ERDC/EL Project Report

Environmental Laboratory

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Engineer Research and Development Center

# Evaluation of Beneficial Use Suitability for Cleveland Harbor Dredged Material: Interim Capacity Management and Long-Term Planning

Appendix A - G

Joseph P. Kreitinger, Richard A. Price, Thomas D. Borrowman, Alan J. Kennedy, Dennis L. Brandon, and Michelle Bourne

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# List of Appendices

# Appendix A: SAP

**Appendix A. Sampling and Analysis Plan for Assessment of Beneficial Use (BU) Alternatives for Cleveland Harbor Dredged Sediment**

**November 9, 2010**

## Plan For Cleveland Harbor Beneficial Use Sampling

The following scope of work for sediment sampling has been developed to address data gaps identified as part of the analysis of beneficial use (BU) alternatives for Cleveland Harbor dredged sediment. A range of beneficial end uses are being evaluated for sediment that will be removed from the upper reach of the Cleveland Harbor Federal Navigation Channel. In addition to collection of sediment from the Cuyahoga River, several samples will need to be collected from reference sediment and soil locations. These reference samples will be used for interpretation of laboratory toxicity and bioaccumulation test results.

The goal of this plan is to collect samples and sediment quality data that will permit evaluation of beneficial use options for the majority of sediment in the Cuyahoga River that may require dredging in the near future. As such, the testing and analysis has focused on the upper reach of the Federal Navigation Channel and the data needs required to develop a decision-making framework for considering the acceptability of dredged materials for potential beneficial uses. To apply this decision-making framework future testing and analysis will be required to ascertain that sediment quality and the risk associated with a beneficial use of dredged material does not change over time. Historically, the upper mile of the Federal Navigation Channel accounts for the majority (approximately 70 percent) of sediment dredged from the River each year. However, the amount of dredging required to maintain the navigation channel downstream varies from year to year depending on seasonal storm events and the accumulation of sediment in shoals. The testing and analysis of sediment that accumulates in downstream shoals and in future dredging cycles will be necessary to evaluate the consistency of sediment quality as compared to the testing and analysis conducted in this study.

1. Primary Objective:

The primary objective of this effort is to collect Cuyahoga River sediment samples in the upper reach of the Navigation Channel that will be used to conduct BU suitability and selection testing. The testing will include chemical, toxicity, bioaccumulation, and geotechnical characterization.

A Tiered Evaluation on Cleveland Harbor Federal Navigation Channel sediments was previously performed to assess the environmental acceptability of placing dredged sediment at the Cleveland Open Lake disposal site. This assessment was based on sediment quality data collected in 2007 (Engineering and Environment, Inc. [EEI] 2007) and guidelines contained in the 1998 U.S. Environmental Protection Agency (USEPA)/U.S. Army Corps of Engineers (USACE) Great Lakes Dredged Material Testing and Evaluation Manual (USEPA/USACE 1998). Based on the data collected in 2007, a determination was made that placement of dredged sediment from Cuyahoga Federal Navigation Channel at the open lake disposal site is unacceptable.

2. Data Quality Objectives:

The tiered evaluation on Cleveland Harbor Federal Navigation Channel sediments was limited to accessing the acceptability of placing dredged material at the Open Lake disposal site through Tier III of the USACE four tier risk evaluation process. Additional data is required to extend this evaluation to include placement of sediment in nearshore littoral environments for beach nourishment and wetland environments for lakeshore habitat restoration. In addition, data is also required to evaluate the potential risk to soil invertebrates and higher trophic levels following placement of sediment in upland habitat restoration projects.

Laboratory toxicity testing will be used to reevaluate whether sediment collected in the upper reach of the Navigation Channel continues to exhibit toxicity to benthic macroinvertebrates and then identify the source(s) of toxicity. The analysis of 2007 data suggests that ammonia, zinc or PAHs may be the source of toxicity observed in whole sediment laboratory tests. Identifying the source of toxicity is important for the development of sediment management strategies that are protective of aquatic resources and human health. For example, if ammonia nitrogen is the source of toxicity in laboratory tests, sediment management strategies that incorporate natural attenuation (e.g., phytoremediation) may be feasible in an engineered wetland system that is specifically designed to remove this nutrient prior to exposing benthic and pelagic aquatic life to toxic concentrations. For other contaminants (e.g., mercury or PCBs), natural attenuation in nearshore littoral or wetland environments may not be feasible thus limiting the engineering options in the nearshore environment to confined disposal facilities.

