

July 30, 2019

Project Reference #18779

Mr. Mathew Reimer
City of Milwaukee
Department of City Development
809 N. Broadway
Milwaukee, WI 53202

SUBJECT: Summary of Completed Remediation Activities
1132-1164 E. North Avenue
Milwaukee, Wisconsin

Dear Mat:

The Sigma Group, Inc. (Sigma) submits this summary of our knowledge of the completed environmental remediation activities at the site and current site status. The site is currently tracked as an open Environmental Repair Program (ERP) site (BRRTS #02-41-557602) by the Wisconsin Department of Natural Resources (WDNR).

SUMMARY OF COMPLETED ACTIVITIES

Remedial Action Plan

Sigma, on behalf of a party planning on redeveloping the subject site, completed subsurface investigation activities at the site. Subsurface investigation activities completed at the site identified limited and low-level petroleum related impacts as well as polynuclear aromatic hydrocarbons (PAHs) and lead concentrations within shallow soil that (at the time) exceeded applicable Residual Contaminant Levels (RCLs).

Based on the proposed redevelopment plan Sigma prepared and submitted a *Remedial Action Plan (RAP)* for the site to WDNR in September 2011. The *RAP* for the site included on-site re-use of soil containing PAH and lead impacts, import of clean fill material to meet proposed site grades and capping of impacted soil with engineered barriers (concrete or asphalt pavement or clean soil cap). The WDNR approved the *RAP* in a letter dated September 12, 2011.

On-Site Soil Management

Following asbestos abatement, the former site building was demolished in September 2012. Existing on-site soil from high areas in the north central area and southwest site corner were graded appropriately to as part of the redevelopment-specific grading plan.

Following re-grading of the on-site soils, select grab samples were collected and submitted for laboratory analysis of PAHs and lead. The purpose of the additional soil sampling was to document post-management conditions as part of a future case closure submittal. Results of the post-grading samples are summarized in **Table 1**.

Fill Import

Once on-site soils were graded, clean fill material was imported and placed to meet required grades associated with the proposed redevelopment. Fill material consisted of excess soil generated from new residential construction projects located at 4850 Lake Drive, Whitefish Bay and 4375 Bradley Road, Milwaukee.

Fill material was primarily placed in locations outside the proposed building footprint requiring elevation gain as part of the proposed redevelopment.

Geotextile and Stone Placement

Following placement of the imported fill, a layer of nonwoven geotextile fabric was placed beneath the area of the site outside the building footprint to provide separation between the underlying soil and traffic bond to be placed beneath the proposed parking lot/drive area. A layer of traffic bond stone was subsequently imported and placed over the geotextile fabric.

To Sigma's knowledge no earthworks or additional remedial activities have been completed at the site since September 2012. Select photos of the work completed at the site in September 2012 are included as **Attachment A**.

DISCUSSION

It is Sigma's understanding that the City of Milwaukee intends to market the property for redevelopment. If the future redevelopment plan is consistent with the most recent redevelopment plan (multi-use building with associated paved parking) or similar, it is Sigma's opinion that WDNR may not require completion of any supplemental site investigation work or significant modifications to the previously approved *RAP*. An updated Exemption to Construct on a Historic Fill Site application may be required by WDNR based on the new redevelopment plan. If redevelopment will require significant relocation of on-site soils or management of excess soils at an off-site location, the excess soils should be characterized and managed in accordance with applicable regulations. Once a detailed redevelopment plan is developed, Sigma recommends providing WDNR with an updated plan and requesting concurrence that the proposed plan is consistent with the previously approved *RAP*.

Please do not hesitate to contact us at (414) 643-4200 with any questions or comments.

Sincerely,

THE SIGMA GROUP, INC.


Stephen Meer, P.E.
Senior Engineer


Randy Boness, P.G.
Geosciences Group Leader

Attachments

TABLE

Table 1
Soil Analytical Results
1150 E. North Avenue, Milwaukee, Wisconsin
Sigma Project No. 18779

