



Prepared for:
Redevelopment Authority of the
City of Milwaukee
Milwaukee WI

Prepared by:
AECOM
Milwaukee, WI
60223901
February 19, 2013

Preliminary Geotechnical Engineering Evaluation

**Century City Property
Redevelopment Authority of the City of Milwaukee
2725 West Hopkins Avenue
Milwaukee, Wisconsin**



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February 19, 2013

Mr. Benji Timm
Redevelopment Authority of the City of Milwaukee
809 North Broadway
Milwaukee, WI 53202

**Subject: Preliminary Geotechnical Engineering Evaluation
Century City Property B, Milwaukee, Wisconsin
AECOM Project No. 60223901**

Dear Mr. Timm;

AECOM is pleased to present this preliminary geotechnical engineering report for the captioned project. This report was developed based on review of the logs from soil borings that were completed on the site by AECOM and others.

The recommendations contained within this report are generalized and intended to provide a geotechnical overview of the site and the geotechnical engineering issues and recommendations which may be associated with potential future development of the site.

These recommendations are neither sufficient nor detailed enough for the design of any structures on the site. Additional explorations (i.e., borings), testing, and engineering analyses are necessary to provide final recommendations for design and construction of any proposed site improvements.

We appreciated this opportunity to be of service to you on this project. If you have any questions regarding our recommendations or if we can be of further assistance, please contact us.

Respectfully,

Aaron Humphrey, P.E.
Senior Project Engineer

Paul A. Tarvin, P.E.
Vice President

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- Proposed Detention Pond Borings (2011)
- Building 36 Rail Pit Borings (2010)
- Railroad Borings (2010)
- Borings DCD-155, 156, 157, 159 (2010)
- Borings DCD-MW3, MW4, MW5, SB36A, SB42 (2010)
- MW-1 (2002)

1.0 Project Overview

The Century City Property is located at 2725 West Hopkins Street in Milwaukee, Wisconsin and is bounded by West Capitol Drive on the north, West Townsend Street on the south, West Hopkins and North 27th Streets on the east, and Canadian Pacific Railroad tracks on the west.

The purposes of this report are to present the data from the existing soil borings that were already completed, summarize the available data, characterize the general soil and groundwater conditions based on the historical data, and provide general recommendations for foundation design and construction for future potential development of the site. Please note that this report is of a general nature and does not address specific geotechnical engineering issues for potential development and building construction. Additional geotechnical engineering evaluations will be required once development details are known.

2.0 Data Review

For the development of this geotechnical engineering report, AECOM reviewed existing soil boring data which was available for the site. AECOM did not perform any new explorations. The data listed below was reviewed by AECOM:

- Proposed Detention Pond Borings (2011) – These soil borings were performed by GESTRA Engineering, Inc., in September of 2011 in the northeast corner of the project site. These borings were drilled for the design of a proposed detention pond and were advanced to between 20 and 25 feet below the ground surface. Laboratory soil testing was performed which included: moisture content, gradation, Atterberg Limits, and organic content tests. Calibrated hand penetrometer measurements are provided for cohesive samples. These boring logs were transmitted in a report titled: “Geotechnical Engineering Report, Proposed Detention Pond, Former Tower Automotive Site, Milwaukee, WI, GESTRA Project No.: 11093-10” dated September 23, 2011.
- Building 36 Rail Pit Borings (2010) – These soil borings were performed by GESTRA Engineering, Inc., in March of 2010 at the southern end of the site. These borings were advanced for the design of a proposed rail pit and were advanced to approximately 39 feet below the ground surface. Laboratory soil testing was performed which included moisture content and one unconfined compression test performed on cohesive soils. Calibrated hand penetrometer measurements are provided for cohesive samples. These boring logs were transmitted in a report titled “Geotechnical Engineering Report, Century City – Building 36 Rail Pit, Milwaukee, WI, GESTRA Project No.: 10044-10” dated March 26, 2010.
- Railroad Borings (2010) – Five soil borings were performed in 2010 by GESTRA Engineering, Inc., under the direction of AECOM. These soil borings were performed at the southern end of the site along a railroad spur line and were each advanced to 15 feet below the existing ground surface. No report is available, but calibrated hand penetrometer measurements and moisture contents were provided for selected cohesive samples.
- Borings DCD-155, 156, 157, 159 (2010) – These four soil borings were advanced by GESTRA Engineering, Inc., in January of 2010 and were located near the southeast corner of the site. The borings were advanced to between 3 feet and 20 feet below the ground surface. No laboratory testing or reports are available, and calibrated hand penetrometer measurements were not provided.
- Borings DCD-MW3, MW4, MW5, SB36A, SB42 (2010) – These five soil borings were primarily advanced along the eastern and western sides of the project site during October of 2010 by GESTRA Engineering, Inc. or On-Site Environmental Services, Inc. The borings were advanced to between 14 feet to 16 feet below the ground surface. No laboratory testing or reports are available, and calibrated hand penetrometer measurements were not provided.
- MW-1 (2002) – This soil boring is located near the northwestern corner of the site and was drilled during October of 2002 by Mid-America Drilling. The boring was advanced to 18 feet

below the ground surface. No laboratory testing or reports are available, and calibrated hand penetrometer measurements were not provided.

All soil boring logs contained soil classification information and SPT-N values which were used by AECOM in our evaluation of the site. Other explorations and monitoring wells were drilled on the site; however, they lacked SPT-N values and were primarily well installation logs with little information of geotechnical significance. It is important to note that AECOM geotechnical engineers did not observe the soil borings, prepare the soil boring logs, or observe the soil samples. All recommendations and interpretations included within this report are based upon the information contained in boring logs, which, primarily, were provided by others.

3.0 Subsurface Conditions

The following is a brief summary of the subsurface conditions as documented in the boring logs. Detailed information of the soils encountered in each boring are presented on the enclosed soil boring logs located in Appendix B of this report. Additional variations to the generalized profiles discussed below were noted. We refer you to the individual boring logs attached for specific information at the borings locations. In addition, the borings that are available generally focus on the southern half of the project site, thus variations in the stratigraphy described below are likely.

Surface Conditions: Most of the boring locations encountered approximately 0.5 to 1.5 feet of concrete at the ground surface, although variations were noted.

Fill Soils: Non-engineered fill soil was identified as extending to an average depth of approximately 6 feet across the site. The deepest fill was observed in boring DCD-157 and extended to 18 feet below the ground surface. Fill was not observed in borings B-3, B-4, B-6, or DCD-155. In general, the fill was deepest near the southeast corner of the site where it typically extended to approximately 8 to 10 feet below the ground surface. The fill soils were of variable composition, but generally consisted of what is considered to be reworked clayey site soils with variable amounts of sand, gravel, brick, foundry sand, and organic materials. These fill soils are not suitable for foundation support.