All chemical analyses (i.e., sediment, tissue) will be conducted by the Environmental Chemistry Branch (ECB) or NELAP approved laboratories according to USEPA guidelines or by ASTM published methods. A Quality Assurance Project Plan (QAPP) will be prepared identifying reporting limits and procedures for maintaining project data quality. The QAPP will be in accordance with Appendix G (QA/QC Considerations) in the guidance manual *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual: Inland Testing Manual* (EPA 823-B-98-004, 1998) and the Great Lakes Dredged Material Testing and Evaluation Manual (USEPA/USACE 1998). The ITM provides guidance for developing QA project plans that ensure the reliability of data collected for evaluating dredged material management options and outlines QA/QC procedures to be followed when sampling sediments, water and tissues for the presence of contaminants.

3. Sample Collection:

The project study area is the upper reach which is defined as approximately the first miles of the Cleveland Harbor Federal Navigation Channel extending from the head of navigation to the turning basin. Samples will be collected from the following areas for this project:

- **Upper Reach:** The upper reach consists of the area which extends from the head of navigation downstream to Station 728 located at the terminus of the turning basin. The area is approximately one mile in length (Figure 1). Based on the 2007 distribution of sediment grain size and contaminant levels, the study area has been dived into two proposed dredge material management units (DMMUs). DMMU-1 extends from the head of navigation to a location approximately 1,500 feet downstream from the head of

navigation. DMMU-2 extends from approximately 1,500 feet downstream from the head of navigation to the Turning Basin. Five discrete and one composite sample surface grab sample will be collected from each DMMU. Sample locations for the discrete samples are provided in Table 1 and their approximate location shown on Figure 1. The discrete samples collected from DMMU-1 will be located at the same positions as samples CH-1 through CH-5 that were previously collected in 2007. The discrete samples collected from DMMU-2 will be located at the same positions as samples CH-6 through CH-8. Two additional samples will be collected from DMMU-2, one sample location (6b) will be positioned halfway between CH-6 and CH-7 and another sample location (7b) will be positioned halfway between CH-7 and CH-8 (Figure 1). One QA/QC sample will be collected at CH-5.

- **Upland Reference Soil:** The upland reference soil will be used as the field reference sample for earthworm toxicity and bioaccumulation testing. The upland reference soil will be collected from Bratenahl, OH at the site previously used to establish background conditions for soil metals by OEPA (Figure 2). The site soils consist of silty to sandy clay and fine originating from post glacial Lacustrine Plain deposits. Surface (0-1 foot) grab samples will be collected from four discrete locations and composited.

- **Littoral Reference Sediment:** Littoral reference sediment samples will be collected from the Perkins Beach site for comparison to the upper reach sediment samples. Water from this location will also be used for elutriate testing. Elutriate testing will be performed following a determination that it is acceptable to place sediments from the Navigation channel at this potential littoral site. The approximate locations of the littoral reference sediments from Perkins Beach site (PB-1 through PB-4) are shown in Figure 3. Surface (0-1 foot) grab samples will be collected from four discrete locations and composited.

The latitude and longitude of the sample locations are provided in Table 1.

4. Shipping and Sample Preparation:

Sample containers and shipping will be provided by the ERDC lab and coordinated with the Buffalo District field sampling team. Composite samples will be homogenized by the ERDC lab. A split composite sample collected for DMMU-1 will be prepared that consists of the coarse grained sediment (fine sand and coarser grain sized sediment) and labeled DMMU-1S. This will be accomplished by preparing a slurry of dredged material and allowing settling to capture the sand and silt fractions and discard the clay fractions. This additional sediment sample will be submitted for laboratory testing.

5. Laboratory Testing and Analysis:

Laboratory testing and analysis will be used to characterize the chemical and physical characteristics of the sediment and the potential for toxicity and contaminant bioaccumulation in aquatic and terrestrial organisms.

The laboratory testing program will include the following tests:

**Phase 1 Testing: Baseline Testing**

1. Baseline Analytical Chemistry
2. Elutriate Chemistry
3. Elutriate Toxicity Testing
4. Sediment Geotechnical Parameters
5. Terrestrial Macroinvertebrate Toxicity and Bioaccumulation

