBER 2013.

2. LOCATIONS OF PREVIOUS SOIL BORINGS AND MONITORING WELLS ARE APPROXIMATE AND ARE BASED ON PREVIOUS CONSULTANTS REPORTS EXCEPT FOR MW-5, MW-10, AND MW-10P IN NORTHEAST PORTION OF SITE WHICH WERE SURVEYED BY SIGMA. LOCATIONS OF HISTORIC BUILDINGS AND SITE FEATURES BASED ON SANBORN MAPS AND/OR CITY OF MILWAUKEE RECORDS CENTER PLANS. TO THE EXTENT POSSIBLE, THE SOIL BORINGS AND WELLS WERE CROSS-REFERENCED WITH MULTIPLE REPORTS TO BEST DETERMINE LOCATIONS.

3. THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD MARKINGS BY DIGGERS HOTLINE, TICKET #2013-3016-330 AND INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.

4. CONCEPTUAL REDEVELOPMENT PLAN BASED ON JUNE, 2015 DRAWING FROM EPPSTEIN UHEN ARCHITECTS.

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

LEGEND

SECTION 1/4 SECTION LINE
PROPERTY LINE
EASEMENT
CHAIN LINK FENCE
GUARD RAIL
METAL FENCE
WOOD FENCE
TREE LINE
OVERHEAD UTILITY LINE
ELECTRIC
TELEPHONE
FIBER OPTIC
CABLE TV
SANITARY SEWER
FORCE MAIN
STORM SEWER
WATER MAIN
GAS
EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
MANHOLE
CATCH BASIN
CATCH BASIN (ROUND)
ROOF DRAIN
HYDRANT
WATER VALVE
GAS VALVE
UTILITY POLE
GUY WIRE
GAS METER
ELECTRIC METER
UTILITY PEDESTAL
HANDHOLE
TRAFFIC SIGNAL
IRON PIPE FOUND/SET
REBAR FOUND/SET
CHISELED CROSS FOUND/SET
PK NAIL FOUND/SET
SPIKE/NAIL
MONUMENT
BENCHMARK
SIGN
DECIDUOUS TREE (Diameter)
CONIFEROUS TREE (Diameter)
POST
SOIL BORING
MONITORING WELL
CULVERT END
LIGHT POLE

FRESHWATER PLAZA
N.E.C. OF S. 1ST STREET & E. GREENFIELD AVENUE
MILWAUKEE, WISCONSIN

SOIL MANAGEMENT PLAN MAP

BEARINGS REFERENCED TO THE WEST LINE OF THE SOUTHEAST 1/4 OF SECTION 32-7-22 BEARING N 01°31'36" W

0 40' 80'

NO.	REVISION	DATE	BY

DRWNG NO. 14160-E-SITE.dwg

DRAWN BY:FPF

DATE: 10-5-2015 / rev. 1-4-2016

PROJECT NO: 14160-027

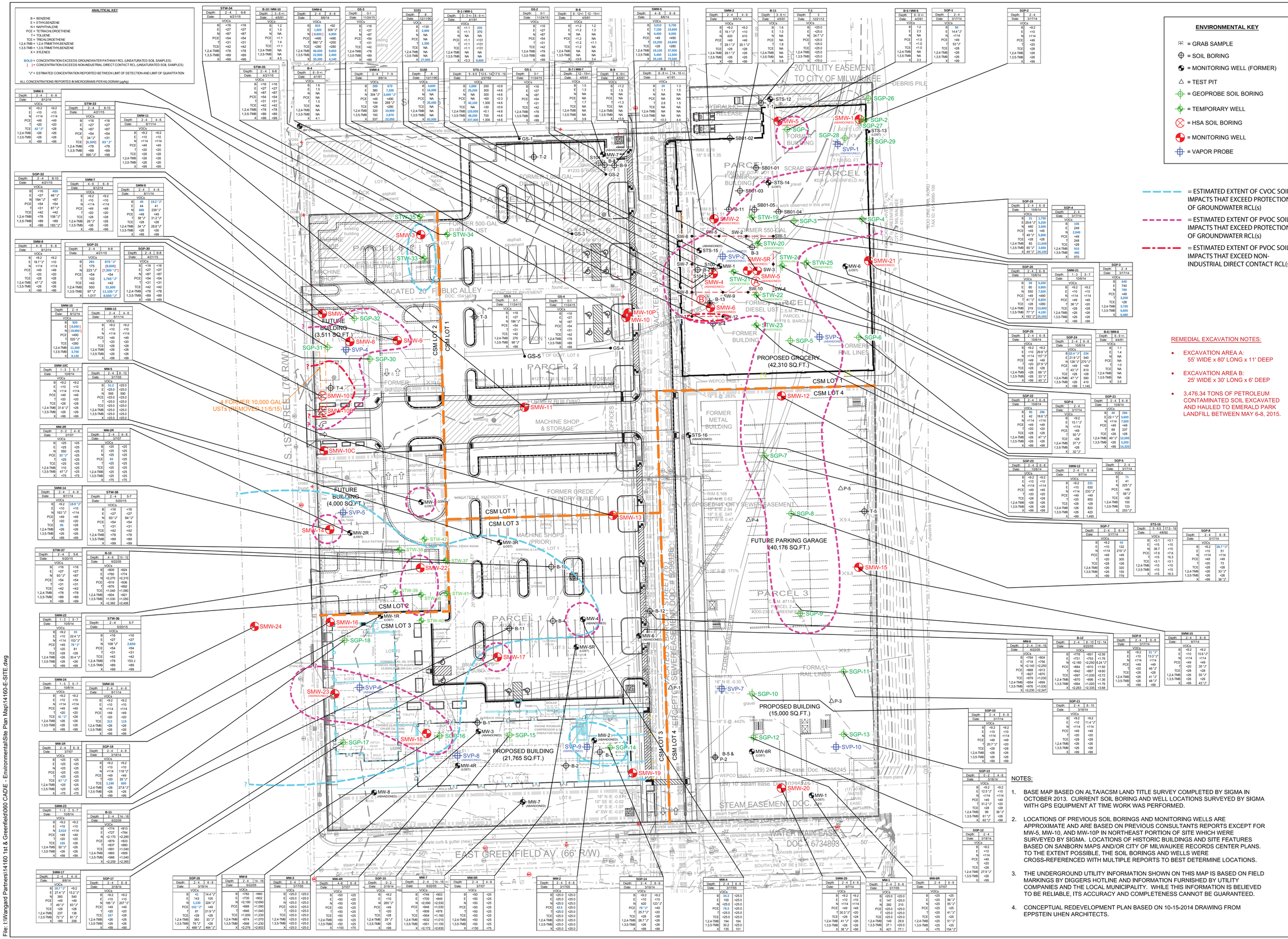
CHECKED BY:

APPROVED BY:

SHEET NO.:

FIGURE 1

File: I:\Wangard Partners\14160 1st & Greenfield\060 CADIE - Environmental\Site Plan Map\14160-E-SITE.dwg



ANALYTICAL KEY

B = BENZENE
E = ETHYLBENZENE
N = NAPHTHALENE
PCE = TETRACHLOROETHENE
T = TOLUENE
TCE = TRICHLOROETHENE
1,2,4-TMB = 1,2,4-TRIMETHYLBENZENE
1,3,5-TMB = 1,3,5-TRIMETHYLBENZENE
X = XYLENES

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAY RCL (UNSATURATED SOIL SAMPLES)
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (UNSATURATED SOIL SAMPLES)
" " = ESTIMATED CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg)

ENVIRONMENTAL KEY

- = GRAB SAMPLE
- = SOIL BORING
- = MONITORING WELL (FORMER)
- = TEST PIT
- = GEOPROBE SOIL BORING
- = TEMPORARY WELL
- = HSA SOIL BORING
- = MONITORING WELL
- = VAPOR PROBE

LEGEND

SECTION 1/4 SECTION LINE
PROPERTY LINE
EASEMENT
CHAIN LINK FENCE
GUARD RAIL
METAL FENCE
WOOD FENCE
TREE LINE
OVERHEAD UTILITY LINE
ELECTRIC
TELEPHONE
FIBER OPTIC
CABLE TV
SANITARY SEWER
FORCE MAIN
STORM SEWER
WATER MAIN
GAS
EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
MANHOLE
CATCH BASIN
CATCH BASIN (ROUND)
ROOF DRAIN
HYDRANT
WATER VALVE
GAS VALVE
UTILITY POLE
GUY WIRE
GAS METER
ELECTRIC METER
UTILITY PEDESTAL
HANDHOLE
TRAFFIC SIGNAL
IRON PIPE FOUND/SET
REBAR FOUND/SET
CHISELED CROSS FOUND/SET
PK NAIL FOUND/SET
SPIKE/NAIL
MONUMENT
BENCHMARK
SIGN
DECIDUOUS TREE (Diameter)
CONIFEROUS TREE (Diameter)
POST
SOIL BORING
MONITORING WELL
CULVERT END
LIGHT POLE

= ESTIMATED EXTENT OF CVOC SOIL IMPACTS THAT EXCEED PROTECTION OF GROUNDWATER RCL(s)

= ESTIMATED EXTENT OF PVOC SOIL IMPACTS THAT EXCEED PROTECTION OF GROUNDWATER RCL(s)

= ESTIMATED EXTENT OF PVOC SOIL IMPACTS THAT EXCEED NON-INDUSTRIAL DIRECT CONTACT RCL(s)

REMEDIAL EXCAVATION NOTES:

- EXCAVATION AREA A: 55' WIDE x 80' LONG x 11' DEEP
- EXCAVATION AREA B: 25' WIDE x 30' LONG x 6' DEEP
- 3,476.34 TONS OF PETROLEUM CONTAMINATED SOIL EXCAVATED AND HAULED TO EMERALD PARK LANDFILL BETWEEN MAY 6-8, 2015.

NOTES:

1. BASE MAP BASED ON ALTA/ACSM LAND TITLE SURVEY COMPLETED BY SIGMA IN OCTOBER 2013. CURRENT SOIL BORING WELL LOCATIONS SURVEYED BY SIGMA WITH GPS EQUIPMENT AT TIME WORK WAS PERFORMED.
2. LOCATIONS OF PREVIOUS SOIL BORINGS AND MONITORING WELLS ARE APPROXIMATE AND ARE BASED ON PREVIOUS CONSULTANTS REPORTS EXCEPT FOR MW-5, MW-10, AND MW-10P IN NORTHEAST PORTION OF SITE WHICH WERE SURVEYED BY SIGMA. LOCATIONS OF HISTORIC BUILDINGS AND SITE FEATURES BASED ON SANBORN MAPS AND/OR CITY OF MILWAUKEE RECORDS CENTER PLANS. TO THE EXTENT POSSIBLE, THE SOIL BORINGS AND WELLS WERE CROSS-REFERENCED WITH MULTIPLE REPORTS TO BEST DETERMINE LOCATIONS.
3. THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD MARKINGS BY DIGGERS HOTLINE AND INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.
4. CONCEPTUAL REDEVELOPMENT PLAN BASED ON 10-15-2014 DRAWING FROM EPPSTEIN UHEN ARCHITECTS.