Native Clayey Soils: The fill soils are generally underlain by native cohesive soils consisting of a mixture of silt and clay with trace to little amounts of sand and gravel. The soil is generally described as a lean clay (USCS: CL) although variations were noted in which the soils were described as silty clay or clayey silt (USCS: CL, CL-ML). Relatively thin layers of silt (USCS: ML) were observed near the top of this stratum in two of the borings. The soils was generally noted to be laminated and relatively thin (i.e., less than 2 feet thick) layers of silt and sand were observed in a few borings. In general, the native soils had SPT-N values ranging from 2 to 94 blows per foot (bpf) with an average of 21 bpf. The unconfined compressive strength of these soils based on calibrated hand penetrometer values ranged from 0.5 tons per square foot (tsf) to greater than 4.5 tsf. The consistency of the soils was generally in the very stiff range, with an average hand penetrometer value recorded of approximately 3.2 tsf. There was no discernible trend of increasing or decreasing stiffness with depth based on the available data. All of the borings terminated within this native stratum except for boring B-2 performed for the detention pond evaluation and the borings B-1 and B-2 performed for the railroad pit evaluation as discussed below.

Granular Stratum (Glacial Till): Dense granular soils (denoted as glacial till) were observed at a depth of approximately 16.5 feet below the ground surface in borings B-1 and B-2 performed for the proposed railroad pit, and at a depth of 23 feet in boring B-2 performed for the detention pond evaluation. These soils generally consisted of clayey sand soils (USCS: SC) with trace to little amounts of gravel, although a 5-foot thick layer of gravel (USCS: GP) was observed between 31.5 and 36.5 feet in boring B-1 performed for the proposed railroad pit. These soils ranged from dense to extremely dense with SPT-values ranging from 30 bpf to greater than 100 bpf, with a general overall increase in relative density with depth. On average, the soils were extremely dense with an average SPT-N value of approximately 85 bpf. The three borings which contained these soils were terminated within this layer.

No sinkholes or limestone caves were encountered, nor are they expected to be present in this area of the state.

Potential Contamination: During review of the boring logs, we observed that numerous positive photoionization detector (PID) readings were recorded on the various boring logs. It is beyond the scope of this report to provide a discussion or recommendations related to contamination issues.

Groundwater: Groundwater was encountered in the detention pond borings B-1 and B-2 at depths of 5.5 to 6 feet corresponding to an elevation of approximately 650 feet. Boring MW-1 indicated a groundwater depth of approximately 7 feet near elevation 660 feet. The remainder of the borings did not indicate the presence of groundwater. A groundwater elevation contour map published by AECOM in 2009 indicates that groundwater elevation on the site ranges from approximately elevation 662 feet to 650 feet (e.g., estimated 5 to 10 feet below the ground surface) based on sampling from numerous monitoring wells located on the property. It should also be noted that groundwater table elevations fluctuate due to seasonal variations in rainfall and surface run-off conditions. Therefore, the readings indicated on the boring logs may not be representative of the long-term hydrostatic groundwater table. Longer term monitoring of the groundwater levels in the numerous monitoring wells on site will provide a more accurate estimate of the groundwater table elevation.

4.0 Analysis and Recommendations

The following recommendations are based upon AECOM's review of the available boring logs. These recommendations are preliminary and are not suitable for design of any structures on the site. Additional soil borings and laboratory testing are necessary to evaluate the appropriateness of these recommendations with regard to any future developments.

4.1 Foundations

4.1.1 Spread Footings on Native Soils

In general, the existing fill soils are unsuitable for support of building foundations. The native moderate strength clayey site soils are suitable for the support of light to moderately loaded structures on spread footing foundations or on mat foundations. We anticipate that net allowable bearing pressures in the range of 2,000 psf to 6,000 psf may be used, depending upon the location, site specific soil conditions, and the type and structural loading of any structure, while likely maintaining total and differential settlements within acceptable levels. The net allowable soil bearing pressure refers to the pressure that can be transmitted to the bearing layer in excess of the final surrounding overburden pressure. Exterior foundations should be embedded a minimum of 5 feet below the finished exterior grade for frost protection. Interior foundations in heated areas could be supported at shallower elevations.

Additional explorations and testing, perhaps including pressuremeter and/or consolidation testing, should be performed to evaluate the bearing capacity along with the anticipated degree of settlement once the details of the proposed structures are known. In our experience, we believe that the soil is likely susceptible to a relatively low degree of consolidation settlement.

4.1.2 Fill Removal and Replacement

The non-engineered fill soils encountered in the borings are not suitable for support of conventional spread footings. In locations where fill soils are present below proposed foundation levels, it will be necessary to remove the fill soils and replace them with a compacted structural fill.

For the removal and replacement of unacceptable materials, the excavation should be oversized 1-foot horizontally for every 1-foot of vertical excavation required. The excavated fill soils should be replaced with a compacted structural soil fill consisting of reasonably well graded sand or a sand and gravel material having less than 12% by weight passing the No. 200 sieve size. This fill should be placed in lifts not to exceed 6 to 9 inches in loose thickness and be compacted to a minimum of 95% of the modified Proctor maximum dry density. Density tests should be taken to verify that the desired degree of compaction is achieved.

Once the excavation and replacement is completed, we anticipate that shallow spread footings can be placed on the structural fill at a net allowable bearing pressure in the range of 2,500 to 5,000 psf.

As discussed above, additional explorations and testing, including pressuremeter and/or consolidation testing, may be warranted to more accurately characterize the magnitude of post construction settlement under anticipated foundation loads.

4.1.3 Deep Foundations

It may be necessary to support more heavily loaded structures on deep foundations. Although insufficient data is available for the design or in-depth discussion of deep foundation options, it appears that the glacial till layer discussed above may provide a suitable bearing stratum for multiple pile or drilled shaft options. Because this layer was identified at relatively shallow depths (e.g., 16.5 feet below the ground surface) the use of intermediate foundation systems such as Geopiers or rammed aggregate columns may also provide cost effective methods of foundation support. The use of deep or intermediate foundations will require additional soil borings, testing, and analysis.

4.2 Floor Slabs

If the floor slabs are supported on structural fill overlying natural soils, the floor slabs can be cast at-grade with no additional site preparation required. However, it is recommended that the final 6 inches of fill consist of a sand or sand and gravel material having less than 5% by weight passing the No. 200 sieve size. The purpose of this material is to provide a capillary break between underlying fills and provide a leveling course prior to placing the concrete. If no floor treatments will be employed and a capillary break is not necessary, crushed base course material could be placed directly below the floor slab. If floor slab coverings are utilized, ACI recommendations should be followed for the use of floor coverings and vapor barriers. The floor slab should be isolated from walls and foundations to minimize cracking due to differential movements between the foundations and the floor slab.

The existing fill soils can likely be used to support floor slabs carrying a design load of up to 250 psf, provided the subgrade soils are properly prepared. This will require proofrolling the soils with a loaded dump truck or steel drum vibratory roller having a minimum weight of 20,000 pounds. The intent of the proofrolling is to detect any soft or compressible zones which exist at, or just below, the subgrade level. Any soft or compressible zones should be selectively undercut and backfilled with structural backfill, as recommended above. At a minimum, we recommend that 18 inches of newly placed structural backfill be placed over the existing fill soils to support the floor slab. The same recommendations for isolation of the floor slab from foundation walls and for the use of vapor barriers should be incorporated into the design as recommended above for placement of the slab on structural fill overlying natural soils.