**Phase 2 Testing: Potentially Required Testing** (based on existing data and Phase 1 results)

6. Whole Sediment Aquatic Macroinvertebrate Toxicity
7. Whole Sediment Aquatic Macroinvertebrate Bioaccumulation

**Phase 3 Testing: Optional Testing** (based on Phase 1 and 2 test results)

8. Toxicity Identification Evaluation
9. Wetland Treatability Testing

The Phase 1 Testing is designed to meet the basic data needs for evaluating the suitability and acceptability of sediment for upland and aquatic beneficial uses. Standard elutriates will be prepared and the chemical analysis of whole sediment, unfiltered elutriate and filtered elutriate samples will be used to provide estimates of contaminant aqueous partitioning and the potential for contaminant leaching and runoff following placement in upland environments. Analysis of sediment elutriate samples will also be used to evaluate potential impacts to water quality following placement of dredged sediment in aquatic littoral environments. Other laboratory testing procedures including the Surface Runoff Procedure (SLRP) and Sediment Leachate Test (SBLT) may be performed in the future to further refine these potential exposure pathways, however, these advanced test procedures are not proposed at this time. Whole sediment macroinvertebrate toxicity and bioaccumulation tests (Phase 2 Testing) will be performed following the baseline testing and upon reaching the conclusion that placement of sediment at an aquatic littoral site will meet State and Federal water quality criteria. Chemical contaminants evaluated in aquatic macroinvertebrate bioaccumulation test will be selected following initial screening of the baseline testing data and evaluation of theoretical bioaccumulation potential. If toxicity is observed in whole sediment, then optional laboratory testing procedures (Phase 3 Testing) may be conducted to identify the source of toxicity and assessing the potential for eliminating or minimizing risk to the aquatic environment through treatment of sediment in an engineered wetland.

All discrete and composited DMMU samples will be analyzed for the following parameters:

1. Metals - 23 per TAL (EPA 6000/7000)
2. Metals AVS/SEM
3. Total CN (EPA 9010B/9012A)
4. TKN (EPA 351)
5. Ammonia Nitrogen (EPA 350)
6. Total Phosphorus (EPA 6000/7000)
7. Volatile Organics - TCL (EPA 8260B)
8. B/N/A (Semi-volatile organics) - TCL (EPA 8270C)
9. Pesticides (EPA 8081A)
10. PCBs (Arochlors EPA 8082)

11. Total Organic Carbon (EPA 9060)
12. Grain size (ASTM D421, D422)

In addition, to the analysis shown above, discrete sediment samples will be analyzed for dissolved PAHs (Parent and Alkylated, ASTM D7363) to evaluate the potential bioavailability and toxicity of PAHs in sediment. Hexavalent chromium (VI) will be analyzed on composite samples to assess the relative concentration of hexavalent chromium (VI) to the total concentration of chromium in sediment and soil samples.

All other testing procedures will be conducted using the composite site and reference samples. Details on the testing procedure methods, number of samples and cost schedule is provided in Table 2.

6. Sample Volumes Required:

Detailed information on sample volumes, containers, and preservation requirements will be provided in the QAPP. The following provides a summary of the sampling volume required.

a. Sediment Samples from Cuyahoga River:

- Discrete Sample Locations: Two liters of sediment will be required from each discrete sediment sample location for bulk sediment chemical analysis and grain size analysis.

- Composite Samples from each DMMU: A single composite sample consisting of 40 gallons that is representative of the average contaminant concentrations will be required from each DMMU. These samples will be used for chemical and bioassay testing of bulk sediment, preparation of elutriates, column settling tests, geotechnical properties, and coarse grained fraction for chemical, biological and physical tests.

b. Sediment Samples from Perkins Beach:

- Discrete Sample Locations: Two liters of sediment will be required from each discrete sediment sample location for bulk sediment chemical analysis and grain size analysis.

- Composite Sample: A single composite sample consisting of 10 gallons that is representative of the average contaminant concentrations will be required from the Perkins Beach site. This sample will be used for chemical and bioassay testing of bulk sediment, preparation of elutriates, and grain size analysis.

c. Soil Sediment from Bratenahl Park:

- Discrete Sample Locations: Two liters of soil will be required from each discrete sediment sample location for bulk soil chemical analysis and grain size analysis.

- Composite Sample: A single composite sample consisting of 5 gallons that is representative of the average soil conditions will be required from the Bratenahl Park site. This sample will be used for chemical and bioassay testing of bulk soil and grain size analysis.

d. Lake Water:

- Fifteen (15) gallons of Lake Erie water collected near the Perkins Beach (~25 liters per test plus extra). This water sample will be used for preparing elutriates and conducting bioassay tests. The water will need to be shipped to the lab two weeks after the shipment of sediment samples.