BEARINGS REFERENCED TO THE WEST LINE OF THE SOUTHEAST 1/4 OF SECTION 32-7-22 BEARING N 01°31'36" W

0 40' 80'

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

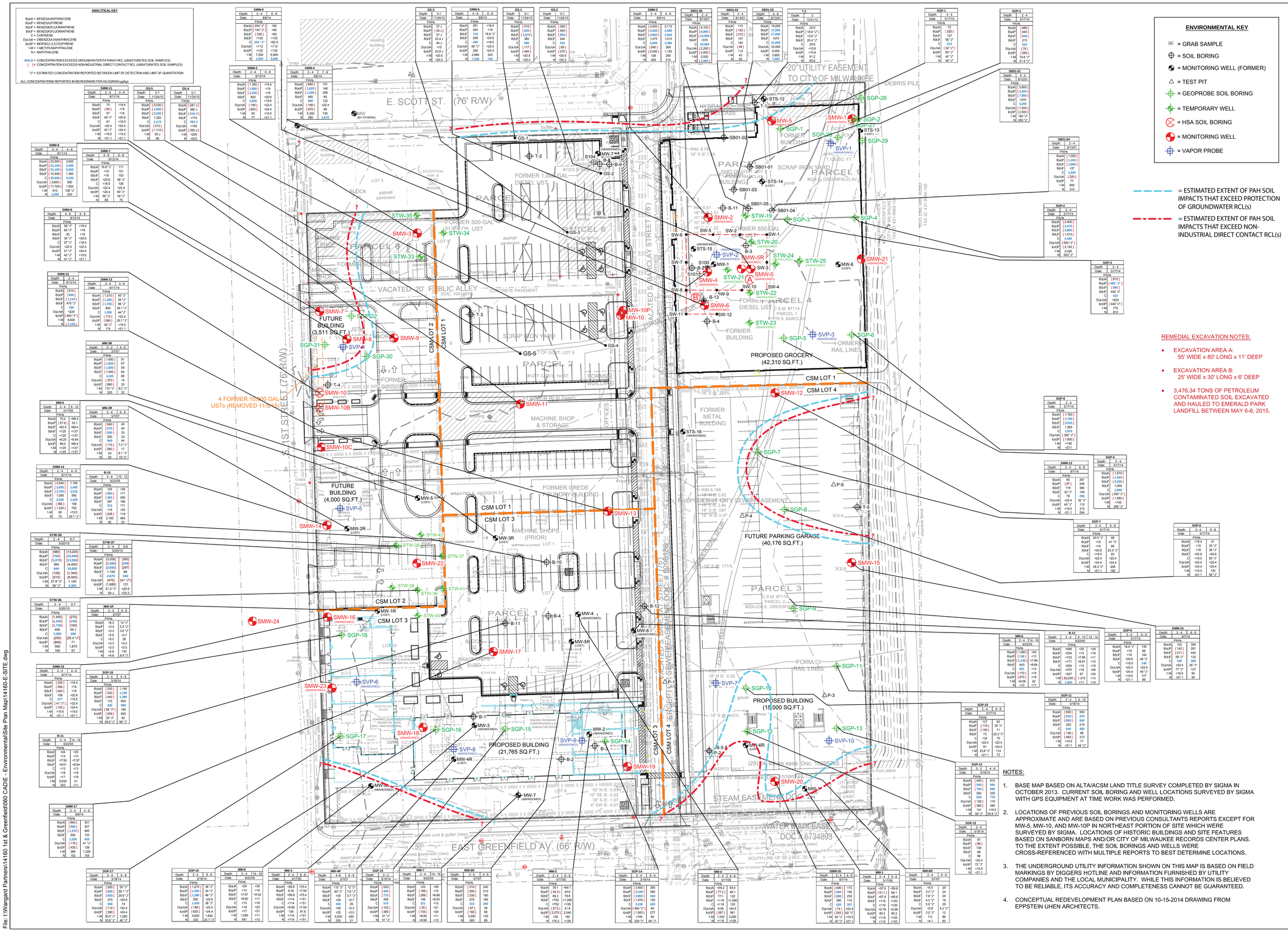
FRESHWATER PLAZA
N.E.C. OF S. 1ST STREET & E. GREENFIELD AVENUE
MILWAUKEE, WISCONSIN

SOIL QUALITY MAP - VOCs

NO. REVISION	DATE BY
DRWNG NO.	14160 Site Plan Map Al Base Dec 2015.pdf
DRAWN BY:	FPF / REV. JWK / AJR
DATE:	11-25-2015 / REV 12-30-2015
PROJECT NO:	14160
CHECKED BY:	
APPROVED BY:	
SHEET NO.:	

FIGURE 2

File: I:\Wangard Partners\14160 1st & Greenfield\060 CADIE - Environmental\Site Plan Map\14160-E-SITE.dwg



ANALYTICAL KEY

B(a)A = BENZO(a)ANTHRACENE
B(a)P = BENZO(a)PYRENE
B(b)F = BENZO(B)FLUORANTHENE
B(k)F = BENZO(K)FLUORANTHENE
C = CHRYSENE
Dia.hA = DIBENZO(a,h)ANTHRACENE
Ico(c)P = INDENO(1,2,3-CD)PYRENE
1-M = 1-METHYLNAPHTHALENE
N = NAPHTHALENE

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAY RCL (UNSATURATED SOIL SAMPLES)
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (UNSATURATED SOIL SAMPLES)

J = ESTIMATED CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg)

SMW-6		
Depth:	2 - 4	6 - 8
Date:	8/6/14	
PAHs		
B(a)A	[204*J*]	<92
B(a)P	[145*J*]	<95
B(b)F	[330]	<93
B(k)F	<103	<103
C	254*J*	<82.5
Dia.hA	<112	<112
Ico(c)P	<122	<122
1-M	7,300	9,900
N	1,020	3,600

SMW-3		
Depth:	2 - 4	6 - 8
Date:	8/12/14	
PAHs		
B(a)A	[1,350]	<18.4
B(a)P	[1,200]	<19
B(b)F	[2,230]	<18
B(k)F	820	<20.6
C	3,650	<18.5
Dia.hA	[195]	<22.4
Ico(c)P	[820]	<24.4
1-M	93	<19.5
N	77	<21.1

SMW-4		
Depth:	2 - 4	7 - 9
Date:	8/6/14	
PAHs		
B(a)A	[640]	101
B(a)P	[1,020]	146
B(b)F	[1,500]	208
B(k)F	480	65
C	860	122
Dia.hA	[168]	<22.4
Ico(c)P	[670]	89
1-M	5,300	735
N	285	1,070

GS-3		
Depth:	0-1	
Date:	11/24/15	
PAHs		
B(a)A	37.2	
B(a)P	[34.2]	
B(b)F	57.1	
B(k)F	23.4 J	
C	40.2	
Dia.hA	<15	
Ico(c)P	23.8 J	
1-M	<20.5	
N	<20.3	

SMW-5		
Depth:	4 - 6	6 - 8
Date:	8/6/14	
PAHs		
B(a)A	291	<18.4
B(a)P	420	<19
B(b)F	710	18.5*J*
B(k)F	209	<20.6
C	440	<18.5
Dia.hA	60.2*	<22.4
Ico(c)P	250	<24.4
1-M	2,960	320
N	7,100	740

GS-1		
Depth:	0-1	
Date:	11/24/15	
PAHs		
B(a)A	[510]	
B(a)P	[620]	
B(b)F	[1,070]	
B(k)F	360	
C	990	
Dia.hA	[117]	
Ico(c)P	[440]	
1-M	<20.5	
N	<20.3	

GS-2		
Depth:	0-1	
Date:	11/24/15	
PAHs		
B(a)A	[360]	
B(a)P	[400]	
B(b)F	[650]	
B(k)F	244	
C	610	
Dia.hA	[68]	
Ico(c)P	[275]	
1-M	<20.5	
N	<20.3	

SMW-2		
Depth:	2 - 4	4 - 6
Date:	8/5/14	
PAHs		
B(a)A	[3,400]	2,110
B(a)P	[3,500]	2,580
B(b)F	[4,900]	2,940
B(k)F	1,470	1,010
C	3,400	2,380
Dia.hA	[540]	269
Ico(c)P	[2,040]	1,150
1-M	128	259
N	400	315

SB01-05		
Date:	8/13/01	
PAHs		
B(a)A	[8,100]	
B(a)P	[8,800]	
B(b)F	[13,000]	
B(k)F	[3,900]	
C	10,000	
Dia.hA	[2,200]	
Ico(c)P	[4,000]	
1-M	2,000	
N	[2,900]	

SB01-02		
Date:	8/13/01	
PAHs		
B(a)A	110	
B(a)P	[120]	
B(b)F	[310]	
B(k)F	<37	
C	140	
Dia.hA	[49]	
Ico(c)P	110	
1-M	43	
N	59	

SB01-03		
Date:	8/13/01	
PAHs		
B(a)A	[19,000]	
B(a)P	[17,000]	
B(b)F	[27,000]	
B(k)F	<370	
C	23,000	
Dia.hA	[3,000]	
Ico(c)P	6,000	
1-M	3,900	
N	7,000	

T-1		
Depth:	3	
Date:	12/21/12	
PAHs		
B(a)A	22.9	
B(a)P	[18.9 J*]	
B(b)F	12.6 J*]	
B(k)F	20.4 J*]	
C	25.6	
Dia.hA	<10.6	
Ico(c)P	<10.6	
1-M	31.2	
N	90.6	

SGP-1		
Depth:	2 - 4	
Date:	3/17/14	
PAHs		
B(a)A	72	
B(a)P	[52]	
B(b)F	127	
B(k)F	56 *J*	
C	213	
Dia.hA	[32 *J*]	
Ico(c)P	60 *J*]	
1-M	42 *J*]	
N	46 *J*]	

SGP-2		
Depth:	2 - 4	
Date:	3/17/14	
PAHs		
B(a)A	[480]	
B(a)P	[440]	
B(b)F	[640]	
B(k)F	215	
C	510	
Dia.hA	[76]	
Ico(c)P	[295]	
1-M	19.6 *J*]	
N	21.4 *J*]	

SB01-01		
Depth:	0 - 2	
Date:	8/13/01	
PAHs		
B(a)A	[3,800]	
B(a)P	[4,300]	
B(b)F	[7,800]	
B(k)F	<370	
C	5,200	
Dia.hA	[1,500]	
Ico(c)P	[2,500]	
1-M	190 *J*]	
N	280 *J*]	

SMW-9		
Depth:	2 - 4	4 - 6
Date:	8/11/14	
PAHs		
B(a)A	[22,900]	3,500
B(a)P	[21,100]	3,400
B(b)F	[31,100]	5,000
B(k)F	[10,500]	1,360
C	[25,000]	4,100
Dia.hA	[3,800]	580
Ico(c)P	[11,700]	1,920
1-M	910	108 *J*]
N	1,200	230

SMW-7		
Depth:	4 - 6	6 - 8
Date:	8/12/14	
PAHs		
B(a)A	18.5 *J*]	111
B(a)P	<19	101
B(b)F	<18	153
B(k)F	<20.6	56 *J*]
C	<18.5	126
Dia.hA	<22.4	<22.4
Ico(c)P	<24.4	65 *J*]
1-M	56 *J*]	49 *J*]
N	68	76

SMW-8		
Depth:	4 - 6	6 - 8
Date:	8/12/14	
PAHs		
B(a)A	56 *J*]	<18.4
B(a)P	60 *J*]	<19
B(b)F	93	<18
B(k)F	34 *J*]	<20.6
C	57 *J*]	<18.5
Dia.hA	<22.4	<22.4
Ico(c)P	51 *J*]	<24.4
1-M	42 *J*]	<19.5
N	41 *J*]	<21.1

SMW-10		
Depth:	2 - 4	
Date:	8/12/14	
PAHs		
B(a)A	[610]	
B(a)P	[640]	
B(b)F	[1,110]	
B(k)F	470 *J*]	
C	700	
Dia.hA	<224	
Ico(c)P	[460 *J*]	
1-M	8,600	
N	[7,100]	