4.3 Below Grade Walls

It is anticipated that basement structures are feasible for this site. The below grade walls will need to be designed to resist lateral earth pressures, and will require conventional perimeter and underslab drainage systems. We do not anticipate large volumes of groundwater seepage for temporary excavations or permanent below grade structures.

4.4 Seismic Site Classification

The Seismic Site Class, according to the International Building Code, is "D" due to the lack of sufficient soil data down to the required depth of 100-feet. Additional soil borings may potentially result in a modification of this site class, but it is not anticipated that the more restrictive site classes "E" nor "F" are applicable to the site.

4.5 Construction Considerations

Care should be exercised to minimize disturbance of soils at the base of the foundation excavations. Water should not be allowed to pond on the surface of the bearing soils, as this could cause a softening of the subgrade, particularly when subjected to construction traffic. Disturbed or loosened soils encountered at the base of the foundation excavations should be removed to a suitable undisturbed subgrade prior to concrete placement.

In addition, if construction proceeds during wet times of the year, such as the late fall or early spring, or if water is allowed to pond on the surface and soften the subgrade, some over-excavation may be required. In any areas where softened or disturbed soils are encountered, the subgrade soils should be recompact in-place, or excavations should extend through the unsuitable deposits to underlying competent soil.

Groundwater seepage and accumulation into shallow excavations is not anticipated to be a significant issue during construction. Standard sump pit and pumping techniques should be suitable to control groundwater accumulations on a localized basis during construction. In excavation areas where groundwater accumulates, a working surface of either crushed aggregate, crushed concrete or a lean concrete mud mat should be used.

5.0 General Qualifications

This report has been prepared in general accordance with normally accepted geotechnical engineering practices to aid in the evaluation of this site and to assist our Client in a general discussion of geotechnical conditions related to this project. We have prepared this report for the purpose intended by our Client, and reliance on its contents by anyone other than our Client is done at the sole risk of the user. No other warranty, either expressed or implied, is made. The scope is limited to the specific project and location described herein, and our description of the project represents our understanding of the significant aspects relevant to the geotechnical characteristics. In the event that any changes in the design or location of the facilities as outlined in this report are planned, we should be informed so that the changes can be reviewed and the conclusions of this report modified, as necessary, in writing by the geotechnical engineer. As a check, we recommend that we be authorized to review the project plans and specifications to confirm that the recommendations contained in this report have been interpreted in accordance with our intent. Without this review, we will not be responsible for the misinterpretation of our data, our analysis, and/or our recommendations, nor how these are incorporated into the final design.

The analysis and recommendations submitted in this report are based on the data obtained from the soil borings performed at the locations indicated on the location diagram and from the information discussed in this report. This report does not reflect any variations which may occur between the borings. In the performance of subsurface explorations, specific information is obtained at specific locations at specific times. However, it is a well-known fact that variations in soil and rock conditions exist on most sites between boring locations and that seasonal and annual fluctuations in groundwater levels will likely occur. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, it will be necessary for a re-evaluation of the recommendations contained in this report after performing on-site observations during the construction period and noting the characteristics of the variations.

The geotechnical engineer of record is the professional engineer who authored the geotechnical report. It is recommended that all construction operations dealing with earthwork and foundations be observed by the geotechnical engineer of record or the geotechnical engineer's appointed representative to confirm that the design requirements are fulfilled in the actual construction. For some projects, this may be required by the governing building code.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria, viruses, and the byproducts of such organisms) assessment of the site, or identification of or prevention of pollutants, hazardous materials, or conditions. Other studies beyond the scope of this project would be required to evaluate the potential of such contamination or pollution.

Appendix A

Figure 1 – Boring Location Plan



DRAWING NO. FIGURE 1	SHEET NO.	FILENAME basic site layout.dwg	PROJECT NO. 60223901	DATE 2/19/2013	CITY OF MILWAUKEE 2725 WEST HOPKINS MILWAUKEE, WISCONSIN		DRN BY: SAP	--1 INCH-- VERIFY SCALE IF PLAN SHEET IS REDUCED			
				DES BY:							
				CHK BY:							
				APP BY:							
				REV	DESCRIPTION		DRN	CHK	DATE		

Appendix B

Proposed Detention Pond Borings (2011)

Building 36 Rail Pit Borings (2010)

Railroad Borings (2010)

Borings DCD-155, 156, 157, 159 (2010)

Borings DCD-MW3, MW4, MW5, SB36A, SB42 (2010)

Boring MW-1 (2002)

Proposed Detention Pond Borings (2011)



SOIL BORING LOG

PAGE NUMBER

1 of 1

PROJECT NAME

Former Tower Auto. Detention Pond

DATE DRILLING STARTED _____

9/9/2011

BORING NUMBER	
---------------	--

B-1

PROJECT NUMBER

11093-10

DRILLING RIG

CME 75 (INT)

DRILLING METHOD

3 1/4" HSA

SURFACE ELEVATION

656.3 ft

BORING DRILLED BY

FIRM: Gestra
CREW CHIEF: A. Woerpel

FIELD LOG

B. Brown

NORTHING	
----------	--

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

3 1/4" HSA

SURFACE ELEVATION

656.3 ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q _u or Q _p) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1					CONCRETE (8")								P200= 98.7%
	12	2 2 3	5		FILL, sandy clay, trace asphalt pieces and organics, brown to dark brown, moist				1.50			18.1	
	12	1 2 2	4	5	651.3				1.50				
	18	0 1 2	3		LEAN CLAY, brown and gray mottled, moist, possible wet layer (Driller's observation), medium stiff to stiff	CL			1.50			27.6	
	18	2 3 4	7	10	646.3				0.50			23.7	
	18	2 3 5	8		LEAN CLAY, brown, moist, very stiff	CL			2.50	32	14	18.2	
SH - 6	18				LEAN CLAY, trace sand, gray, moist, stiff to very stiff				2.50	30	14	19	P200= 90.9%
SS - 7	18	4 5 6	11	20	636.3				1.00			11.2	
					End of Boring at 20.0'								
				25	631.3								
				30	626.3								

WATER & CAVE-IN OBSERVATION DATA

✓	WATER ENCOUNTERED DURING DRILLING: 6 ft.	☒	CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐ DRY ☒
✓	WATER LEVEL AT COMPLETION: 6 ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	WET ☐ DRY ☒
✓	WATER LEVEL AFTER 0 HOURS: N/A ft.			