Figure 1. Proposed Cuyahoga River Sample Locations

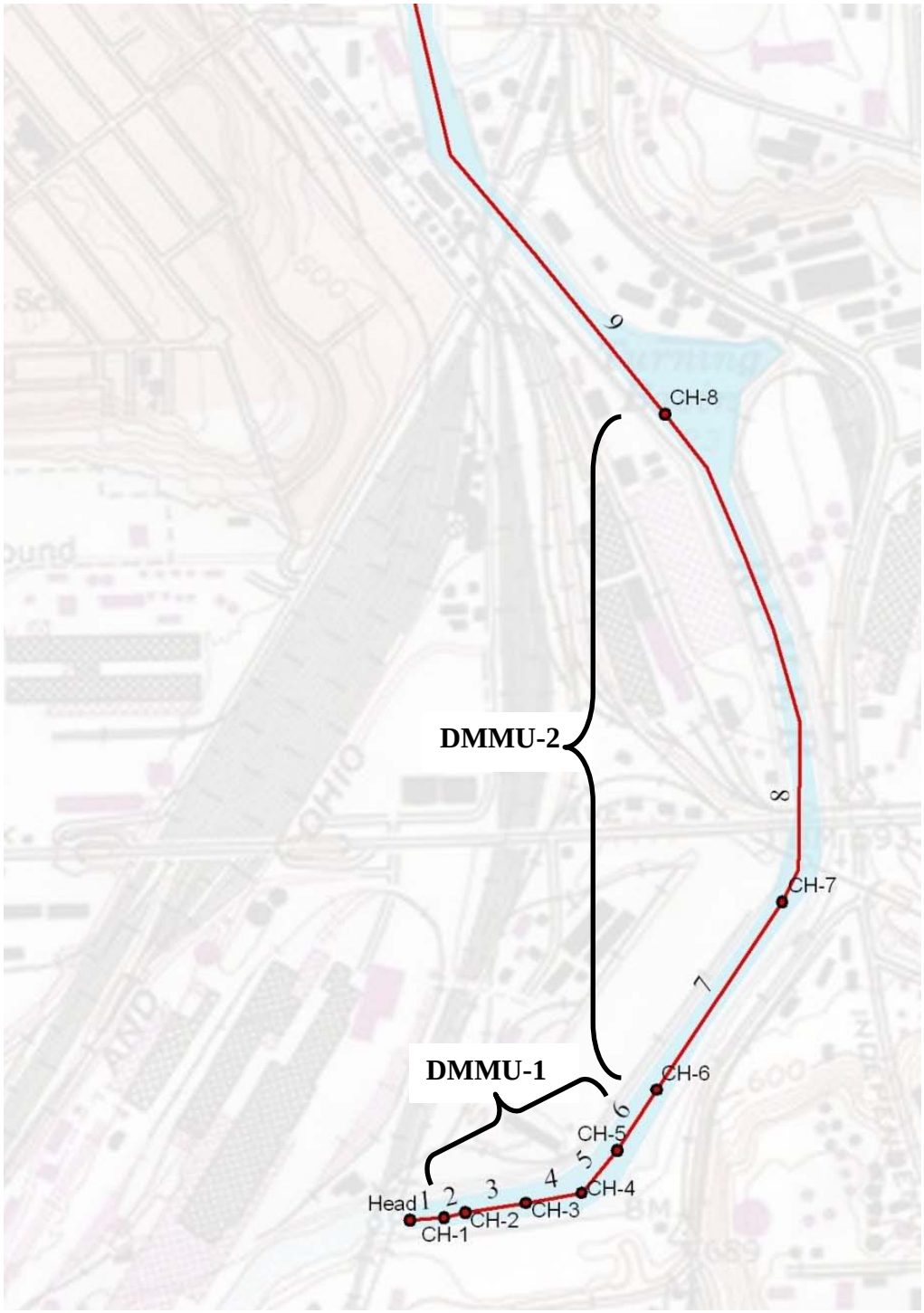

Figure 2. Proposed Bratenahl Reference Soil Sample Locations

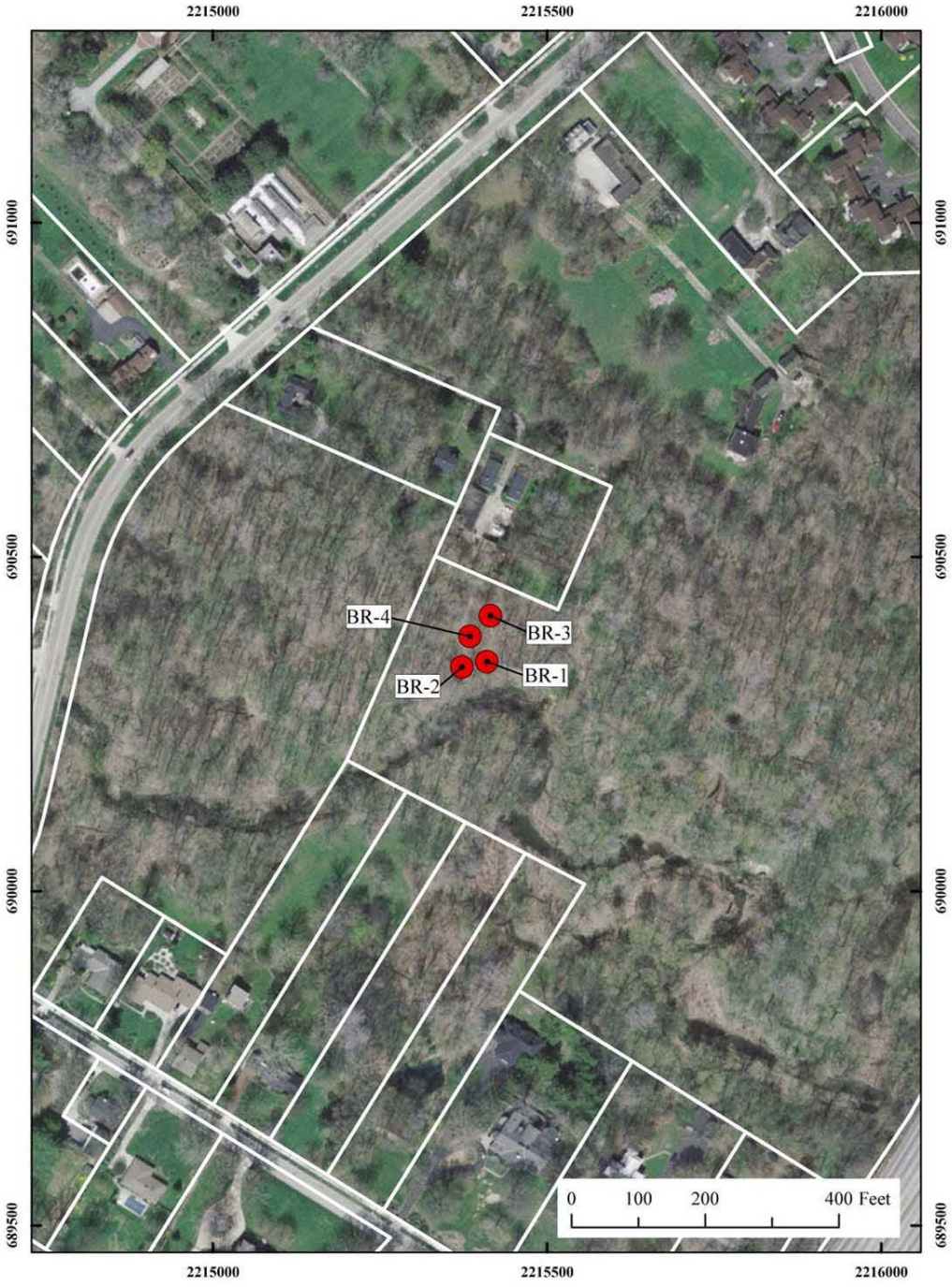

Figure 3. Proposed Perkins Beach Littoral Reference Sample Locations

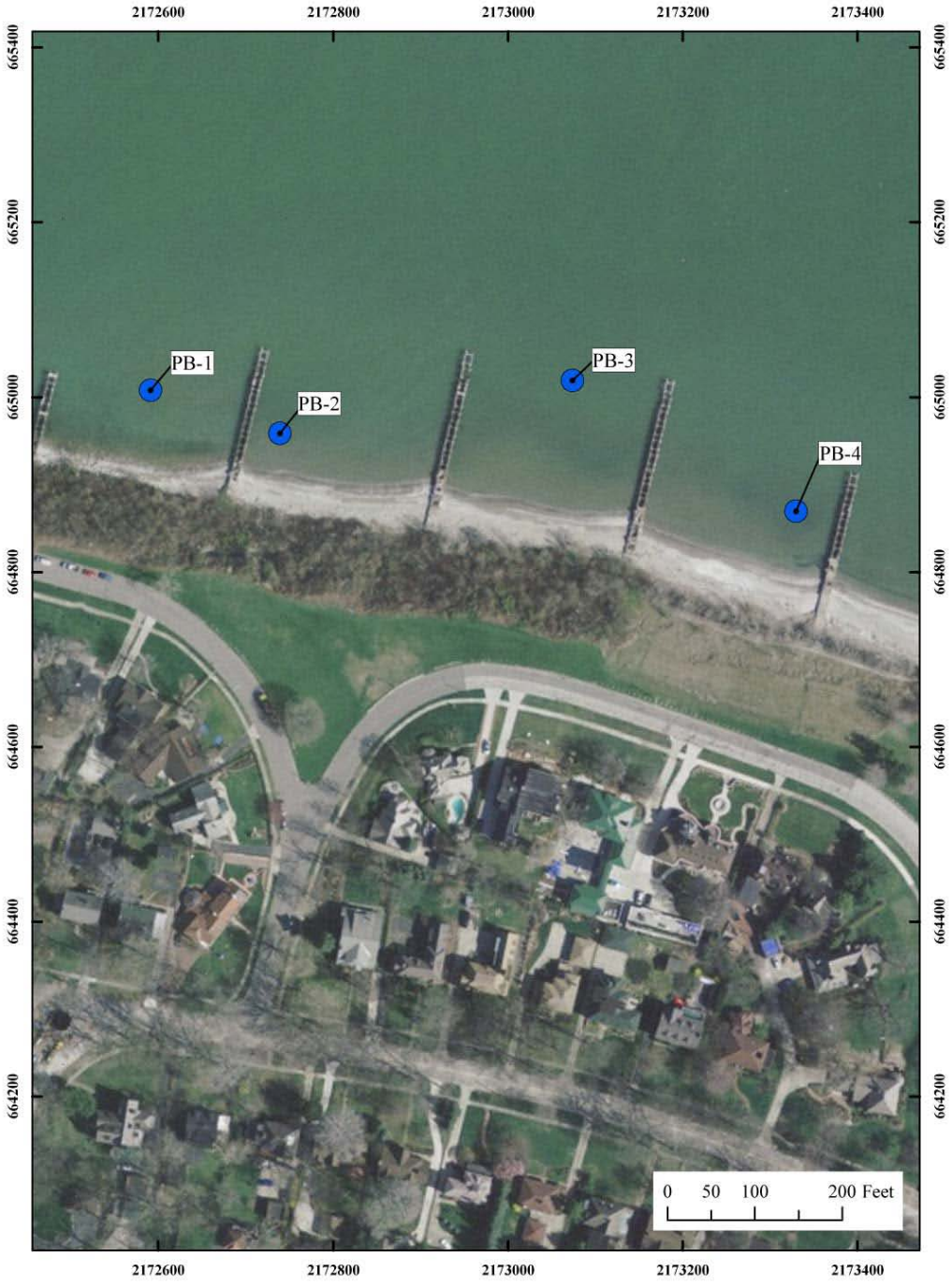

Table 1. Proposed Sample Locations

| Sample ID | Dredge Material Management Unit | Map Segment | Map Segment Distance | Approx. Cumulative Distance From Head of Navigation Channel | Latitude (NAD83) | Longitude (NAD83) |
|---|---|---|---|---|---|---|
| | | | (ft) | (ft) | | |
| CH-1 | DMMU-1 | 1 | 186 | 186 | 41° 27' 53.28" N | 81° 40' 33.42" W |
| CH-2 | DMMU-1 | 2 | 112 | 299 | 41° 27' 53.52" N | 81° 40' 31.98" W |
| CH-3 | DMMU-1 | 3 | 328 | 627 | 41° 27' 54.00" N | 81° 40' 27.72" W |
| CH-4 | DMMU-1 | 4 | 301 | 928 | 41° 27' 54.48" N | 81° 40' 23.82" W |