SMW-33		
Depth:	2 - 4	4 - 6
Date:	8/11/14	
PAHs		
B(a)A	[1,310]	49 *J*]
B(a)P	[1,380]	39 *J*]
B(b)F	[1,790]	58 *J*]
B(k)F	830	28.1 *J*]
C	1,390	44 *J*]
Dia.hA	[173]	<22.4
Ico(c)P	[590]	25.7 *J*]
1-M	40 *J*]	<19.5
N	174	<21.1

MW-3R		
Depth:	0 - 2	4 - 6
Date:	3/7/07	
PAHs		
B(a)A	[1,900]	81
B(a)P	[1,600]	67
B(b)F	[1,600]	59
B(k)F	[1,500]	64
C	2,100	80
Dia.hA	[370]	14
Ico(c)P	[880]	33
1-M	170 *J*]	62 *J*]
N	320	22

MW-5		
Depth:	2 - 4	8 - 10
Date:	3/7/05	
PAHs		
B(a)A	70.2	<68.4
B(a)P	[57.9]	33.1
B(b)F	<62.5	<68.4
B(k)F	<125	<137
C	<125	<137
Dia.hA	<6.25	<6.84
Ico(c)P	86.0	<68.4
1-M	<125	<137
N	<125	<137

MW-2R		
Depth:	2 - 4	6 - 8
Date:	3/7/07	
PAHs		
B(a)A	[640]	45
B(a)P	[570]	40
B(b)F	[900]	33
B(k)F	500	33
C	640	44
Dia.hA	[110]	7.3 *J*]
Ico(c)P	[260]	17
1-M	24	8.1 *J*]
N	82	35 *J*]

SMW-14		
Depth:	2 - 4	4 - 6
Date:	8/11/14	
PAHs		
B(a)A	[2,540]	1,160
B(a)P	[2,650]	1,400
B(b)F	[3,700]	2,010
B(k)F	1,090	590
C	2,530	1,420
Dia.hA	[360]	199
Ico(c)P	[1,330]	750
1-M	90	<19.5
N	72	29.1 *J*]

B-10		
Depth:	4 - 6	10 - 12
Date:	6/22/05	
PAHs		
B(a)A	<25	<26
B(a)P	[565]	171
B(b)F	[480]	306
B(k)F	397	196
C	313	171
Dia.hA	<19	<20
Ico(c)P	[228]	119
1-M	2,160	465
N	82	23

STW-38		
Depth:	2 - 4	5 - 7
Date:	5/20/15	
PAHs		
B(a)A	[980]	[13,200]
B(a)P	[760]	[10,400]
B(b)F	[1,070]	[13,500]
B(k)F	360	[4,400]
C	840	10,800
Dia.hA	[126]	[1,340]
Ico(c)P	[910]	[6,500]
1-M	27.8 *J*]	1,100
N	36 *J*]	4,300

STW-37		
Depth:	2 - 4	5-6
Date:	5/20/15	
PAHs		
B(a)A	[3,200]	[360]
B(a)P	[2,900]	[240]
B(b)F	[3,600]	[297]
B(k)F	1,100	86
C	2,870	340
Dia.hA	[470]	[41 *J*]
Ico(c)P	[1,680]	191
1-M	31.2 *J*]	<20.5
N	54 *J*]	<20.3

STW-36		
Depth:	2 - 4	5-7
Date:	5/20/15	
PAHs		
B(a)A	[1,450]	[270]
B(a)P	[1,340]	[158]
B(b)F	[1,730]	[165]
B(k)F	490	55 *J*]
C	1,200	266
Dia.hA	[250]	[25.4 *J*]
Ico(c)P	[890]	71
1-M	580	1,870
N	180	97

MW-18		
Depth:	2 - 4	6 - 8
Date:	3/7/07	
PAHs		
B(a)A	<6.3	14 *J*]
B(a)P	<3.4	5.3 *J*]
B(b)F	<3.3	3.6 *J*]
B(k)F	<3.6	<3.7
C	<5.2	28
Dia.hA	<3.3	<3.3
Ico(c)P	<3.0	<3.0
1-M	<3.6	130
N	<4.8	8.9 *J*]

SMW-16		
Depth:	2 - 4	4 - 6
Date:	8/11/14	
PAHs		
B(a)A	[230]	<18.4
B(a)P	[294]	<19
B(b)F	480	<18
B(k)F	108	<20.6
C	277	<18.5
Dia.hA	[41 *J*]	<22.4
Ico(c)P	[153]	<24.4
1-M	<19.3	<19.5
N	<21.1	<21.1

SGP-18		
Depth:	2 - 4	4 - 8
Date:	3/18/14	
PAHs		
B(a)A	[330]	1,160
B(a)P	[320]	1,130
B(b)F	[440]	1,380
B(k)F	172	600
C	330	980
Dia.hA	[56 *J*]	180
Ico(c)P	[209]	600
1-M	35 *J*]	83
N	29.6 *J*]	66 *J*]

B-11		
Depth:	2 - 4	14 - 16
Date:	6/22/05	
PAHs		
B(a)A	<24	<25
B(a)P	<13	<13
B(b)F	<7.59	<7.67
B(k)F	<8.51	<8.94
C	<13	<13
Dia.hA	<18	<19
Ico(c)P	<17	<18
1-M	5,630	21
N	253	<11

SMW-17		
Depth:	2 - 4	4 - 6
Date:	8/8/14	
PAHs		
B(a)A	[840]	301
B(a)P	[890]	307
B(b)F	[1,370]	460
B(k)F	500	133
C	1,030	428
Dia.hA	[116]	41 *J*]
Ico(c)P	[430]	138
1-M	286	1,200
N	152	154

SGP-17		
Depth:	2 - 4	6 - 8
Date:	3/18/14	
PAHs		
B(a)A	[560]	55 *J*]
B(a)P	[600]	29.1 *J*]
B(b)F	[820]	29.9 *J*]
B(k)F	270	<20.6
C	650	74
Dia.hA	[112]	<22.4
Ico(c)P	[390]	<24.4
1-M	30.5 *J*]	1,050
N	30.9 *J*]	46 *J*]

SGP-16		
Depth:	2 - 4	6 - 8
Date:	3/18/14	
PAHs		
B(a)A	[1,270]	38 *J*]
B(a)P	[1,200]	34 *J*]
B(b)F	[1,380]	46 *J*]
B(k)F	550	<20.6
C	1,450	38 *J*]
Dia.hA	[188]	<22.4
Ico(c)P	[620]	<24.4
1-M	4,890	1,640
N	320	23.1 *J*]

MW-8		
Depth:	2 - 4	14 - 16
Date:	6/22/05	
PAHs		
B(a)A	<24	<30
B(a)P	<7.67	<9.42
B(b)F	<8.60	<11
B(k)F	<13	<16
C	<19	<23
Dia.hA	<17	<21
Ico(c)P	1,280	<11
1-M	581	<13

MW-3		
Depth:	2 - 4	6 - 8
Date:	3/17/05	
PAHs		
B(a)A	<56.8	<75.4
B(a)P	6.34	<7.54
B(b)F	<56.8	<75.4
B(k)F	<114	<151
C	<114	<151
Dia.hA	<5.68	<7.54
Ico(c)P	136	81.6
1-M	<114	<151
N	<114	<151

MW-4R		
Depth:	4 - 6	6 - 8
Date:	3/7/07	
PAHs		
B(a)A	110 *J*]	12 *J*]
B(a)P	60 *J*]	7.6 *J*]
B(b)F	<35	3.7 *J*]
B(k)F	<39	<3.7
C	240	25
Dia.hA	<35	<3.5
Ico(c)P	<32	<3.0
1-M	5,200	450
N	250	31

SGP-15		
Depth:	0 - 2	
Date:	3/18/14	
PAHs		
B(a)A	[520]	
B(a)P	[560]	
B(b)F	[770]	
B(k)F	300	
C	570	
Dia.hA	[102]	
Ico(c)P	[380]	
1-M	41.7 *J*]	
N	51.7 *J*]	

MW-7		
Depth:	2 - 4	14 - 16
Date:	6/22/05	
PAHs		
B(a)A	<23	<28
B(a)P	[188]	<15
B(b)F	[288]	<8.96
B(k)F	106	<9.93
C	323	<15
Dia.hA	[36]	<20
Ico(c)P	[155]	<20
1-M	<8.89	<11
N	<9.96	<12

SMW-5R		
Depth:	2 - 4	4 - 6
Date:	6/22/05	
PAHs		
B(a)A	[350]	240
B(a)P	[300]	210
B(b)F	[300]	180
B(k)F	275	180
C	430	260
Dia.hA	[87]	39
Ico(c)P	[160]	99
1-M	3,000	130
N	360	69

MW-2		
Depth:	2 - 4	6 - 8
Date:	3/17/05	
PAHs		
B(a)A	38.1	<84.1
B(a)P	[34.3]	43.8
B(b)F	69.3	76.8
B(k)F	<752	<1,200
C	<752	<128
Dia.hA	[27.5]	21.2
Ico(c)P	[2,270]	2,040
1-M	109	192
N	<75.2	<128

SGP-14		
Depth:	2 - 4	8 - 9
Date:	3/19/14	
PAHs		
B(a)A	[3,500]	360
B(a)P	[3,100]	390
B(b)F	[3,900]	540
B(k)F	[1,570]	155
C	3,150	420
Dia.hA	[480 *J*]	80
Ico(c)P	[1,920]	277
1-M	<195	82
N	229 *J*]	64 *J*]

MW-4		
Depth:	2 - 4	6 - 8
Date:	3/17/05	
PAHs		
B(a)A	<59.2	65.4
B(a)P	[77.2]	46.1
B(b)F	77.1	122
B(k)F	<118	<1,090
C	<118	120
Dia.hA	[68]	<54.5
Ico(c)P	[367]	961
1-M	3,000	130
N	<118	<109

SMW-20		
Depth:	2 - 4	4 - 6
Date:	8/7/14	
PAHs		
B(a)A	[430]	173
B(a)P	[560]	156
B(b)F	[890]	235
B(k)F	395	110
C	520	207
Dia.hA	[41 *J*]	<22.4
Ico(c)P	[293]	62 *J*]
1-M	56 *J*]	<19.5
N	32 *J*]	<21.1

MW-1		
Depth:	2 - 4	6 - 8
Date:	3/17/05	
PAHs		
B(a)A	<57.9	<59.8
B(a)P	[51.1]	66.1
B(b)F	<57.9	<59.8
B(k)F	<116	<120
C	<116	<120
Dia.hA	<5.79	<5.98
Ico(c)P	80.3	90.3
1-M	<116	<120
N	<116	<120

MW-6R		
Depth:	2 - 4	6 - 8
Date:	3/7/07	
PAHs		
B(a)A	<5.1	29
B(a)P	3.3 *J*]	24
B(b)F	7.5 *J*]	20
B(k)F	4.3 *J*]	19
C	5.9 *J*]	26
Dia.hA	<2.8	4.2 *J*]
Ico(c)P	3.2 *J*]	12
1-M	7.0	86
N	<4.1	60

SMW-12		
Depth:	2 - 4	6 - 8
Date:	8/7/14	
PAHs		
B(a)A	65	267
B(a)P	[67]	246
B(b)F	116	380
B(k)F	32 *J*]	109
C	78	295
Dia.hA	<22.4	32 *J*]
Ico(c)P	40 *J*]	110
1-M	<19.5	315
N	<21.1	294

SGP-7		
Depth:	2 - 4	6 - 8
Date:	3/17/14	
PAHs		
B(a)A	20.5 *J*]	66
B(a)P	<19	41 *J*]
B(b)F	<18	66
B(k)F	<20.6	23.3 *J*]
C	<18.5	63
Dia.hA	<22.4	<22.4
Ico(c)P	<24.4	<24.4
1-M	28.3 *J*]	206
N	<21.1	180

