

Report

Phase II Environmental Site Assessment

**1.5 mile long stretch of Grand River
Grand Rapids, Michigan**

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NTH Project No. 74-091509-03H19**

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1.0 INTRODUCTION

NTH Consultants, Ltd. (NTH) has prepared this Phase II Environmental Site Assessment (ESA) Report on an approximately 1.5-mile long stretch of the Grand River immediately north of the 4th street dam. The Phase II ESA was conducted on behalf of the Grand Rapids Whitewater Association. The Phase II ESA was performed under the Brownfield Assessment Grant that the Grand Valley Metropolitan Council (GVMC) received from the U.S. Environmental Protection Agency.

The approximate location of the Site is shown on Figure 1 “Site Location Map”, in Appendix A. The total Site is approximately 90.9 acres in size. The layout of the Site is shown on Figure 2, “Sediment Sampling Location Plan”

2.0 FIELD INVESTIGATION AND SAMPLING

The objective of the Phase II ESA was to evaluate whether contamination is present in the river sediments at levels exceeding the Michigan Department Environmental Quality (MDEQ) Generic Residential Cleanup Criteria developed under Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 P.A. 451, as amended (Part 201).

Phase II ESA activities consisted of a river bottom sediment investigation that included collecting sediment samples for chemical analysis. Details of the Phase II ESA are described in the following sections:

2.1 RIVER BOTTOM SEDIMENT INVESTIGATION

River bottom sediment investigation activities were conducted on October 26 and 27, 2011. Forty-five (45) sediment samples, designated as SS-1 through SS-45, were advanced by NTH personnel. All the sediment samples were collected with an AMS multi-stage sludge and sediment sampler. The sediment sampler was advanced to a maximum depth of 4 feet into the sediment.

The approximate location of each sediment sample is shown on Figure 2 “Sediment Sampling Location Plan” in Appendix A. The rationale for the sediment sampling was based on the MDEQ’s Guidance for Sediment Testing for Dredging Projects.

2.2 SEDIMENT LABORATORY TESTING

Sediment samples selected for analytical testing were placed in laboratory-supplied containers and stored in a clean cooler packed with ice. All sediment samples were tested for contaminants including polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PNAs) and twelve metals including arsenic, barium, cadmium, chromium, copper, lead, manganese, nickel, mercury, selenium, silver and zinc. The samples were transported to Fibertec Environmental Services (Fibertec) in Holt, Michigan. Samples were transported within appropriate holding times and in accordance with NTH’s standard chain-of-custody procedures.

Analytical results are summarized on Table 1 in Appendix B. The laboratory data report, including quality assurance/quality control (QA/QC) documentation for the samples analyzed during the Phase II ESA study, is presented in Appendix C.

3.0 EVALUATION OF ANALYTICAL DATA

The sediment analytical data were compared to the MDEQ generic residential risk based screening criteria (GRCC). Consistent with Part 201 regulations, detected concentrations of the various metals were only considered to exceed generic cleanup criteria if they also exceeded their respective Statewide Default Background Levels (SDBLs). The sediment contaminant concentrations exceeding the MDEQ residential criteria are discussed below. The Part 201 rules provide generic cleanup criteria developed for a number of potential sediment exposure routes and migratory pathways, which include:

- Direct contact with impacted soil (including soil ingestion).
- Particulate Inhalation
- Inhalation of impacted particulate (soil) and/or volatilized compounds from soil.

- Migration of hazardous substances from soil into drinking water supplies, groundwater or surface water.

Part 201 allows for evaluation of relevant or applicable pathways of exposure or migration by considering geologic and hydrogeologic characteristics and prevailing surface conditions at the impacted sites, as well as future use of the site. Depending on site-specific factors certain exposure or migration pathways may be eliminated or determined not to be applicable, and thus, not relevant to assessment of subsurface environmental risk at a site. Based on the fact that the sediment has been present in the river bottom for an extended time all contaminants are not likely to leach or volatilize, the remaining exposure routes are direct contact with the sediments wherever they are deposited soils and particulate inhalation from the sediments drying out and particulate becoming airborne wherever deposited.

3.1 SEDIMENT ANALYTICAL DATA

The above discussion notwithstanding, the results of the sediment analyses were compared to the following Part 201 Generic Residential Cleanup Criteria:

- Direct contact (including soil ingestion) with impacted soil (DCC).
- Soil Volatilization to Indoor air Inhalation (SVIIC).
- Volatile Soil Inhalation (VSIC) for ambient air, assuming an “infinite source.”
- Particulate Soil Inhalation (PSIC).
- Statewide Default Background Level (SDBL) concentrations, as established by MDEQ.

The sediment analytical results are summarized on Table 1 in Appendix B. The laboratory data report is included in Appendix C. PCBs were not detected in any of the samples. PNAs were detected in samples SS-10, SS-31 and SS-32, but none of the concentrations exceeded the Part 201 Generic Residential Cleanup Criteria. Several metals were detected at various concentrations in sediment samples from each of the sediment sample locations; one sediment samples (SS-15) contained concentrations of arsenic metal above Part 201 Generic Residential Cleanup Criteria for DCC while all other sediment samples contained concentrations below SDBL concentrations and/or Part 201 Generic Residential Cleanup Criteria.

4.0 CONCLUSIONS

The results of the Phase II ESA and laboratory testing confirmed the presence of arsenic in the sediment exceeding Part 201 Generic Residential Cleanup Criteria at the location of SS-15. All other sediment samples contained contaminant concentrations below Part 201 Generic Residential Cleanup Criteria.

5.0 LIMITATIONS

The objective of the Phase II ESA exploration was to evaluate whether sediment contamination was present at the Site at levels exceeding the MDEQ's GRCC developed under Part 201. Considering the limited scope of the present exploration, data collection, and testing, our findings should not be construed as absolute certainties, but rather indicative of generalized site conditions within the areas and depths explored during this study. NTH cannot offer any form of warranty or guarantee with respect to the type and extent of hazardous substances on the subject property, other than those identified and discussed in this report. This report is intended for the exclusive use of the Grand Rapids Whitewater Association and the Grand Valley Metropolitan Council. This report presents NTH's opinion of the property as of this date, based on the results of this study. The results of this study may not be relied upon by parties other than those identified above without the prior knowledge and written consent of NTH.



APPENDIX A

FIGURES



APPENDIX B

TABLES



APPENDIX C

ANALYTICAL DATA REPORTS