| CH-5 | DMMU-1 | 5 | 295 | 1223 | 41° 27' 56.70" N | 81° 40' 21.30" W |
| CH-6a | DMMU-2 | 6 | 384 | 1607 | 41° 27' 59.88" N | 81° 40' 18.54" W |
| CH-6b | DMMU-2 | 6b | - | ~2208 | 41° 28' 4.96" N | 81° 40' 13.71" W |
| CH-7a | DMMU-2 | 7 | 1201 | 2809 | 41° 28' 9.66" N | 81° 40' 9.60" W |
| CH-7b | DMMU-2 | 7b | - | ~4199 | 41° 28' 23.19" N | 81° 40' 9.76" W |
| CH-8 | DMMU-2 | 8 | 2781 | 5589 | 41° 28' 35.34" N | 81° 40' 17.52" W |
| PB-1 | Perkins Beach Reference | – | – | – | 41° 29' 22.45" N | 81° 45' 18.20" W |
| PB-2 | Perkins Beach Reference | – | – | – | 41° 29' 21.95" N | 81° 45' 16.27" W |
| PB-3 | Perkins Beach Reference | – | – | – | 41° 29' 22.52" N | 81° 45' 11.86" W |
| PB-4 | Perkins Beach Reference | – | – | – | 41° 29' 21.02" N | 81° 45' 8.51" W |
| BS-1 | Bratenahl Reference | – | – | – | 41° 33' 28.76" N | 81° 35' 52.14" W |
| BS-2 | Bratenahl Reference | – | – | – | 41° 33' 28.68" N | 81° 35' 52.64" W |
| BS-3 | Bratenahl Reference | – | – | – | 41° 33' 29.44" N | 81° 35' 52.06" W |
| BS-4 | Bratenahl Reference | – | – | – | 41° 33' 29.13" N | 81° 35' 52.47" W |

# Appendix B: QAPP

# QUALITY ASSURANCE PROJECT PLAN

## Cleveland Harbor Beneficial Use Alternatives Assessment

Prepared by:

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5 November 2010

# Quality Assurance Project Plan
# Cleveland Harbor Beneficial Use Alternatives Assessment

Prepared by:

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5 November 2010

| | |
|---|---|
| Trudy Estes, Tom Borrowman and Dennis L. Brandon, Principal Investigators, Column Settling and Geotechnical Tests | Date |
| Joseph Kreitinger, Project Manager | Date |
| Anthony J. Bednar, QA Manager, Analytical Chemistry | Date |
| Alan J. Kennedy, Aquatic Bioassays | Date |
| Richard A. Price, Terrestrial Bioassays | Date |