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



Gestra Engineering Inc.
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Milwaukee, WI 53205
Phone: 414-933-7444, Fax: 414-933-7844

SOIL BORING LOG

PAGE NUMBER

1 of 1

PROJECT NAME

Former Tower Auto. Detention Pond

DATE DRILLING STARTED

9/9/2011

BORING NUMBER

B-2

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

9/9/2011

PROJECT NUMBER

11093-10

DRILLING RIG

CME 75 (INT)

BORING DRILLED BY

FIRM: Gestra
CREW CHIEF: A. Woerpel

FIELD LOG

B. Brown

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

3 1/4" HSA

SURFACE ELEVATION

656.7 ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q _u or Q _p) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1	9	2 1 3	4		ASPHALT (4") BASE COURSE (6") FILL, sandy clay with gravel, brown to dark brown, moist				1.00			24.7	
SS - 2	13	0 1 2	3	5 651.7	LEAN CLAY, dark brown, moist, stiff (BURIED TOPSOIL)	CL			1.00			38.2	LOI= 5.7%
SS - 3	18	0 1 1	2		CLAYEY SAND, brown, wet, very loose	SC						15.4	
SS - 4	15	2 3 11	14	10 646.7	SANDY CLAY, trace gravel, brown to dark brown, moist, medium stiff to very stiff	CL						13.5	P200= 65%
SS - 5	18	18 26 23	49									8.3	
SS - 6	18	14 10 8	18	15 641.7	LEAN CLAY, trace to with sand and gravel, gray, moist, hard				4.50	21	8	12.7	
SS - 7	14	30 44 50	94	20 636.7		CL						7.4	Attempted to push Shelby tube at 18 feet- No recovery
SS - 8	8	18 50/5"	50/5"	25 631.7	CLAYEY SAND WITH GRAVEL, gray, wet, very dense	SC							
					End of Boring at 25.0'								
				30 626.7									

WATER & CAVE-IN OBSERVATION DATA

▽	WATER ENCOUNTERED DURING DRILLING: 5.5 ft.	1/2	CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐ DRY ☐
▽	WATER LEVEL AT COMPLETION: 23.5 ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	WET ☐ DRY ☐
▽	WATER LEVEL AFTER 0 HOURS: N/A ft.			

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

Building 36 Rail Pit Borings (2010)



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Phone: 414-933-7444, Fax: 414-933-7844

SOIL BORING LOG

PAGE NUMBER

1 of 2

PROJECT NAME

Century City Building 36 - Rail Pit

DATE DRILLING STARTED

3/18/2010

BORING NUMBER

B-1

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/18/2010

PROJECT NUMBER

10044-10

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

4 1/4" HSA w/ RWB

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_{tip}) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1	10	13/1/1	2		CONCRETE (6")								
SS - 2	12	2/13/5/5	18		FILL, lean clay, some gravel, brown, moist							15	
SS - 3	14	4/4/4/4	8	5	LEAN CLAY, trace sand and gravel, brown with gray mottling, moist, very stiff (POSSIBLE FILL)	cl			2.50			27	
SS - 4	22	3/3/4/5	7		SANDY CLAY, with gravel, olive gray, moist, very stiff (POSSIBLE FILL)	cl			2.00			15	Slight odor smell in sample SS-4, odor does not appear to be fuel base.
SS - 5	24	4/3/6/8	9	10	LEAN CLAY, trace sand and gravel, brown, moist, very stiff				3.50			14	
						cl							Driller converted to mud rotary drilling at 10.0' bgs.
SH - 6	4			15	More sand observed in Sample SH-6				3.50			12	4" recovery from natural soil
SH - 7	0			20	CLAYEY SAND, with gravel, gray, moist, very dense (glacial till)	sc							No recovery from natural soil

WATER & CAVE-IN OBSERVATION DATA

☐	WATER ENCOUNTERED DURING DRILLING: N/A ft.	☐	CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
☐	WATER LEVEL AT COMPLETION: N/A ft.	☐	CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	DRY ☐
☐	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐
				DRY ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



Gestra Engineering Inc.
1626 W. Fond du Lac Avenue
Milwaukee, WI 53205
Phone: 414-933-7444, Fax: 414-933-7844

SOIL BORING LOG

PAGE NUMBER

2 of 2

PROJECT NAME

Century City Building 36 - Rail Pit

DATE DRILLING STARTED

3/18/2010

BORING NUMBER

B-1

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/18/2010

PROJECT NUMBER

10044-10

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

4 1/4" HSA w/ RWB

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_{ts}) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SH - 8	0			25	CLAYEY SAND, with gravel, gray, moist, very dense (glacial till)	sc							No recovery from natural soil
SS - 9	18	34/47/45/92	92	30								8.5	
SS - 10	18	27/31/50/5"	81/11"	35	fine GRAVEL, with coarse gravel and moist silty sand seam in sample SS-10, gray, wet, very dense	gp							
SS - 11	18	33/37/50/3"	87/9"	40	CLAYEY/ SILTY SAND, with gravel, gray, moist, very dense (glacial till)	sc/sm						8.6	
					End of Boring at 39'3"								

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: N/A ft.		CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
	WATER LEVEL AT COMPLETION: N/A ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	DRY ☐
	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐
				DRY ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



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SOIL BORING LOG

PAGE NUMBER

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PROJECT NAME

Century City Building 36 - Rail Pit

DATE DRILLING STARTED

3/18/2010

BORING NUMBER

B-2

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/18/2010

PROJECT NUMBER

10044-10

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

4 1/4" HSA w/ RWB

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_{tip}) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1	13	1/3/3/4	7		CONCRETE (8")								
SS - 2	18	3/2/4/3	6		FILL, lean clay, trace sand and gravel, moist, stiff to very stiff							25	
SS - 3	18	2/3/6/5	9	5	Color change to brown and gray mixed from 2.0' to 4.0'							19	Fuel odor present in sample SS-2
SS - 4	6	4/13/14/18	27									15	
SS - 5	24	4/12/18/23	30	10	LEAN CLAY, trace sand and gravel, brown, moist, hard	cl			4.50			12	
SH - 6	9			15	SILTY CLAY, with gravel, trace sand, gray, moist, very stiff	cl-mi			2.13			15	Driller converted to mud rotary drilling at 10.0' bgs.
SH - 7	4			20	CLAYEY SAND, with gravel, trace clay, gray, moist, dense to very dense (glacial till)	sc						10	Wet density= 148 pcf Dry density= 134 pcf 9" recovery from natural soil
													4" recovery from natural soil

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: N/A ft.		CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
	WATER LEVEL AT COMPLETION: N/A ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	DRY ☐
	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐
				DRY ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



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SOIL BORING LOG

PAGE NUMBER

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PROJECT NAME

Century City Building 36 - Rail Pit

DATE DRILLING STARTED

3/18/2010

BORING NUMBER

B-2

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/18/2010

PROJECT NUMBER

10044-10

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

4 1/4" HSA w/ RWB

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_{tip}) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 8		18/16/14/30	30	25	CLAYEY SAND, with gravel, trace clay, gray, moist, dense to very dense (glacial till)							10	
SS - 9		18/25/40/50/4"	65	30		SC						9.2	
SS - 10	18	31/38/50/5"	88/11"	35								7.9	
SS - 11	18	36/45/50/3"	95/9"	40	End of Boring at 39'3"							8.7	

WATER & CAVE-IN OBSERVATION DATA

☐	WATER ENCOUNTERED DURING DRILLING: N/A ft.	☐	CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
☐	WATER LEVEL AT COMPLETION: N/A ft.	☐	CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	DRY ☐
☐	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐
				DRY ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

Railroad Borings (2010)