SGP-8		
Depth:	2 - 4	6 - 8
Date:	3/17/14	
PAHs		
B(a)A	<18.4	61
B(a)P	<19	30 *J*]
B(b)F	<18	38 *J*]
B(k)F	<20.6	<20.6
C	<18.5	50 *J*]
Dia.hA	<22.4	<22.4
Ico(c)P	<24.4	<24.4
1-M	<19.5	120
N	<21.1	58 *J*]

MW-6		
Depth:	2 - 4	14 - 16
Date:	6/22/05	
PAHs		
B(a)A	[1,080]	<25
B(a)P	[748]	<13
B(b)F	[1,140]	<7.89
B(k)F	443	<8.84
C	931	<13
Dia.hA	[170]	<19
Ico(c)P	[670]	<18
1-M	<9.08	22
N	<10	117

B-12			
Depth:	2 - 4	8 - 10	12 - 14
Date:	6/22/05		
PAHs			
B(a)A	<486	<25	<34
B(a)P	<254	<13	<18
B(b)F	<153	<7.66	<11
B(k)F	<171	<8.81	<12
C	<254	<13	<18
Dia.hA	<370	<19	<26
Ico(c)P	<347	87	<24
1-M	83,200	1,310	<13
N	1,500	<11	<14

SGP-9		
Depth:	2 - 4	
Date:	3/17/14	
PAHs		
B(a)A	18.9 *J*]	139
B(a)P	<19	96
B(b)F	<18	144
B(k)F	<20.6	48 *J*]
C	<18.5	146
Dia.hA	<22.4	<22.4
Ico(c)P	<24.4	49 *J*]
1-M	<19.5	177
N	<21.1	96

SMW-15		
Depth:	2 - 4	6 - 8
Date:	8/7/14	
PAHs		
B(a)A	122	306
B(a)P	[142]	281
B(b)F	[211]	440
B(k)F	58 *J*]	132
C	155	360
Dia.hA	<22.4	30 *J*]
Ico(c)P	77 *J*]	127
1-M	<19.5	90
N	<21.1	92

SGP-10		
Depth:	2 - 4	6 - 8
Date:	3/17/14	
PAHs		
B(a)A	127	63
B(a)P	[116]	35 *J*]
B(b)F	[190]	71
B(k)F	73	22.3 *J*]
C	134	75
Dia.hA	<22.4	<22.4
Ico(c)P	81	<24.4
1-M	23.8 *J*]	112
N	<21.1	73

SGP-11		
Depth:	2 - 4	8 - 10
Date:	3/18/14	
PAHs		
B(a)A	[500]	550
B(a)P	[510]	470
B(b)F	[950]	650
B(k)F	320	219
C	540	488
Dia.hA	[136]	86
Ico(c)P	[450]	312
1-M	<19.5	71
N	<21.1	44 *J*]

SGP-13		
Depth:	2 - 4	6 - 8
Date:	3/18/14	
PAHs		
B(a)A	[490]	610
B(a)P	[540]	560
B(b)F	[790]	890
B(k)F	262	330
C	520	770
Dia.hA	[126]	119
Ico(c)P	[380]	350
1-M	141	<19.5
N	58 *J*]	29.9 *J*]

SGP-12		
Depth:	2 - 4	
Date:	3/18/14	
PAHs		
B(a)A	87	
B(a)P	[88]	
B(b)F	139	
B(k)F	68	
C	96	
Dia.hA	<22.4	
Ico(c)P	72 *J*]	
1-M	<19.5	
N	<21.1	

ENVIRONMENTAL KEY

= GRAB SAMPLE
= SOIL BORING
= MONITORING WELL (FORMER)
= TEST PIT
= GEOPROBE SOIL BORING
= TEMPORARY WELL
= HSA SOIL BORING
= MONITORING WELL
= VAPOR PROBE

LEGEND

SECTION 1/4 SECTION LINE
PROPERTY LINE
EASEMENT
CHAIN LINK FENCE
GUARD RAIL
METAL FENCE
WOOD FENCE
TREE LINE
OVERHEAD UTILITY LINE
ELECTRIC
TELEPHONE
FIBER OPTIC
CABLE TV
SANITARY SEWER
FORCE MAIN
STORM SEWER
WATER MAIN
GAS
EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
MANHOLE
CATCH BASIN
CATCH BASIN (ROUND)
ROOF DRAIN
HYDRANT
WATER VALVE
GAS VALVE
UTILITY POLE
GUY WIRE
GAS METER
ELECTRIC METER
UTILITY PEDESTAL
HANDHOLE
TRAFFIC SIGNAL
IRON PIPE FOUND/SET
REBAR FOUND/SET
CHISELED CROSS FOUND/SET
PK NAIL FOUND/SET
SPIKE/NAIL
MONUMENT
BENCHMARK
SIGN
DECIDUOUS TREE (Diameter)
CONIFEROUS TREE (Diameter)
POST
SOIL BORING
MONITORING WELL
CULVERT END
LIGHT POLE

= ESTIMATED EXTENT OF PAH SOIL IMPACTS THAT EXCEED PROTECTION OF GROUNDWATER RCL(s)

= ESTIMATED EXTENT OF PAH SOIL IMPACTS THAT EXCEED NON-INDUSTRIAL DIRECT CONTACT RCL(s)

SGP-4		
Depth:	2 - 4	
Date:	3/17/14	
PAHs		
B(a)A	[2,400]	
B(a)P	[2,470]	
B(b)F	[3,800]	
B(k)F	[1,510]	
C	2,450	
Dia.hA	[500 *J*]	
Ico(c)P	[2,150]	
1-M	2,420	
N	520 *J*]	

SGP-3		
Depth:	2 - 4	
Date:	3/17/14	
PAHs		
B(a)A	[810]	
B(a)P	[480 *J*]	
B(b)F	[900]	
B(k)F	440 *J*]	
C	810	
Dia.hA	<224	
Ico(c)P	[440 *J*]	
1-M	700	
N	810	

SGP-4		
Depth:	2 - 4	
Date:	3/17/14	
PAHs		
B(a)A	[1,760]	
B(a)P	[1,760]	
B(b)F	[3,010]	
B(k)F	1,060	
C	3,970	
Dia.hA	[390 *J*]	
Ico(c)P	[1,600]	
1-M	<195	
N	<211	

SGP-5		
Depth:	2 - 4	
Date:	3/17/14	
PAHs		
B(a)A	[1,670]	
B(a)P	[1,940]	
B(b)F	[3,200]	
B(k)F	1,000	
C	1,940	
Dia.hA	[390 *J*]	
Ico(c)P	[1,500]	
1-M	<195	
N	295 *J*]	

THE SIGMA GROUP
Single Source. Sound Solutions.

www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

FRESHWATER PLAZA
N.E.C. OF S. 1ST STREET & E. GREENFIELD AVENUE
MILWAUKEE, WISCONSIN

SOIL QUALITY MAP - PAHs

BEARINGS REFERENCED TO THE WEST LINE OF THE SOUTHEAST 1/4 OF SECTION 32-7-22 BEARING N 01°31'36" W

0 40' 80'

REMEDIAL EXCAVATION NOTES:

- EXCAVATION AREA A: 55' WIDE x 80' LONG x 11' DEEP
- EXCAVATION AREA B: 25' WIDE x 30' LONG x 6' DEEP
- 3,476.34 TONS OF PETROLEUM CONTAMINATED SOIL EXCAVATED AND HAULED TO EMERALD PARK LANDFILL BETWEEN MAY 6-8, 2015.

NOTES:

1. BASE MAP BASED ON ALTA/ACSM LAND TITLE SURVEY COMPLETED BY SIGMA IN OCTOBER 2013. CURRENT SOIL BORING AND WELL LOCATIONS SURVEYED BY SIGMA WITH GPS EQUIPMENT AT TIME WORK WAS PERFORMED.
2. LOCATIONS OF PREVIOUS SOIL BORINGS AND MONITORING WELLS ARE APPROXIMATE AND ARE BASED ON PREVIOUS CONSULTANTS REPORTS EXCEPT FOR MW-5, MW-10, AND MW-10P IN NORTHEAST PORTION OF SITE WHICH WERE SURVEYED BY SIGMA. LOCATIONS OF HISTORIC BUILDINGS AND SITE FEATURES BASED ON SANBORN MAPS AND CITY OF MILWAUKEE RECORDS CENTER PLANS. TO THE EXTENT POSSIBLE, THE SOIL BORINGS AND WELLS WERE CROSS-REFERENCED WITH MULTIPLE REPORTS TO BEST DETERMINE LOC

ANALYTICAL KEY

As = ARSENIC
Pb = LEAD
1242 = PCB-1242
1248 = PCB-1248
1254 = PCB-1254
1260 = PCB-1260

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAYRCL (UNSATURATED SOIL SAMPLES)
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (UNSATURATED SOIL SAMPLES)

"J" = ESTIMATED CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg), EXCEPT ARSENIC AND LEAD WHICH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).

SMW-6	2 - 4	6 - 8
Date:	8/6/14	
METALS		
As	[2.4]	1.3 "J"
Pb	230	11
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

SMW-5	4 - 6	6 - 8
Date:	8/6/14	
METALS		
As	2.3	1.3 "J"
Pb	24	9.7
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

GS-1	0-1	
Date:	11/24/15	
METALS		
As	[4.38]	
Pb	248	
PCBs		
1242	NA	
1248	NA	
1254	NA	
1260	NA	

GS-2	0-1	
Date:	11/24/15	
METALS		
As	[5.94]	
Pb	72.4	
PCBs		
1242	NA	
1248	NA	
1254	NA	
1260	NA	

SMW-2	2 - 4	4 - 6
Date:	8/5/14	
METALS		
As	9.1 "J"	7.2
Pb	[24,000]	180
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	[440]	<4.9

B-8 / MW-5	6 - 8	+/-
Date:	4/2/91	
METALS		
As	NA	
Pb	NA	
PCBs		
1242	<6.0	
1248	<6.0	
1254	<6.0	
1260	<6.0	

SGP-1	2 - 4	
Date:	3/17/14	
METALS		
As	<1.44	
Pb	[864]	
PCBs		
1242	78	
1248	<9.6	
1254	46 "J"	
1260	<14.7	

SGP-26	2 - 4	5-7
Date:	4/21/15	
METALS		
As	NA	NA
Pb	NA	NA
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	[380]	<4.7
1260	<4.9	<4.9

SMW-3	2 - 4	6 - 8
Date:	8/12/14	
METALS		
As	[5.6]	2.2
Pb	170	4.8
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

SMW-4	2 - 4	7 - 9
Date:	8/6/14	
METALS		
As	[2.7]	2.1
Pb	130	19
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

GS-3	0-1	
Date:	11/24/15	
METALS		
As	[4.61]	
Pb	37.4	
PCBs		
1242	NA	
1248	NA	
1254	NA	
1260	NA	

SGP-2	2 - 4	
Date:	3/17/14	
METALS		
As	<1.44	
Pb	5.19	
PCBs		
1242	[5,300]	
1248	<9.6	
1254	[720]	
1260	<14.7	

SGP-27	5-7	
Date:	4/21/15	
METALS		
As	NA	NA
Pb	NA	
PCBs		
1242	<3.2	
1248	<3.2	
1254	<4.7	
1260	<4.9	

SGP-28	2 - 4	5-7
Date:	4/21/15	
METALS		
As	NA	NA
Pb	NA	NA
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	[280]	<4.7
1260	<4.9	<4.9

SGP-29	2 - 4	5-7
Date:	4/21/15	
METALS		
As	NA	NA
Pb	NA	NA
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

SMW-7	4 - 6	6 - 8
Date:	8/12/14	
METALS		
As	2.7	3.1
Pb	8.4	12
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

SMW-11	2 - 4	4 - 6
Date:	8/11/14	
METALS		
As	[6.6]	6.6
Pb	36	15
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