Soil Sample Location:	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Groundwater Pathway RCL ⁴	Non-Industrial Direct Contact RCL ⁵	Industrial Direct Contact RCL ⁶	Background Threshold Value ⁷	
Sample Collection Date:	09/13/12	09/13/12	09/13/12	09/13/12	09/13/12	09/13/12	09/18/12	09/18/12	09/18/12	09/18/12					
PAHs															
Acenaphthene	mg/kg	0.040 J	0.049 J	0.053	0.115	<0.0164	0.067	0.0297 J	0.054	0.0195 J	0.086	NS	3,590	45,200	NS
Acenaphthylene	mg/kg	<0.021	0.039 J	0.035 J	0.039 J	<0.021	0.0261 J	0.0224 J	0.0245 J	<0.021	<0.021	NS	NS	NS	NS
Anthracene	mg/kg	0.127	0.292	0.187	0.370	0.058 J	0.195	0.136	0.278	0.069	0.410	196.9492	17,900	100,000	NS
Benzo(a)anthracene	mg/kg	0.310	0.800	0.307	0.510	0.158	0.480	0.308	0.650	0.215	0.540	NS	1.14	20.8	NS
Benzo(a)pyrene	mg/kg	[0.32]	[0.92]	[0.33]	[0.49]	[0.161]	[0.46]	[0.33]	[0.65]	[0.206]	[0.46]	0.47	0.115	2.11	NS
Benzo(b)fluoranthene	mg/kg	0.460	1.370	0.450	0.720	0.244	0.670	0.470	0.950	0.295	0.660	0.4781	1.15	21.1	NS
Benzo(ghi)perylene	mg/kg	0.214	0.640	0.237	0.330	0.130	0.308	0.240	0.440	0.134	0.273	NS	NS	NS	NS
Benzo(k)fluoranthene	mg/kg	0.159	0.410	0.140	0.227	0.078	0.243	0.146	0.278	0.096	0.272	NS	11.5	211	NS
Chrysene	mg/kg	0.360	0.880	0.340	0.520	0.174	0.500	0.340	0.660	0.230	0.570	0.1442	115	2,110	NS
Dibenzo(a,h)anthracene	mg/kg	0.051 J	[0.165]	0.056 J	0.083	0.0313 J	0.079	0.058 J	[0.116]	0.033 J	0.074 J	NS	0.115	2.11	NS
Fluoranthene	mg/kg	0.760	1.770	0.700	1.130	0.302	1.050	0.620	1.450	0.490	1.400	88.8778	2,390	30,100	NS
Fluorene	mg/kg	0.039 J	0.056 J	0.070	0.130	<0.0203	0.058 J	0.038 J	0.067	0.0216 J	0.134	14.8299	2,390	30,100	NS
Indeno(1,2,3-cd)pyrene	mg/kg	0.174	0.540	0.192	0.282	0.105	0.259	0.195	0.370	0.114	0.237	NS	1.15	21.1	NS
1-Methylnaphthalene	mg/kg	<0.021	<0.021	0.048 J	0.120	0.049 J	0.0243 J	0.047 J	<0.021	<0.021	<0.021	NS	17.6	72.7	NS
2-Methylnaphthalene	mg/kg	<0.0224	0.0264 J	0.063 J	0.168	0.067	0.036 J	0.079	0.0255 J	<0.0224	0.0248 J	NS	239	3,010	NS
Naphthalene	mg/kg	<0.0249	0.030 J	0.038 J	0.109	0.040 J	<0.0249	0.043 J	0.029 J	<0.0249	0.0308 J	0.6582	5.52	24.1	NS
Phenanthrene	mg/kg	0.410	0.600	0.550	0.960	0.180	0.500	0.340	0.710	0.191	1.020	NS	NS	NS	NS
Pyrene	mg/kg	0.640	1.490	0.630	0.960	0.271	0.870	0.550	1.210	0.430	1.080	54.5455	1,790	22,600	NS
Metals															
Lead	mg/kg	63.2	101	46.4 *	72.3	83.9	19.1	49.6 *	108	27.2 *	31.7 *	27	400	800	52

Notes:

1. Unsaturated/smear zone versus saturated soil conditions based on: (1) measured water levels in adjacent/nearby monitoring wells, or (2) soil moisture conditions recorded on soil boring logs during drilling.
2. Analytical units: 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 (dilution factor of 2) as presented on the WDNR's RCL Spreadsheet (dated December 2018) 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 presented on the WDNR's RCL Spreadsheet (dated December 2018) 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. Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at an industrial property as presented on the WDNR's RCL Spreadsheet (dated December 2018) 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.
7. Background Threshold Value = Non-outlier trace element maximum levels in Wisconsin surface soils from USGS report "Distribution and Variation of Arsenic in Wisconsin Surface Soils, With Data on Other Trace Elements" (revised February 2013).
8. NS = no standard established
9. Laboratory flags: "J" = Analyte detected between Limit of Detection and Limit of Quantitation
10. Exceedances:
 - BOLD** = Concentration exceeds Groundwater Pathway RCL
 - []** = Concentration exceeds Non-Industrial Direct Contact RCL (any depth)
 - { }** = Concentration exceeds Industrial Direct Contact RCL (any depth)
 - *** = Concentration is below Background Threshold Value so RCL exceedances are not marked

ATTACHMENT A



Photo 1: Site following building demo. View to southwest; photograph taken on September 7, 2012.



Photo 2: Removing vegetation from west side of site. View to south, photograph taken on September 11, 2012.

1132-1164 E. North Avenue, Milwaukee, Wisconsin

Sigma Project Number: 18779



Photo 3: On-site soil re-use. View to northeast, photo taken September 13, 2012.



Photo 4: On-site soil re-use. View to north, photo taken September 13, 2012.

1132-1164 E. North Avenue, Milwaukee, Wisconsin

Sigma Project Number: 18779



Photo 5: Site following placement of on-site soil for re-use. View to south/southwest, photo taken September 17, 2012.



Photo 6: Site following placement of on-site soil for re-use. View to west photo taken September 17, 2012.

1132-1164 E. North Avenue, Milwaukee, Wisconsin

Sigma Project Number: 18779



Photo 7: Site during placement of imported clean fill. View to southwest, photo taken September 18, 2012.



Photo 6: Site during placement of imported clean fill. View to west photo taken September 18, 2012.

1132-1164 E. North Avenue, Milwaukee, Wisconsin

Sigma Project Number: 18779



Photo 9: Proposed parking area during placement of geotextile and traffic bond. View to west/northwest, photo taken September 26, 2012.



Photo 10: Proposed parking area during placement of geotextile and traffic bond. View to southwest photo taken September 26, 2012.

1132-1164 E. North Avenue, Milwaukee, Wisconsin

Sigma Project Number: 18779