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SOIL BORING LOG

PAGE NUMBER

1 of 1

PROJECT NAME

Century City Bldg. 38

DATE DRILLING STARTED

3/19/2010

BORING NUMBER

B-3

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/19/2010

PROJECT NUMBER

10044-60

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

2 1/4" HSA

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_p) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1					CONCRETE (6")								
	13	5/9/11	20		SILT, trace sand and gravel, brown with gray mottling, moist, medium dense	ML						15.8	
SS - 2	13	3/9/9	18	5	LEAN CLAY, with silt seams, brown with gray mottling, moist, very stiff to hard			4.50				17.2	
SS - 3	18	4/8/15	23		Color change to brown at 6.0'			4.50				12.0	
					Sand seam at 7.0'								
SS - 4	18	11/14/10	24	10	Color change to gray at 8.5'	CL		4.00				12.5	
SS - 5	18	4/8/9	17					4.50				16.0	
SS - 6	18	4/7/11	18	15				4.50				17.3	
				20	End of Boring at 15'0"								

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: N/A ft.		CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
	WATER LEVEL AT COMPLETION: N/A ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	WET ☐
	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



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SOIL BORING LOG

PAGE NUMBER

1 of 1

PROJECT NAME

Century City Bldg. 38

DATE DRILLING STARTED

3/19/2010

BORING NUMBER

B-4

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/19/2010

PROJECT NUMBER

10044-60

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

2 1/4" HSA

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_p) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1	18	5/5/8	13		CONCRETE (6")								
					LEAN CLAY, trace sand and gravel, brown with gray mottling, moist, stiff to hard				4.50			18.8	
SS - 2	18	7/14/12	26	5					4.50			20.8	
SS - 3	18	7/7/8	15		Increase in silt content from 6.0' to 8.5'				4.00			17.0	
SS - 4	18	3/7/5	12	10	Color change to gray at 8.5'	CL			1.50			14.5	
SS - 5	18	5/7/8	15						2.50			19.5	
SS - 6	18	3/5/7	12	15					3.00			20.5	
				20	End of Boring at 15'0"								

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: N/A ft.		CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
	WATER LEVEL AT COMPLETION: N/A ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	WET ☐
	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



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SOIL BORING LOG

PAGE NUMBER

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PROJECT NAME

Century City Bldg. 38

DATE DRILLING STARTED

3/19/2010

BORING NUMBER

B-5

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/19/2010

PROJECT NUMBER

10044-60

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

2 1/4" HSA

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_p) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1	12	2 3/5	8		CONCRETE (6")								
					FILL, lean clay, trace sand, gravel and foundry sand, dark brown, moist							23.2	
SS - 2	15	5 8/10	18	5	SILT, trace sand and gravel, brown with gray mottling, moist, medium dense	ML						11.4	
SS - 3	16	3 5/9	14		LEAN CLAY, trace sand and gravel, brown, moist, very stiff to hard				2.50			11.5	
SS - 4	18	5 10/14	24	10	Color change to brown at 8.5'	CL			4.50			17.7	
SS - 5	18	6 11/19	30		Color change to gray at 11.0'				4.50				
SS - 6	18	30 14/15	29	15	SAND, with gravel and clay and silt, seams, gray, moist, medium dense	SP						17.3	
					End of Boring at 15'0"								
				20									

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: N/A ft.		CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
	WATER LEVEL AT COMPLETION: N/A ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	WET ☐
	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



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SOIL BORING LOG

PAGE NUMBER

1 of 1

PROJECT NAME

Century City Bldg. 38

DATE DRILLING STARTED

3/19/2010

BORING NUMBER

B-6

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/19/2010

PROJECT NUMBER

10044-60

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

2 1/4" HSA

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_p) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1					CONCRETE (18")								
	10	5/5/5	10		LEAN CLAY, trace sand and gravel, brown and gray mottled, moist, stiff to hard				2.50			23.4	
SS - 2													
	15	2/3/4	7	5					3.50			23.6	
SS - 3													
	18	3/2/8	10			CL			1.50			14.2	
SS - 4					Color change to brown at 8.5'								
	15	5/12/19	31	10					4.50			15.5	
SS - 5													
	18	5/10/17	27		fine SAND, with clay and silt seams, gray, moist, medium dense	SP-SC							
SS - 6													
	18	5/13/23	36	15	SILTY CLAY, with sand and gravel, gray, moist, dense	CL-ML						7.9	Unable to get Q_p
				20	End of Boring at 15'0"								

WATER & CAVE-IN OBSERVATION DATA



WATER ENCOUNTERED DURING DRILLING: N/A ft.



CAVE DEPTH AT COMPLETION: N/A ft.

WET ☐

DRY ☐



WATER LEVEL AT COMPLETION: N/A ft.



CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.

WET ☐

DRY ☐

WATER LEVEL AFTER 0 HOURS: N/A ft.

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



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SOIL BORING LOG

PAGE NUMBER

1 of 1

PROJECT NAME

Century City Bldg. 38

DATE DRILLING STARTED

3/19/2010

BORING NUMBER

B-7

PROJECT LOCATION

Milwaukee, WI

DATE DRILLING ENDED

3/19/2010

PROJECT NUMBER

10044-60

DRILLING RIG

CME 75

BORING DRILLED BY

FIRM: Gestra Engineering, Inc.
CREW CHIEF: A. Woerpel

FIELD LOG

S. Nealy

NORTHING

LAB LOG / QC

E. Jeske

EASTING

DRILLING METHOD

2 1/4" HSA

SURFACE ELEVATION

ft

Number and Type	Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation	Soil Description and Geological Origin for Each Major Unit	USCS Classification	Graphic	Well Diagram	Unconfined Comp. Strength (Q_u or Q_p) (tsf)	Liquid Limit	Plasticity Index	Moisture Content (%)	Comments
SS - 1	12	3/4/8	12		CONCRETE (6")								
					FILL, lean clay, trace sand and gravel, brown mixed with black and gray, moist							19.1	
SS - 2	15	2/3/4	7		Color change to dark gray mixed with black at 3.5'							24.6	
				5									
SS - 3	14	2/3/5	8		LEAN CLAY, trace sand and gravel, brown with gray mottling, moist, stiff to hard Thin sand seam in sample SS-3				1.00			16.9	
SS - 4	16	3/8/11	19		Color change to brown at 8.5'				3.50			15.0	
				10									
SS - 5	18	4/7/12	19		Color change to gray at 11.0'	CL			4.50			17.2	
SS - 6	18	5/9/13	22						4.50			16.9	
				15									
				20	End of Boring at 15'0"								

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: N/A ft.		CAVE DEPTH AT COMPLETION: N/A ft.	WET ☐
	WATER LEVEL AT COMPLETION: N/A ft.		CAVE DEPTH AFTER HOURS: N/A ft., 0 hrs.	WET ☐
	WATER LEVEL AFTER 0 HOURS: N/A ft.			WET ☐

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

Borings DCD-155, 156, 157, 159 (2010)

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-155
Boring Drilled By: Name of crew chief (first, last) and Firm R. Filbrandt Gestra			Date Drilling Started 1/14/2010	Date Drilling Completed 1/14/2010	Drilling Method 4 1/4-inch ID HSA with 2-foot long split spoon sampler
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 8.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N, E S/C/N 1/4 of 1/4 of Section , T N, R			Local Grid Location Lat _____ ° _____ ' _____ " _____ " Long _____ ° _____ ' _____ " _____ " Feet ☐ N ☐ E Feet ☐ S ☐ W		