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## 1. INTRODUCTION

The purpose of this document is to present the quality assurance/quality control (QA/QC) requirements for assessing the beneficial use alternatives of dredged sediment from the Cleveland Harbor. This Quality Assurance Project Plan (QAPP) has been prepared in accordance with Appendix G (QA/QC Considerations) in the guidance manual *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual: Inland Testing Manual* (EPA 823-B-98-004, 1998) and the Great Lakes Dredged Material Testing and Evaluation Manual (USEPA / USACE 1998). To provide a consistent framework, the format of this document closely follows the specifications and instructions for information as presented in the Inland Testing Manual (ITM) (US EPA / USACE 1998). The ITM provides guidance for developing QA project plans for ensuring the reliability of data collected for evaluating dredged material proposed for discharge, and outlines QA/QC procedures to be followed when sampling and analyzing sediments, water and tissues.

The QA/QC requirements provided herein are limited to project activities to be performed by the U.S. Army Engineer Research and Development Center (ERDC) Environmental Laboratory located in Vicksburg, MS. Chemical analysis of sediment, site water and elutriate will be performed by the Environmental Chemistry Branch, toxicity and bioaccumulation testing will be performed by the Environmental Risk Assessment Branch or its subcontractors, and column settling, and elutriate tests will be performed by the Environmental Engineering Branch at ERDC.

## 2. BACKGROUND AND PROJECT DESCRIPTION

The following summarizes the work scope and testing procedures that will be used by LRB in order to assess beneficial use alternatives of Cleveland Harbor sediments. The primary objective is to collect Cuyahoga River sediment samples in the upper reach of the navigation channel that will be used to conduct BU suitability and selection testing. The testing will include chemical, toxicity, bioaccumulation, and geotechnical characterization.

## 1. GENERAL

1) The Buffalo District field sampling team shall be responsible for the collection, compositing, preservation, and shipment of the water and sediment samples. ERDC will expect to receive samples in mid -November 2010.

2) ERDC shall be responsible for all laboratory testing and analyses, as defined in the Modified Elutriate Testing, Column Settling Tests, and Biological Testing (Water Column Bioassay Testing, Terrestrial Bioassay Testing) sections below. The work scope will include chemical, physical and biological testing of composite samples. Composite samples will be homogenized by the ERDC lab. All sampling, testing and analyses will be funded by the USACE.

3) In the event dilution testing is required, the Buffalo District field sampling team will remobilize to collect water samples. This will be coordinated through ERDC personnel in December 2010.

## 2. ERDC WORK SCOPE

**Samples Required:**

The project study area is the Upper Reach which is defined as approximately the first mile of the Cleveland Harbor Federal Navigation Channel extending from the head of navigation to the turning basin. Samples will be collected from the following areas for this project:

1) **Upper Reach :** DMMU1 extends from the head of navigation to a location approximately 1,500 feet downstream from the head of navigation. Five discrete and one composite sample surface grab sample will be collected. The discrete samples collected will be located at the same positions as samples CH-1 through CH-5 that were previously collected in 2007. Two liters of sediment will be required from each discrete sediment sample location for bulk sediment chemical analysis and grain size analysis. A single composite sample consisting of 40 gallons that is representative of the average contaminant concentrations will be required from each DMMU. The composite sample will be used for chemical and bioassay testing of bulk sediment, preparation of elutriates, column settling tests, geotechnical properties, and coarse grained fraction for chemical, biological and physical tests. One QA/QC sample will be collected at CH-5. Sample locations are listed in the Sample List (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011).

2) DMMU2 extends from approximately 1,500 feet downstream from the head of navigation to the Turning Basin. Five discrete and one composite sample surface grab sample will be collected. The discrete samples collected will be located at the same positions as samples CH-6 through CH-8. One sample location (6b) will be positioned halfway between CH-6 and CH-7 and another sample location (7b) will be positioned halfway between CH-7 and CH-8. Two liters of sediment will be required from each discrete sediment sample location for bulk sediment chemical analysis and grain size analysis. A single composite sample consisting of 40 gallons that is representative of the average contaminant concentrations will be required from each DMMU. The composite sample will be used for chemical and bioassay testing of bulk sediment, preparation of elutriates, column settling tests, geotechnical properties, and coarse grained fraction for chemical, biological and physical tests. Sample locations are listed in the Sample List (Evaluation of Beneficial Uses of Cleveland

Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011).

3) **Upland Reference Soil**: The Upland Reference soil will be used as the field reference sample for earthworm toxicity and bioaccumulation testing. The Upland Reference soil will be collected from Bratenahl, OH. The site soils consist of silty to sandy clay and fine originating from post glacial Lacustrine Plain deposits. Surface (0-1 foot) grab samples will be collected from four discrete locations and composited. Sample locations are listed in the Sample List (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011).