GS-5	0-1	
Date:	11/24/15	
METALS		
As	[28.1]	
Pb	[1,140]	
PCBs		
1242	NA	
1248	NA	
1254	NA	
1260	NA	

GS-4	0-1	
Date:	11/24/15	
METALS		
As	[4.63]	
Pb	[218]	
PCBs		
1242	NA	
1248	NA	
1254	NA	
1260	NA	

SMW-8	6 - 8	
Date:	8/12/14	
METALS		
As	5.1	8.3
Pb	32	20
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

SGP-30	2 - 4	6-8
Date:	4/21/15	
METALS		
As	NA	NA
Pb	NA	NA
PCBs		
1242	<3.2	NA
1248	<3.2	NA
1254	<4.7	NA
1260	<4.9	NA

SMW-10	2 - 4
Date:	8/12/14
METALS	
As	[5.9]
Pb	200
PCBs	
1242	NA
1248	NA
1254	NA
1260	NA

SMW-13	2 - 4	4 - 6
Date:	8/11/14	
METALS		
As	[6.5]	9.4
Pb	88	9.7
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

SMW-10C	1 - 3	5 - 7
Date:	10/8/14	
METALS		
As	NA	NA
Pb	186	38.6
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-3R	6 - 8	4 - 6
Date:	3/7/07	
METALS		
As	[3.2]	3.4
Pb	77	23
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-5	2 - 4	8 - 10
Date:	3/7/05	
METALS		
As	[2.74]	<3.07
Pb	50.1	<6.15
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-2R	6 - 8
Date:	3/7/07
METALS	
As	[6.9] 3.4
Pb	150 38
PCBs	
1242	NA NA
1248	NA NA
1254	NA NA
1260	NA NA

SMW-14	2 - 4	4 - 6
Date:	8/11/14	
METALS		
As	[6.4]	4.6
Pb	100	66
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

B-10	4 - 6	10 - 12
Date:	6/22/05	
METALS		
As	<1.48	<6.02
Pb	477	<25.9
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

B-4	6 - 8
Date:	9/14/04
METALS	
As	NA
Pb	NA
PCBs	
1242	<55.0
1248	<55.0
1254	<55.0
1260	<55.0

MW-1R	2 - 4	6 - 8
Date:	3/7/07	
METALS		
As	[3.0 "J"]	3.4
Pb	38	10
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

SMW-16	2 - 4	6 - 8
Date:	8/11/14	
METALS		
As	[7.8]	6.4
Pb	160	12
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

SGP-18	2 - 4	4 - 8
Date:	3/19/14	
METALS		
As	<7.2	<7.2
Pb	116	25.4
PCBs		
1242	<3.2	33
1248	39	<3.2
1254	<4.7	11 "J"
1260	<4.9	<4.9

B-11	2 - 4	14 - 16
Date:	6/22/05	
METALS		
As	[29]	<1.4
Pb	97	11
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

SMW-17	2 - 4	4 - 6
Date:	8/8/14	
METALS		
As	[11]	6.2
Pb	21	120
PCBs		
1242	85	<3.2
1248	<3.2	<3.2
1254	44	<4.7
1260	<4.9	<4.9

B-1	2 - 4
Date:	9/14/04
METALS	
As	NA
Pb	NA
PCBs	
1242	<52.9
1248	<52.9
1254	<52.9
1260	<52.9

SGP-17	2 - 4	6 - 8
Date:	3/18/14	
METALS		
As	<7.2	[5.90]
Pb	50.8	14.0
PCBs		
1242	11 "J"	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

SGP-16	2 - 4	6 - 8
Date:	3/19/14	
METALS		
As	<7.2	<7.2
Pb	37.0	20.7
PCBs		
1242	<3.2	<3.2
1248	<3.2	<3.2
1254	<4.7	<4.7
1260	<4.9	<4.9

MW-8	2 - 4	14 - 16
Date:	6/22/05	
METALS		
As	<1.43	<1.75
Pb	<6.13	<7.53
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-3	2 - 4	6 - 8
Date:	3/17/05	
METALS		
As	[427]	<3.77
Pb	1,500	15.2
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-4R	4 - 6	6 - 8
Date:	3/7/07	
METALS		
As	4.5	[8.1 "J"]
Pb	17	8.1
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

SGP-15	0 - 2	
Date:	3/19/14	
METALS		
As	<7.2	
Pb	73.9	
PCBs		
1242	[250]	
1248	<3.2	
1254	130	
1260	<4.9	

MW-7	2 - 4	14 - 16
Date:	6/22/05	
METALS		
As	[8.88]	<1.65
Pb	62	<7.09
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-5R	2 - 4	4 - 6
Date:	3/17/05	
METALS		
As	[4.8]	7.2
Pb	29	130
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

B-2	4 - 6
Date:	9/14/04
METALS	
As	NA
Pb	NA
PCBs	
1242	<53.7
1248	<53.7
1254	<53.7
1260	<53.7

MW-2	2 - 4	6 - 8
Date:	3/17/05	
METALS		
As	[28.8]	6.11
Pb	[5,600]	842
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

B-3	0 - 2	
Date:	9/14/04	
METALS		
As	NA	
Pb	NA	
PCBs		
1242	<45.7	
1248	<45.7	
1254	<45.7	
1260	<45.7	

SGP-14	2 - 4	8 - 9
Date:	3/19/14	
METALS		
As	<1.44	<7.2
Pb	137	178
PCBs		
1242	[250]	32
1248	<3.2	<3.2
1254	<4.7	11 "J"
1260	<4.9	<4.9

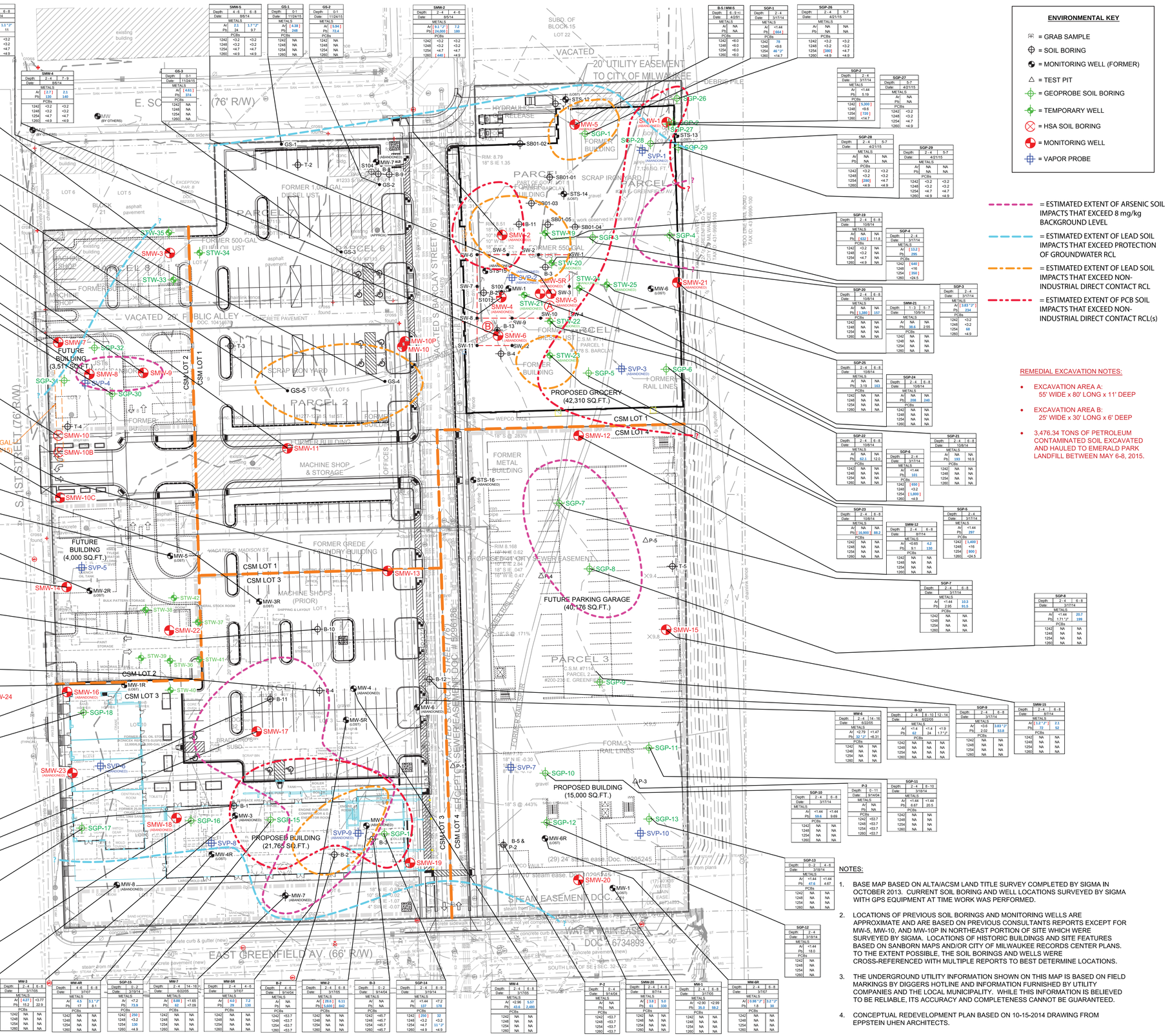
MW-4	2 - 4	6 - 8
Date:	3/17/05	
METALS		
As	<2.98	5.57
Pb	43.6	2,480
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

P-2	0 - 4	
Date:	9/14/04	
METALS		
As	NA	
Pb	NA	
PCBs		
1242	<53.7	
1248	<53.7	
1254	<53.7	
1260	<53.7	

SMW-20	2 - 4	4 - 6
Date:	3/17/14	
METALS		
As	[3.8]	5.0
Pb	61	330
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-1	2 - 4	6 - 8
Date:	3/17/05	
METALS		
As	<2.90	<2.99
Pb	35.0	59.2
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA

MW-6R	2 - 4	6 - 8
Date:	3/7/07	
METALS		
As	[0.98 "J"]	[3.2 "J"]
Pb	1.8	30
PCBs		
1242	NA	NA
1248	NA	NA
1254	NA	NA
1260	NA	NA



ENVIRONMENTAL KEY

- = GRAB SAMPLE
- = SOIL BORING
- = MONITORING WELL (FORMER)
- = TEST PIT
- = GEOPROBE SOIL BORING
- = TEMPORARY WELL
- = HSA SOIL BORING
- = MONITORING WELL
- = VAPOR PROBE

- = ESTIMATED EXTENT OF ARSENIC SOIL IMPACTS THAT EXCEED 8 mg/kg BACKGROUND LEVEL
- = ESTIMATED EXTENT OF LEAD SOIL IMPACTS THAT EXCEED PROTECTION OF GROUNDWATER RCL
- = ESTIMATED EXTENT OF LEAD SOIL IMPACTS THAT EXCEED NON-INDUSTRIAL DIRECT CONTACT RCL
- = ESTIMATED EXTENT OF PCB SOIL IMPACTS THAT EXCEED NON-INDUSTRIAL DIRECT CONTACT RCL(s)

REMEDIAL EXCAVATION NOTES:

- EXCAVATION AREA A: 55' WIDE x 80' LONG x 11' DEEP
- EXCAVATION AREA B: 25' WIDE x 30' LONG x 6' DEEP
- 3,476.34 TONS OF PETROLEUM CONTAMINATED SOIL EXCAVATED AND HAULED TO EMERALD PARK LANDFILL BETWEEN MAY 6-8, 2015.