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
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Sample			Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)	Compressive Strength								Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 SS	24 15	1 3 3 3	1	UNIT 1. CONCRETE FROM 0.0 TO 0.6 FEET.	Concrete										
2 SS	12 0	12 0	2	UNIT 1. Loose; White (10YR 8/1); POORLY GRADED GRAVEL (GP); moist; non plastic; non cohesive; massive; fill.	GP										
			3	END OF BORING AT 3.0 FEET.											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm AECOM	Tel: Fax:
-----------	------------	--------------

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-156
Boring Drilled By: Name of crew chief (first, last) and Firm R. Filbrandt Gestra			Date Drilling Started 1/14/2010	Date Drilling Completed 1/14/2010	Drilling Method 4 1/4-inch ID HSA with 2-foot long split spoon sampler
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 8.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N, E S / C / N			Local Grid Location ☐ N ☐ E ☐ S ☐ W		
1/4 of Section T N, R			Long Feet		

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 SS	24 18	0 7 5 7	1	UNIT 1. CONCRETE FROM 0.0 TO 0.5 FEET.	Concrete									
				UNIT 1. Medium dense; White (10YR 8/1); POORLY GRADED GRAVEL (GP); moist; non plastic; non cohesive; massive; fill	GP			0.3						
2 SS	24 .5	3 3 5 6	2	UNIT 1. Stiff; Reddish brown (5YR 5/3); SANDY LEAN CLAY (CL); moist; slight cohesive; some sand; few gravel; fill										
			3	-As above from 1.0 to 2.0 feet, but consistency becomes medium.				0.1						
3 SS	24 12	4 9 9 9	4	-As above from 1.0 to 4.0 feet, but consistency becomes very stiff.										
			5		CL			0.1						
4 SS	24 24	4 7 7 8	6	-As above from 1.0 to 6.0 feet, but consistency becomes stiff.										
			7					0.0						
5 SS	24 24	8 13 15 19	8	-As above from 1.0 to 8.0 feet, but consistency becomes very stiff.										
			9					0.0						
6 SS	24 24	10 16 20 22	10	UNIT 2. Very stiff; Pale brown (10YR 6/3); SANDY LEAN CLAY (CL); moist; cohesive; low to moderate plasticity; some sand; trace gravel; diamicton.	CL									
			11					0.0						
			12											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm AECOM	Tel: Fax:
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Page 2 of 2

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
7 SS	24 24	5 8 13 21	13	UNIT 2. Very stiff; Pale brown (10YR 6/3); SANDY LEAN CLAY (CL); moist; cohesive; low to moderate plasticity; some sand; trace gravel; diamicton. <i>(continued)</i>	CL			0.0						
8 SS	24 24	6 12 12 18	14 15	UNIT 4. Very stiff; Gray (10YR 5/1); SANDY LEAN CLAY (CL); wet; slightly cohesive; low plasticity; some sand; few gravel; diamicton.					0.1					
9 SS	24 24	10 15 15 28	16 17		CL									
10 SS	24 .5	15 40 40 55	18 19	-As above from 15.0 to 18.0 feet, but consistency becomes hard.										
			20	END OF BORING AT 20.0 FEET.										

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-157
Boring Drilled By: Name of crew chief (first, last) and Firm R. Filbrandt Gestra			Date Drilling Started 1/14/2010	Date Drilling Completed 1/14/2010	Drilling Method 4 1/4-inch ID HSA with 2-foot long split spoon sampler
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 8.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N, E S/C/N			Lat ° ' " Long ° ' "		Local Grid Location ☐ N ☐ E ☐ S ☐ W
1/4 of Section T N, R					

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
-------------	----------------------------	--------------------------	---

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 SS	24 24	0 0 1 2	1	UNIT 1. CONCRETE FROM 0.0 TO 0.7 FEET.	Concrete									
				UNIT 1. Very soft; White (10YR 8/1); POORLY GRADED GRAVEL (GP); moist; non plastic; non cohesive; massive; fill	GP									
2 SS	24 .5	5 9 6 3	2 3	UNIT 1. Stiff; Dark brown (10YR 3/3); CLAYEY SAND (SC); moist; low plasticity; slightly cohesive; massive; fill	SC			0.0						
3 SS	24 12	4 3 3 4	4 5	-As above from 2.0 to 4.0 feet, but consistency becomes medium.				0.3						
4 SS	24 18	1 2 3 7	6 7					0.7						
5 SS	24 24	2 7 9 14	8 9	-As above from 2.0 to 8.0 feet, but consistency becomes very stiff.				0.0						
6 SS	24 24	4 18 14 18	10 11	-As above from 2.0 to 10.0 feet, but consistency becomes hard.				0.0						
			12											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm AECOM	Tel: Fax:
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Page 2 of 2

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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-159
Boring Drilled By: Name of crew chief (first, last) and Firm R. Filbrandt Gestra			Date Drilling Started 1/14/2010	Date Drilling Completed 1/14/2010	Drilling Method 4 1/4-inch ID HSA with 2-foot long split spoon sampler
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 8.25 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐	State Plane N, E S / C / N	Lat ° ' "	Local Grid Location ☐ N ☐ E ☐ S ☐ W
1/4 of	1/4 of Section , T N, R	Long ° ' "	Feet ☐ S ☐ W

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 SS	24 18	0 1 1 7	1	UNIT 1. CONCRETE FROM 0.0 TO 0.8 FEET.	Concrete									
				UNIT 1. Very soft; Dark brown (10YR 3/3) mottled with gray (10YR 5/1) and yellowish red (5YR 5/6); SANDY LEAN CLAY (CL); moist; medium plasticity; slight cohesive; some sand; trace gravel; fill				0.2						
2 SS	24 12	2 4 13 5	2 3	-As above from 0.8 to 2.0 feet, but consistency becomes very stiff.	CL			0.0						
3 SS	24 18	5 3 4 5	4 5	-As above from 0.8 to 4.0 feet, but consistency becomes medium.				0.1						
4 SS	24 24	0 1 3 4	6 7	UNIT 1. Soft; Light reddish brown (5YR 6/3) mottled with gray (10YR 5/1) and yellowish red (5YR 5/6); SANDY LEAN CLAY (CL); wet; moderate to high plasticity; cohesive; some sand; fill	CL			0.0						
5 SS	24 24	5 7 7 9	8 9	-As above from 6.0 to 8.0 feet, but consistency becomes stiff.										
				UNIT 2. Stiff; Light reddish brown (5YR 6/3); SANDY LEAN CLAY (CL); moist; low plasticity; slightly cohesive; some sand; few gravel; diamicton.	CL			0.0						
6 SS	24 24	4 6 13 13	10 11	-As above from 8.5 to 10.0 feet, but consistency becomes very stiff.										
				UNIT 4. Very stiff; Reddish brown (10YR 5/3); LEAN CLAY (CL); moist; medium plasticity; cohesive; trace sand and gravel; diamicton.	CL			0.1						

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Page 2 of 2

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Borings DCD-MW3, MW4, MW5, SB36A, SB42 (2010)

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-MW3
Boring Drilled By: Name of crew chief (first, last) and Firm A. Woerpel Gestra			Date Drilling Started 10/12/2009	Date Drilling Completed 10/12/2009	Drilling Method 4 1/4-inch ID HSA with direct push technology
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 8.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N, E S / C / N			Local Grid Location ☐ N ☐ E ☐ S ☐ W		
1/4 of Section T N, R			Long Feet		

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 SS	24 20.40	2 3 5 7	1	UNIT 1. Medium; Black (10YR 2/1); LEAN CLAY WITH SAND (CL); moist; low plasticity; cohesive; massive; little sand; few gravel; trace brick; fill. -As above from 0.0 to 2.0 feet, but consistency becomes stiff	GP			4.1						
2 SS	24 18	4 4 5 9	2 3					2						
3 SS	24 21.60	4 9 12 11	4 5	Very stiff; pale brown (10Y R6/3) mottled with very pale brown (10YR 8/3) and yellow (10YR 7/6) ORGANIC SOIL (OL); dry; low plasticity; slightly cohesive; trace plant roots; organic soil.										
4 SS	24 22.80	4 8 9 10	6 7	UNIT 3. Very stiff; yellowish brown (10YR 5/4) laminated with gray (10YR 5/1); LEAN CLAY (CL); moist; medium plasticity; cohesive; laminated; lacustrine.	CL			3.9						
5 SS	24 22.80	4 6 8 9	8 9											
6 SS	24 24	2 4 8 9	10 11	UNIT 4. Stiff; Gray (10YR 5/1); LEAN CLAY (CL); moist; low to medium plasticity; cohesive; massive; trace sand and gravel; diamicton.	CL			3.7						

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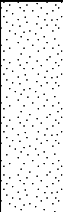
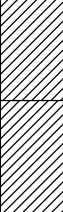
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-MW4
Boring Drilled By: Name of crew chief (first, last) and Firm A. Woerpel Gestra			Date Drilling Started 10/14/2009	Date Drilling Completed 10/14/2009	Drilling Method 4 1/4-inch ID HSA with 2-inch dia. by 2-foot long split spoon sampler
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 8.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N, E S/C/N 1/4 of 1/4 of Section , T N, R			Local Grid Location Lat _____° _____' _____" Long _____° _____' _____" Feet ☐ N ☐ E ☐ S ☐ W		

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 SS	24 16	5 4 3 3	1	UNIT 1. Loose; black (10YR 2/1); POORLY GRADED SAND (SP); moist; non plastic; non cohesive; massive; trace gravel; trace brick; fragments; fill.	SP			17.5						
2 SS	24 11	2 3 2 2	2											
3 SS	24 23	2 2 3 4	3	UNIT 1. Medium; Gray (10YR 6/1) mottled with olive yellow (2.5Y 6/6); LEAN CLAY WITH SAND (CL); wet; low to medium plasticity; cohesive; massive; little sand; trace gravel; trace debris; fill.	CL			34.6						Strong hydrocarbon odor, sheen
4 SS	24 20	5 4 6 6	4											
5 SS	24 11	3 8 20 22	5	UNIT 2. Medium; Gray (2.5Y 6/1) mottled with olive yellow (2.5Y 6/6) and brown yellow (10YR 6/6); LEAN CLAY WITH SAND (CL); wet; low to medium plasticity; cohesive; massive; few sand; trace gravel; diamicton.	CL			88.6						
6 SS	24 14	6 16 15 15	6	UNIT 3. Firm; Reddish brown (5YR 5/3) LEAN CLAY (CL) interbedded with light greenish gray (10Y 7/1) and dark yellowish brown (10YR 4/6) SILT (ML); moist to wet; medium to high plasticity; cohesive; laminated; lacustrine.	CL			16.9						
			7											
			8											
			9											
			10											
			11											
			12	UNIT 3. Hard; Brown (7.5YR 5/3); LEAN CLAY (CL); moist to wet; medium to high plasticity; cohesive; laminated; lacustrine.	CL			42.9						Strong hydrocarbon odor
								43.2						

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
7 SS	24 23	3 6 10 14	13	UNIT 3. Hard; Brown (7.5YR 5/3); LEAN CLAY (CL); moist to wet; medium to high plasticity; cohesive; laminated; lacustrine. <i>(continued)</i>	CL			15.2						
8 SS	24	6 25 39 11	14	UNIT 4. Very stiff; Dark gray (10YR 4/1); LEAN CLAY WITH SAND (CL); moist; medium plasticity; cohesive; massive; few sand; trace gravel; diamicton.	CL									11.2
			15											
			16	END OF BORING AT 16.0 FEET.										

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-MW5
Boring Drilled By: Name of crew chief (first, last) and Firm D. Harvey On-Site Environmental			Date Drilling Started 10/14/2009	Date Drilling Completed 10/14/2009	Drilling Method 4 1/4-inch ID HSA with 2-foot long split spoon sampler
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 8.25 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐	State Plane N, E S / C / N	Lat ° ' "	Local Grid Location ☐ N ☐ E ☐ S ☐ W
1/4 of	1/4 of Section , T N, R	Long ° ' "	Feet ☐ S ☐ W

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 SS	24 14.40	2 3 2 2	1	UNIT 1. Loose; Brown (10YR 4/3); POORLY GRADED GRAVEL WITH SAND (GP); moist; non plastic; non cohesive; massive; little sand; fill	GP										
2 SS	24 21.60	4 7 8 9	2	UNIT 2. Medium; Gray (10YR 6/1) mottled with brownish yellow (10Y R6/6); LEAN CLAY WITH SAND (CL); moist; medium plasticity; cohesive; massive; little sand; trace gravel; diamicton. -As above from 1.1 to 2.0 feet, but consistency becomes stiff.	CL			6.7							
3 SS	24 24	9 8 14 16	4	UNIT 2. Very stiff; Yellowish brown (10YR 5/4) mottled with strong brown (7.5YR 4/1); LEAN CLAY (CL); massive; trace sand and gravel; diamicton.	CL			7.4							Hydrocarbon odor
4 SS	24 24	5 6 10 12	6	UNIT 3. Very stiff; Brown (7.5YR 5/3); LEAN CLAY (CL); moist; medium to high plasticity; cohesive; faintly laminated; lacustrine.	CL			13.4							Strong hydrocarbon odor
5 SS	24 21.60	2 4 6 9	8		CL			15.4							
6 SS	24 24	2 3 6 7	10		CL			14.7							

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Signature	Firm AECOM	Tel: Fax:
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Page 2 of 2

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
7 SS	24 24	2 3 5 6	13	UNIT 3. Very stiff; Brown (7.5YR 5/3); LEAN CLAY (CL); moist; medium to high plasticity; cohesive; faintly laminated; lacustrine. <i>(continued)</i>	CL									
			14	UNIT 4. Medium; Dark gray (10YR 4/1); SANDY LEAN CLAY (CL); wet; low to medium plasticity; cohesive; massive; some sand; trace gravel; diamicton. END OF BORING AT 14.0 FEET.	CL									