NOTES:

1. BASE MAP BASED ON ALTA/ACSM LAND TITLE SURVEY COMPLETED BY SIGMA IN OCTOBER 2013. CURRENT SOIL BORING AND WELL LOCATIONS SURVEYED BY SIGMA WITH GPS EQUIPMENT AT TIME WORK WAS PERFORMED.
2. LOCATIONS OF PREVIOUS SOIL BORINGS AND MONITORING WELLS ARE APPROXIMATE AND ARE BASED ON PREVIOUS CONSULTANTS REPORTS EXCEPT FOR MW-5, MW-10, AND MW-10P IN NORTHEAST PORTION OF SITE WHICH WERE SURVEYED BY SIGMA. LOCATIONS OF HISTORIC BUILDINGS AND SITE FEATURES BASED ON SANBORN MAPS AND/OR CITY OF MILWAUKEE RECORDS CENTER PLANS. TO THE EXTENT POSSIBLE, THE SOIL BORINGS AND WELLS WERE CROSS-REFERENCED WITH MULTIPLE REPORTS TO BEST DETERMINE LOCATIONS.
3. THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD MARKINGS BY DIGGERS HOTLINE AND INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.
4. CONCEPTUAL REDEVELOPMENT PLAN BASED ON 10-15-2014 DRAWING FROM EPPSTEIN UHEN ARCHITECTS.

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

LEGEND

SECTION 1/4 SECTION LINE
PROPERTY LINE
EASEMENT
CHAIN LINK FENCE
GUARD RAIL
METAL FENCE
WOOD FENCE
TREE LINE
OVERHEAD UTILITY LINE
ELECTRIC
TELEPHONE
FIBER OPTIC
CABLE TV
SANITARY SEWER
FORCE MAIN
STORM SEWER
WATER MAIN
GAS
EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
MANHOLE
CATCH BASIN
CATCH BASIN (ROUND)
ROOF DRAIN
HYDRANT
WATER VALVE
GAS VALVE
UTILITY POLE
GUY WIRE
GAS METER
ELECTRIC METER
UTILITY PEDESTAL
HANDHOLE
TRAFFIC SIGNAL
IRON PIPE FOUND/SET
REBAR FOUND/SET
CHISELED CROSS FOUND/SET
PK NAIL FOUND/SET
SPIKE/NAIL
MONUMENT
BENCHMARK
SIGN
DECIDUOUS TREE (Diameter)
CONIFEROUS TREE (Diameter)
POST
SOIL BORING
MONITORING WELL
CULVERT END
LIGHT POLE

BEARINGS REFERENCED TO THE WEST LINE OF THE SOUTHEAST 1/4 OF SECTION 32-7-22 BEARING N 01°31'36" W

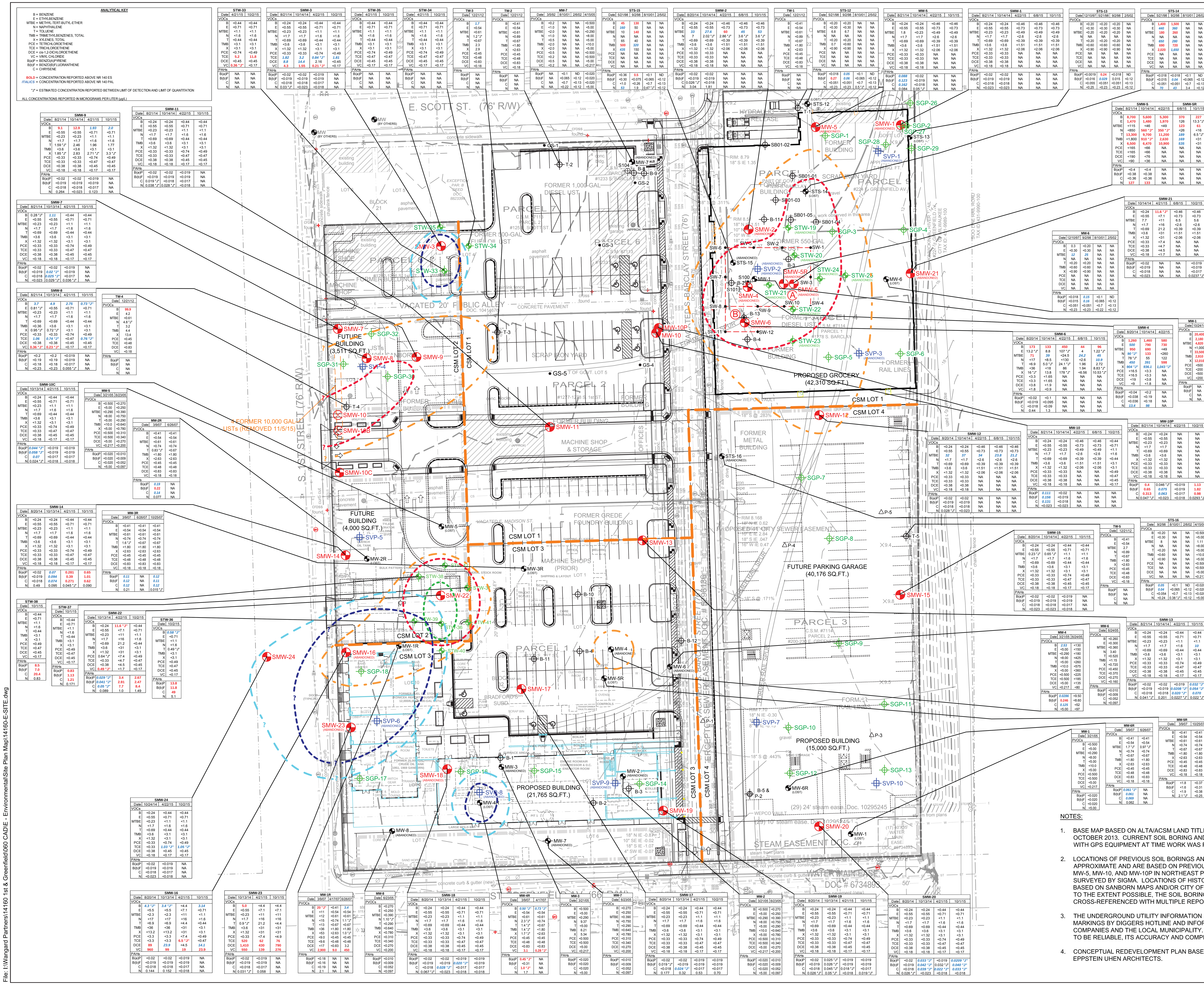
0 40' 80'

FRESHWATER PLAZA
N.E.C. OF S. 1ST STREET & E. GREENFIELD AVENUE
MILWAUKEE, WISCONSIN

SOIL QUALITY MAP - METALs & PCBs

NO.	REVISION	DATE BY
DRWNG NO.	14160 Site Plan Map AI Base Dec 2015.pdf	
DRAWN BY:	FPF / REV. JWK / AJR	
DATE:	11-25-2015 / REV 12-30-2015	
PROJECT NO:	14160	
CHECKED BY:		
APPROVED BY:		
SHEET NO.:	**FIGURE 4**	

File: I:\Wangard Partners\14160 1st & Greenfield\060 CADIE - Environmental\Site Plan Map\14160-E-SITE.dwg



ENVIRONMENTAL KEY

- = GRAB SAMPLE
- = SOIL BORING
- = MONITORING WELL (FORMER)
- = TEST PIT
- = GEOPROBE SOIL BORING
- = TEMPORARY WELL
- = HSA SOIL BORING
- = MONITORING WELL
- = VAPOR PROBE

- = ESTIMATED EXTENT OF PETROLEUM HYDROCARBON FREE PRODUCT
- = ESTIMATED EXTENT OF PVOC AND/OR PAH IMPACTS ABOVE NR 140 ENFORCEMENT STANDARDS
- = ESTIMATED EXTENT OF PVOC IMPACTS ABOVE NR 140 PREVENTIVE ACTION LIMITS
- = ESTIMATED EXTENT OF CVOC IMPACTS ABOVE NR 140 ENFORCEMENT STANDARDS
- = ESTIMATED EXTENT OF CVOC IMPACTS ABOVE NR 140 PREVENTIVE ACTION LIMITS

REMEDIAL EXCAVATION NOTES:

- EXCAVATION AREA A: 55' WIDE x 80' LONG x 11' DEEP
- EXCAVATION AREA B: 25' WIDE x 30' LONG x 6' DEEP
- 3,476.34 TONS OF PETROLEUM CONTAMINATED SOIL EXCAVATED AND HAULED TO EMERALD PARK LANDFILL BETWEEN MAY 6-8, 2015.

NOTES:

1. BASE MAP BASED ON ALTA/ACSM LAND TITLE SURVEY COMPLETED BY SIGMA IN OCTOBER 2013. CURRENT SOIL BORING AND WELL LOCATIONS SURVEYED BY SIGMA WITH GPS EQUIPMENT AT TIME WORK WAS PERFORMED.
2. LOCATIONS OF PREVIOUS SOIL BORINGS AND MONITORING WELLS ARE APPROXIMATE AND ARE BASED ON PREVIOUS CONSULTANTS REPORTS EXCEPT FOR MW-5, MW-10, AND MW-10P IN NORTHEAST PORTION OF SITE WHICH WERE SURVEYED BY SIGMA. LOCATIONS OF HISTORIC BUILDINGS AND SITE FEATURES BASED ON SANBORN MAPS AND/OR CITY OF MILWAUKEE RECORDS CENTER PLANS. TO THE EXTENT POSSIBLE, THE SOIL BORINGS AND WELLS WERE CROSS-REFERENCED WITH MULTIPLE REPORTS TO BEST DETERMINE LOCATIONS.
3. THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD MARKINGS BY DIGGERS HOTLINE AND INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.
4. CONCEPTUAL REDEVELOPMENT PLAN BASED ON 10-15-2014 DRAWING FROM EPPSTEIN UHEN ARCHITECTS.

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

LEGEND

- SECTION 1/4 SECTION LINE
- PROPERTY LINE
- EASEMENT
- CHAIN LINK FENCE
- GUARD RAIL
- METAL FENCE
- WOOD FENCE
- TREE LINE
- OVERHEAD UTILITY LINE
- ELECTRIC
- TELEPHONE
- FIBER OPTIC
- CABLE TV
- SANITARY SEWER
- FORCE MAIN
- STORM SEWER
- WATER MAIN
- GAS
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- MANHOLE
- CATCH BASIN
- CATCH BASIN (ROUND)
- ROOF DRAIN
- HYDRANT
- WATER VALVE
- GAS VALVE
- UTILITY POLE
- GUY WIRE
- GAS METER
- ELECTRIC METER
- UTILITY PEDESTAL
- HANDHOLE
- TRAFFIC SIGNAL
- IRON PIPE FOUND/SET
- REBAR FOUND/SET
- CHISELED CROSS FOUND/SET
- PK NAIL FOUND/SET
- SPIKE/NAIL
- MONUMENT
- BENCHMARK
- SIGN
- DECIDUOUS TREE (Diameter)
- CONIFEROUS TREE (Diameter)
- POST
- SOIL BORING
- MONITORING WELL
- CULVERT END
- LIGHT POLE