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-SB36A	
Boring Drilled By: Name of crew chief (first, last) and Firm A. Woerpel Gestra			Date Drilling Started 10/13/2009	Date Drilling Completed 10/13/2009	Drilling Method 4 1/4-inch ID HSA	
WI Unique Well No.	DNR Well ID No.	Common Well Name TW-36A	Final Static Water Level Feet MSL		Surface Elevation Feet MSL	Borehole Diameter 2.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N, E S/C/N NE 1/4 of 1/4 of Section 12, T 7 N, R 21 E			Lat _____ ° _____ ' _____ " Long _____ ° _____ ' _____ "		Local Grid Location ☐ N ☐ E ☐ S ☐ W	
Facility ID		County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI		

Sample			Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)	Compressive Strength								Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 GP	60 55		1 2 3 4 5	UNIT 1. Black (10YR 2/1) to brown (10YR 5/3); POORLY GRADED SAND WITH GRAVEL (SP); moist; non plastic; non cohesive; massive; little gravel; trace bricks; fill. -Referenced soil description DCD-SB36 from 0.0 to 5.0 feet	SP		0.0 0.0								
2 SS	24 22.80	3 4 8 10	6 7 8 9	UNIT 1. Stiff; Yellowish brown (10YR 5/4) mottled with light gray (10YR 7/1) and olive yellow (2.5Y 6/6); LEAN CLAY (CL); moist; medium plasticity; cohesive; massive; trace sand and gravel; diamicton.	CL		1 11.2								
3 SS	24 24	4 7 7 9	10 11	UNIT 4. Stiff; Light yellowish brown (10YR 6/4) with strong brown (7.5Y 4/6); LEAN CLAY WITH SAND (CL); moist; medium plasticity; cohesive; massive; little sand; trace gravel; diamicton.	CL										
4 SS	24 24	4 7 8 11	12												
5 SS	24 24	6 11 16													

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm AECOM	Tel: Fax:
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
6 SS	24 22.80	27			CL									
		13	UNIT 3. Very stiff; Reddish brown (5YR 5/3); LEAN CLAY (CL) interbedded with light greenish gray (10Y 7/1) and dark yellowish brown (10YR 4/6) SILT (ML); moist to wet; medium to high plasticity; cohesive; laminated; lacustrine. UNIT 4. Very stiff; Dark gray (10YR 4/1); LEAN CLAY (CL); moist; medium plasticity; cohesive; massive; trace sand and gravel; diamicton. -Becomes hard at 13.0 feet END OF BORING AT 15.0 FEET.	CL										
		14		CL										
		15												

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name 3533 N. 27th Street-Phase II			License/Permit/Monitoring Number		Boring Number DCD-SB42
Boring Drilled By: Name of crew chief (first, last) and Firm D. Harvey On-Site Environmental			Date Drilling Started 10/13/2009	Date Drilling Completed 10/13/2009	Drilling Method 2 1/4-inch dia. Geoprobe with direct push technology
WI Unique Well No.	DNR Well ID No.	Common Well Name DCD-SB42	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.25 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N, E S/C/N NE 1/4 of 1/4 of Section 12, T 7 N, R 21 E			Local Grid Location ☐ N ☐ E ☐ S ☐ W		

Facility ID	County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee, WI
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 GP	60 55		1	Reddish brown (5YR 5/3); POORLY GRADED SAND WITH GRAVEL (SP); moist; non plastic; non cohesive; massive; little gravel; fill. -References soil description DCD-SB-42 from 0.0 to 5.0 feet	SP			0.0						
2 SS	24 24	4 6 8 8	5 6 7 8	UNIT 1. Stiff; Light olive brown (2.5Y 5/3); LEAN CLAY WITH SAND (CL); moist; low plasticity; cohesive; massive; little sand; fill.	CL			3.4						
3 SS	24 21.60	4 4 7 10	7 8 9 10	UNIT 2. Stiff; Yellowish brown (10YR 5/4) mottled with strong brown (7.5YR 4/6); LEAN CLAY WITH SAND (CL); moist; low to medium plasticity; cohesive; massive; little sand; diamicton.	CL			0.4						
4 SS	24 22.80	6 8 9 23	9 10 11 12	UNIT 3. Hard; Brown (7.5YR 5/4); LEAN CLAY (CL); moist; medium to high plasticity; cohesive; faintly laminated; lacustrine.	CL			1.1						

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Page 2 of 2

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
6 SS	24 24	25		UNIT 4. Hard; Dark gray (10YR 4/1); LEAN CLAY (CL); moist; medium plasticity; cohesive; massive; trace sand and gravel; diamicton. <i>(continued)</i>	CL			0.7						
		6 18 14 17	13 14 15											END OF BORING AT 15.0 FEET.

Boring MW-1 (2002)

SOIL BORING LOG INFORMATION

Form 4400-122

Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Tower Automotive Building 57			License/Permit/Monitoring Number		Boring Number MW-1		
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: Eric Last Name: Kaelin Firm: Mid-America Drilling			Date Drilling Started 10 / 22 / 2002 m m / d d / y y y y		Date Drilling Completed 10 / 22 / 2002 m m / d d / y y y y		
WI Unique Well No.		DNR Well ID No.		Well Name MW-1		Drilling Method hollow stem auger	
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒ XI		Final Static Water Level 600.23 Feet MSL		Surface Elevation 607.10 Feet MSL		Borehole Diameter 6.25 inches	
State Plane 401003.52 N, 2546873.99 E		Lat 0 ' "		Local Grid Location		☐ N ☐ E ☐ S ☐ W	
NW 1/4 of SE 1/4 of Section 12 T 7 N, R 21 E		Long 0 ' "		Feet		Feet	
Facility ID		County MILWAUKEE		County Code 41		Civil Town/City/ or Village Milwaukee	

Sample Number and Type	Length At. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1	80%	NA		0.0 - 2.0 Sandy GRAVEL	FL									
2	80%	9/13/ 15/1	2	2.0 - 4.0 Silty SAND; black (stained), moist, no odor	SM									
3	20%	4/15/ 19/2	4	4.0 - 6.0 Sandy SILT; brown, coarse-grained sand, some clay, stiff, damp	ML									
4	85%	4/21/ 26/2	6	6.0 - 8.0 Clayey SILT; dark greyish brown, trace gravel, hard, damp	ML									
5	80%	5/20/ 25/2	8	8.0 - 10.0 Clayey SILT; dark greyish brown, trace gravel, hard, damp	ML									
6	100%	7/17/ 24/2	10	10.0 - 12.0 Clayey SILT; dark greyish brown, trace gravel, hard, damp	ML									
7	80%	6/8/1 2/10	12	12.0 - 14.0 Clayey SILT; dark greyish brown, trace gravel, hard, wet at 13 feet	ML									
8	70%	8/13/ 10/11	14	14.0 - 16.0 Silty SAND; brown, fine- to medium-grained sand with coarse gravel, wet	SM									
9	60%	8/10/ 13/12	16	16.0 - 18.0 Clayey SILT to Silty CLAY; greyish brown, lenses of silt and clay with some fine to coarse sand and gravel, soft, wet	ML/S									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Jang M. Cooper Firm Environmental Strategies Corporation

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