FRESHWATER PLAZA
N.E.C. OF S. 1ST STREET & E. GREENFIELD AVENUE
MILWAUKEE, WISCONSIN

GROUNDWATER QUALITY MAP

BEARINGS REFERENCED TO THE WEST LINE OF THE SOUTHEAST 1/4 OF SECTION 32-7-22 BEARING N 01°31'36" W

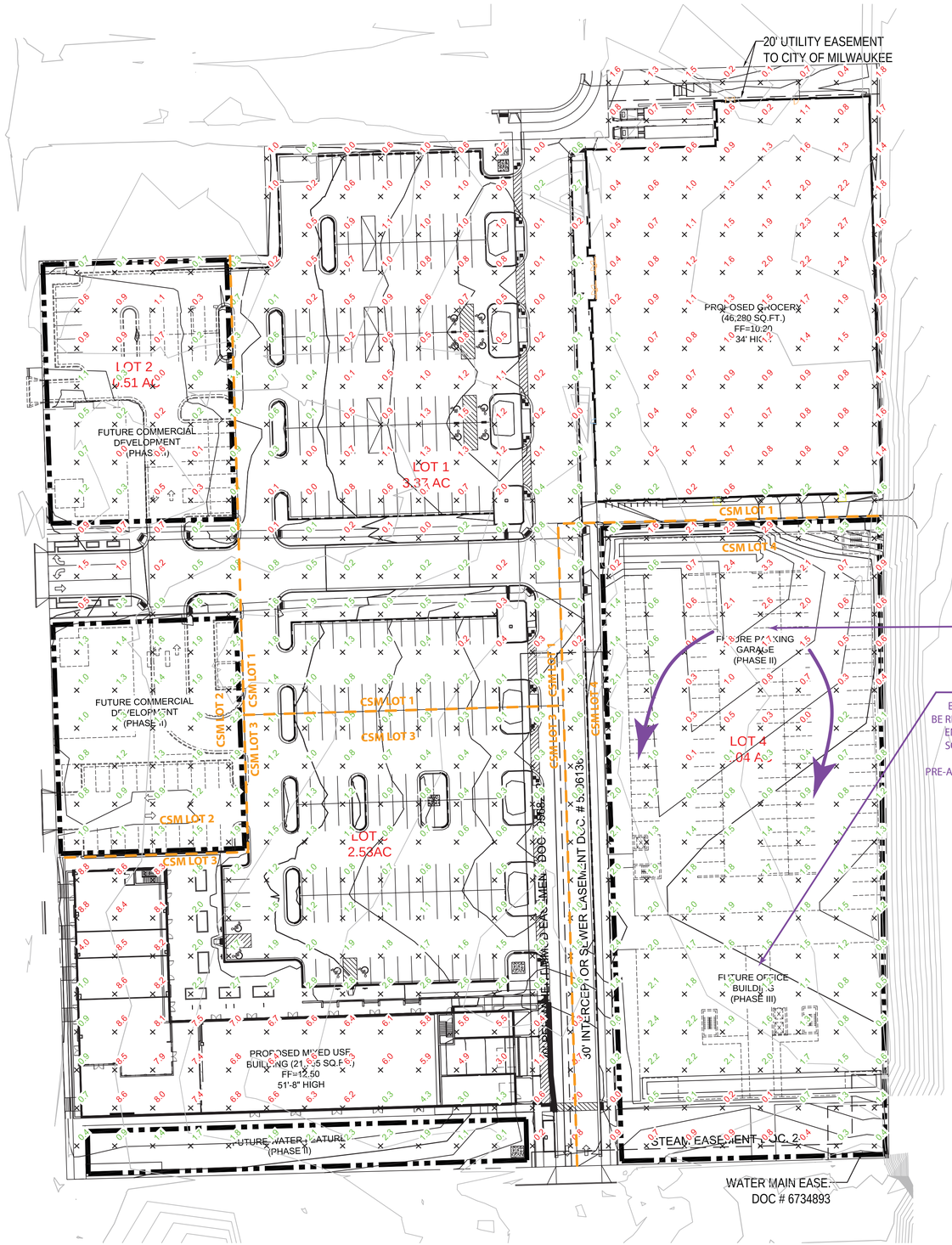
0 40' 80'

NO.	REVISION	DATE	BY

DRWNG NO. 14160 Site Plan Map AI Base Dec 2015.pdf
DRAWN BY: FPF / REV. JWK / AJR
DATE: 11-25-2015 / REV 12-30-2015
PROJECT NO: 14160
CHECKED BY:
APPROVED BY:
SHEET NO.:

FIGURE 5

File: I:\Wangard Partners\14160 1st & Greenfield\060 CADE - Environmental\Site Plan Map\14160-E-SITE.dwg



SOIL MOVEMENT FOR LOT 4:
INITIAL MASS GRADING:
EXCESS SOIL FROM GRADING TO BE MOVED TO LOW SPOTS ON LOT 4 TO RAISE THE SUBGRADE BENEATH THE FUTURE PARKING GARAGE.

FUTURE BUILDING CONSTRUCION:
EXCAVATED SOIL FROM LOT 4 BUILDING BASEMENT TO BE REUSED UNDER FUTURE PARKING GARAGE AND/OR OTHER ENGINEERED BARRIERS ON LOT 4 IF SPACE AVAILABLE. IF SOIL REUSE NOT FEASIBLE, SOIL TO BE TRANSPORTED TO AN ALTERNATIVE DISPOSAL SITE (PENDING WDNR PRE-APPROVAL) OR LICENSED LANDFILL FACILITY FOR DISPOSAL.

GRAPHIC SCALE
0 40' 80'

LEGEND:

- 5" THICK CONCRETE WALK (X / C400)
- ASPHALT SURFACE (X / C400)
- 5 — EXISTING CONTOUR
- 5 — PROPOSED CONTOUR
- 100.50 T/C 100.00 BTM — PROPOSED CURB & GUTTER SPOT GRADE T/C: TOP OF CURB GRADE BTM: BOTTOM OF CURB GRADE
- 100.00 — PROPOSED ASPHALT SPOT GRADE

GENERAL NOTES:

1. THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS DRAWING IS BASED ON FIELD LOCATIONS AND/OR RECORDS FURNISHED BY MUNICIPALITIES AND UTILITY COMPANIES. THE LOCATION AND ACCURACY OF WHICH CANNOT BE GUARANTEED. THERE MAY BE ADDITIONAL UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
2. VERIFY ACTUAL LOCATIONS AND INVERTS IN THE FIELD. ANY POTENTIAL ERRORS, OMISSIONS, OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
3. WORK TO BE COMPLETED IS INDICATED IN BOLD TYPE LINES AND EXISTING CONDITIONS ARE INDICATED BY LIGHT TYPE LINES.
4. ELECTRONIC CIVIL FILES ARE AVAILABLE UPON WRITTEN REQUEST. DO NOT USE ELECTRONIC CIVIL FILES TO LAYOUT FOUNDATIONS, COLUMN LINES, LIGHT POLES, OR OTHER NON CIVIL SITE WORK. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS OF BUILDING AND ARCHITECTURAL FEATURES.
5. DIMENSIONS ARE FROM FACE OF CURB OR EDGE OF PAVEMENT.
6. WORK WITHIN THE PUBLIC RIGHT OF WAY, INCLUDING BUT NOT LIMITED TO DRIVEWAY OPENINGS, SIDEWALK AND RAMPS, PAVING, AND CURB AND GUTTER SHALL BE COMPLETED PER MUNICIPAL AND/OR COUNTY REQUIREMENTS AND STANDARDS.
7. EARTHWORK SHALL BE IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.

TO OBTAIN LOCATIONS OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE

WIS STATUTE 182.0175(1974) REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

MILW. AREA 259-1181

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

LOT 4 - FRESHWATER PLAZA
MILWAUKEE, WISCONSIN

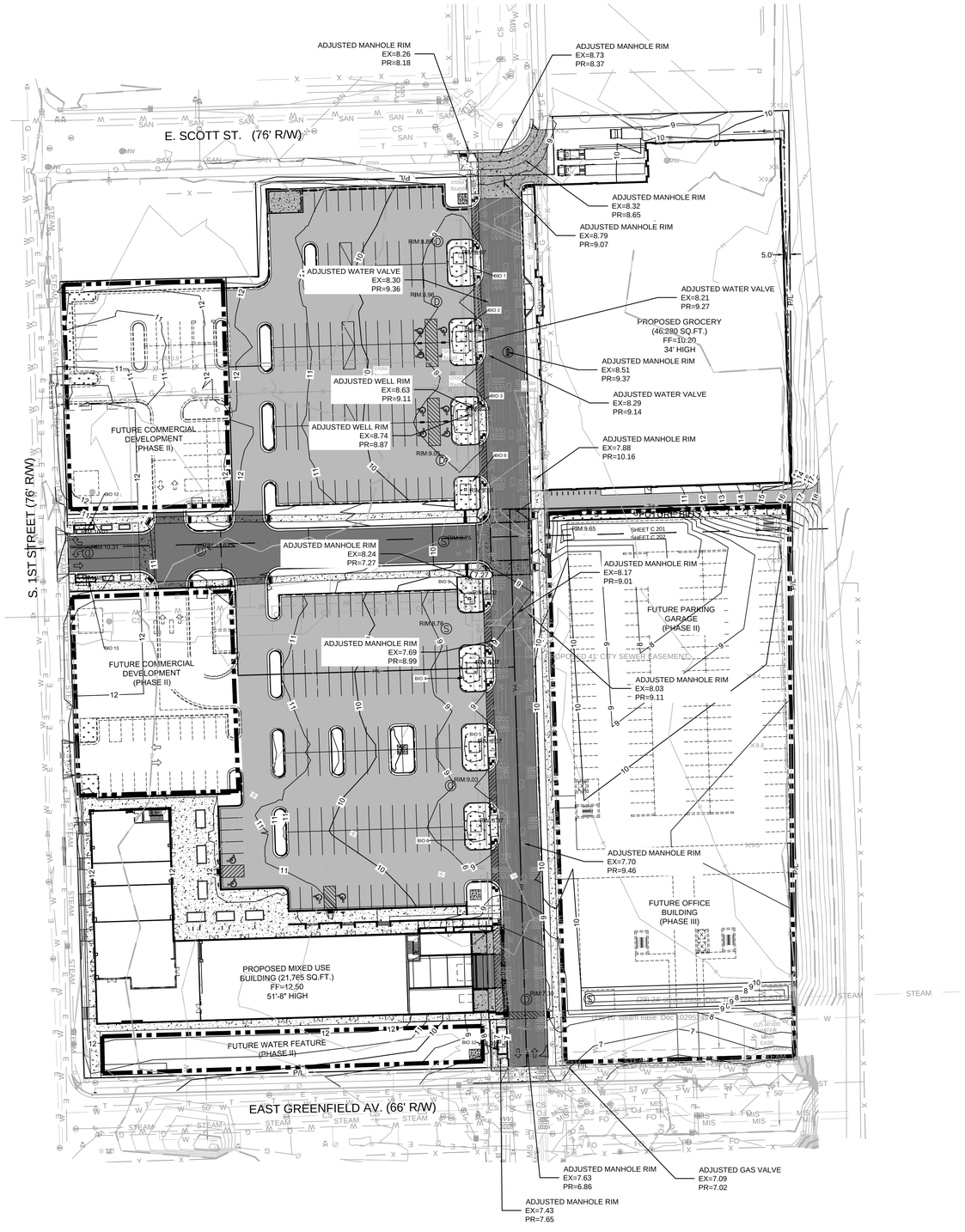
OVERALL CUT / FILL PLAN

NO.	REVISION	DATE	BY

DRAWING NO. 14160 Detailed Volume Calc.dwg
DRAWN BY:
DATE: 1-5-2016
PROJECT NO:
CHECKED BY:
APPROVED BY:
SHEET NO.:

C 200

File: I:\Wangard Partners\14160 1st & Greenfield\060 CAD\C - Civil\100 Modeling\Volume Calculations\14160 Detailed Volume Calc.dwg



GRAPHIC SCALE

0 40' 80'

LEGEND:

- CURB & GUTTER (ACCEPT) — A C401
- CURB & GUTTER (REJECT) — A C401
- CONCRETE WALK — B C401
- HEAVY DUTY CONCRETE SURFACE — C C401
- ASPHALT SURFACE — D C401
- HEAVY DUTY ASPHALT SURFACE — E C401
- PROPOSED BIOINFILTRATION — A C403, B C403, A C404
- 5 EXISTING CONTOUR
- 5 PROPOSED CONTOUR

GENERAL NOTES:

1. THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS DRAWING IS BASED ON FIELD LOCATIONS AND/OR RECORDS FURNISHED BY MUNICIPALITIES AND UTILITY COMPANIES. THE LOCATION AND ACCURACY OF WHICH CANNOT BE GUARANTEED. THERE MAY BE ADDITIONAL UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
2. VERIFY ACTUAL LOCATIONS AND INVERTS IN THE FIELD. ANY POTENTIAL ERRORS, OMISSIONS, OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
3. WORK TO BE COMPLETED IS INDICATED IN BOLD TYPE LINES AND EXISTING CONDITIONS ARE INDICATED BY LIGHT TYPE LINES.
4. ELECTRONIC CIVIL FILES ARE AVAILABLE UPON WRITTEN REQUEST. DO NOT USE ELECTRONIC CIVIL FILES TO LAYOUT FOUNDATIONS, COLUMN LINES, LIGHT POLES, OR OTHER NON CIVIL SITE WORK. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS OF BUILDING AND ARCHITECTURAL FEATURES.
5. DIMENSIONS ARE FROM FACE OF CURB OR EDGE OF PAVEMENT.
6. WORK WITHIN THE PUBLIC RIGHT OF WAY, INCLUDING BUT NOT LIMITED TO DRIVEWAY OPENINGS, SIDEWALK AND RAMPS, PAVING, AND CURB AND GUTTER SHALL BE COMPLETED PER MUNICIPAL AND/OR COUNTY REQUIREMENTS AND STANDARDS.
7. EARTHWORK SHALL BE IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
7. CONTAMINATED SOIL HAS BEEN IDENTIFIED WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT AS DESIGNATED ON PLAN SHEET SMP 1.0. BASED ON SOIL ANALYTICAL DATA, CONTAMINATION MAY BE ENCOUNTERED DURING EXCAVATION ACTIVITIES WITHIN THESE AREAS OF THE SITE. BE ADVISED THAT UNIDENTIFIED CONTAMINATION MAY BE PRESENT AT ADDITIONAL LOCATIONS WITHIN THE PROJECT LIMITS. SITE WORKERS TAKING PART IN EXCAVATION ACTIVITIES IN THESE AREAS WILL HAVE A REASONABLE PROBABILITY OF EXPOSURE TO POTENTIAL HEALTH HAZARDS ASSOCIATED WITH VOLATILE ORGANIC COMPOUNDS. LIKELY EXPOSURE ROUTES ARE SKIN CONTACT, INHALATION AND INGESTION. SITE WORKERS THAT HAVE A PROBABILITY OF EXPOSURE TO A HAZARDOUS MATERIAL WILL HAVE COMPLETED HEALTH AND SAFETY TRAINING THAT MEETS OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS. PREPARE A SITE-SPECIFIC HEALTH AND SAFETY PLAN COMPLYING WITH OSHA STANDARDS.
8. REFER TO SOIL MANAGEMENT DOCUMENT FOR ADDITIONAL ENVIRONMENTAL INFORMATION.

TO OBTAIN LOCATIONS OF PRIVATELY OWNED UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE
WIS STATUTE 182.0175(2)(a)
REQUIRES MIN. 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE
MILW. AREA 259-1181

THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS MAP IS BASED ON FIELD MARKINGS AND INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.

File: I:\Weingard Partners\141160 1st & Greenfield\060 CADC - Civil\500 Production - Civil Plans\505-Grading Plan\C200-GRADING.dwg

eppstein uhen : architects

milwaukee 333 East Chicago Street Milwaukee, Wisconsin 53202 telephone 414 .271 .5350

madison 222 West Washington Ave, Suite 650 Madison, Wisconsin 53703 telephone 608 .442 .5350

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

PROJECT INFORMATION

Freshwater Plaza - Mixed Use Building

1st and Greenfield
Milwaukee, Wisconsin

ISSUANCE AND REVISIONS

CONSTRUCTION DOCUMENTS

#	DATE	DESCRIPTION
1	11/13/15	BID PACKAGE #1 - FOOTING AND FOUNDATION PACKAGE

KEY PLAN

SHEET INFORMATION

PROJECT MANAGER	JBL
PROJECT NUMBER	14160
DATE	11/13/15

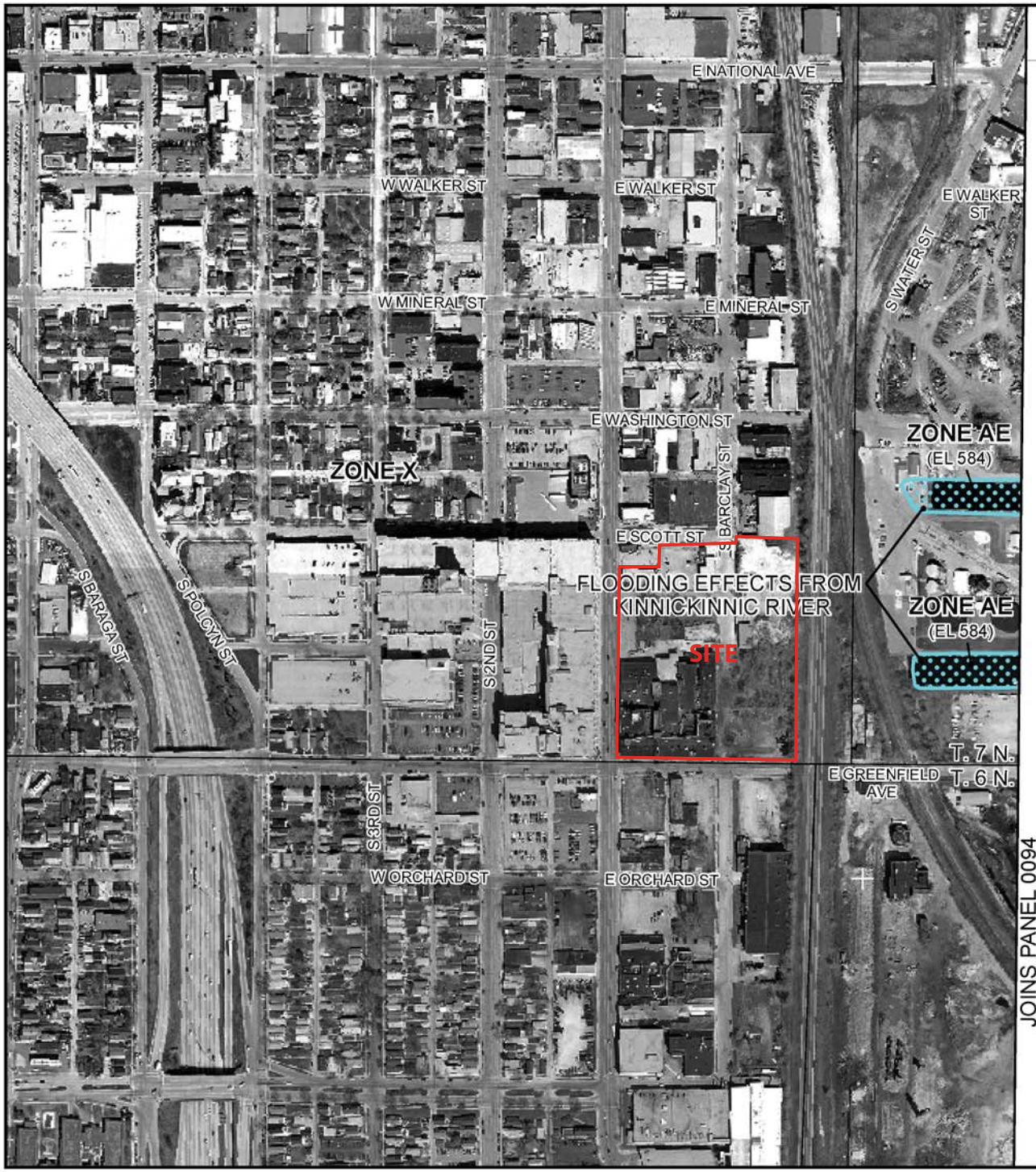
OVERALL GRADING PLAN

C 200

© Eppstein Uhen Architects, Inc.

ATTACHMENT 2

FLOOD INSURANCE RATE MAP



MAP SCALE 1" = 500'

250 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0093E

FIRM

FLOOD INSURANCE RATE MAP

MILWAUKEE COUNTY, WISCONSIN

AND INCORPORATED AREAS

PANEL 93 OF 300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MILWAUKEE, CITY OF	550278	0093	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
55079C0093E

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

ATTACHMENT 3

GROUNDWATER ELEVATION DATA

Table 1D
Water Level Elevations
Freshwater Plaza - Lot 4, CSM #8731: Northeast Corner of S. 1st Street & E. Greenfield Avenue, Milwaukee, Wisconsin
Sigma Project No. 14160

SMW-12

Ground Elev.: 589.5 (feet datum) Screen Interval: 4.9 to 14.9 (feet bgs)
TOC Elev.: 591.76 (feet datum) 584.6 to 574.6 (feet MSL)

Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet datum)	Depth to Groundwater (feet bgs)	Physical Observations
8/20/14	10.13	17.13	7.00	---	581.63	7.87	clear
9/16/14	10.30	NM	6.83	-0.17	581.46	8.04	
10/14/14	10.54	17.13	6.59	-0.24	581.22	8.28	clear
11/26/14	NM	NM	---	---	---	---	
4/21/15	9.45	17.10	7.65	1.06	582.31	7.19	clear
6/8/15	10.26	17.10	6.84	-0.81	581.50	8.00	turbid
10/1/15	10.27	17.10	6.83	-0.01	581.49	8.01	slightly turbid

SMW-15

Ground Elev.: 590.5 (feet datum) Screen Interval: 5.0 to 15.0 (feet bgs)
TOC Elev.: 592.63 (feet datum) 585.5 to 575.5 (feet MSL)

Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet datum)	Depth to Groundwater (feet bgs)	Physical Observations
8/20/14	10.85	17.12	6.27	---	581.78	8.72	clear
9/16/14	11.13	NM	5.99	-0.28	581.50	9.00	
10/14/14	11.39	17.12	5.73	-0.26	581.24	9.26	clear
11/26/14	NM	NM	---	---	---	---	
4/21/15	10.69	17.15	6.46	0.73	581.94	8.56	clear
6/8/15	NM	NM	---	---	---	---	
10/1/15	11.31	17.15	5.84	-0.62	581.32	9.18	clear

SMW-20

Ground Elev.: 587.2 (feet datum) Screen Interval: 4.9 to 14.9 (feet bgs)
TOC Elev.: 589.53 (feet datum) 582.3 to 572.3 (feet MSL)

Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet datum)	Depth to Groundwater (feet bgs)	Physical Observations
8/20/14	8.54	17.23	8.69	---	580.99	6.24	clear
9/16/14	8.83	NM	8.40	-0.29	580.70	6.53	
10/13/14	9.02	17.23	8.21	-0.19	580.51	6.72	clear
11/26/14	NM	NM	---	---	---	---	
4/21/15	8.39	17.20	8.81	0.60	581.14	6.09	clear
6/8/15	NM	NM	---	---	---	---	
10/1/15	8.95	17.20	8.25	-0.56	580.58	6.65	clear

Notes:
1. Ground surface and top of casing elevations surveyed by The Sigma Group, Inc.
2. feet MSL = feet above Mean Sea Level
3. feet bgs = feet below ground surface
4. feet TOC = feet below top of casing
5. NM = not measured
6. --- = information not presented or otherwise available in previous consultants' reports (or not caculated in tables above)