4) **Littoral Reference Sediment**: Littoral Reference sediment samples will be collected from the Perkins Beach site for comparison to the Upper Reach sediment samples. Water from this location will also be used for Elutriate Testing. Elutriate testing will be performed following a determination that it is acceptable to place sediments from the navigation channel at this potential littoral site. Surface (0-1 foot) grab samples will be collected from four discrete locations and composited. Twenty liters of water will be collected initially for elutriate testing. If dilution testing is warranted, approximately 38 liters of water will be collected two weeks later. Sample locations are listed the Sample List (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011).

**Testing Plan:**
The laboratory testing program consists of three phases:

**Phase 1 Testing: Baseline Testing**

1. Baseline Analytical Chemistry
2. Elutriate Chemistry
3. Elutriate Toxicity Testing
4. Sediment Geotechnical Parameters
5. Terrestrial Macroinvertebrate Toxicity and Bioaccumulation

**Phase 2 Testing: Potentially Required Testing** (based on existing data and Phase 1 results)

6. Whole Sediment Aquatic Macroinvertebrate Toxicity
7. Whole Sediment Aquatic Macroinvertebrate Bioaccumulation

**Phase 3 Testing: Optional Testing** (based on Phase 1 and 2 test results)

8. Column Settling Test
9. Toxicity Identification Evaluation
10. Wetland Treatability Testing

The Phase 1 Testing is designed to meet the basic data needs for evaluating the suitability and acceptability of sediment for upland and aquatic beneficial uses. Standard elutriates will be prepared and the chemical analysis of whole sediment, unfiltered elutriate and filtered elutriate samples will be used to provide estimates of contaminant aqueous partitioning and the potential for contaminant leaching and runoff following placement in upland environments and to provide estimate of the potential impacts to water quality following placement in aquatic littoral environments. Other laboratory testing procedures including the Surface Runoff Procedure (SLRP) and Sediment Leachate Test (SBLT) may be performed in the future to further refine these potential exposure pathways, however, these advanced test procedures are not proposed at this time. Phase 2 Testing will be performed following the baseline testing and upon reaching the conclusion that placement of sediment at an aquatic littoral site will meet State and Federal water quality criteria. Chemical contaminants evaluated in aquatic macroinvertebrate bioaccumulation test will be selected following initial screening of the baseline testing data and evaluation of theoretical bioaccumulation potential. Data from the column settling test will provide information necessary for modeling transport of suspended solids during placement of dredged sediments in littoral environments. If toxicity is observed in whole sediment, then optional laboratory testing procedures (Phase 3 Testing) maybe conducted to identify the source of toxicity and assessing the potential for eliminating or minimizing risk to the aquatic environment through treatment of sediment in an engineered wetland.

(Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011) identifies the physical or chemical test methods used with each medium (i.e., sediment, soil, water). The Modified Elutriate Test (MET) will follow the procedures outlined in TN EEDP-04-01 through 04-4 (Palermo 1985) and presented as the effluent elutriate test in the UTM (ERDC/EL TR-03-1 January 2003) with the provision for analysis of the whole (uncentrifuged /unfiltered) elutriate as well as the centrifuged/filtered elutriate including TSS and turbidity testing of both the whole elutriate and the centrifuged/filtered elutriate. Due to the CoCs including PAHs, testing for the organic fraction will be performed in glass apparati with mixing instead of aeration, while testing for the metals and nutrient fraction will be performed in Nalgene or glass apparati with aeration. The Column Settling Tests will follow the general procedures presented as the effluent elutriate test in the UTM (ERDC/EL TR-03-1 January 2003) as outlined in Engineer Manual 1110-2-5027 (USACE 1987) as modified in Technical Report D-88-2 (Averett et al. 1988) and further clarified in web-posted procedures (Schroeder 2002). TSS and turbidity measurements will be made on supernatant samples from the column settling tests and analyzed by the same methods as listed above for other samples. http://el.erdc.usace.army.mil/elmodels/zipd/setpro.pdf. Forms for reporting settling column test data are posted on the web at http://el.erdc.usace.army.mil/elmodels/zipd/setform.xls. Bioassays will be conducted following the Great Lakes Manual and will consist of initial elutriate bioassay tests on the 100% (undiluted and aged) MET. Elutriate samples will be modified by aging and centrifuging/filtering samples prior to conducting bioassays. The aging and centrifuging/filtering of samples is designed to simulate the chemical/physical processes associated with the anticipated several week residency time of water in the CDF. Additional testing using five dilutions will be conducted if greater than 50% mortality occurs in the undiluted MET.

## 3. QA ORGANIZATION: PERSONNEL, QUALIFICATIONS

This section summarizes the project roles and responsibilities for the principal project team members.

**Principal Investigator** – Trudy Estes, Tom Borrowman and Dennis Brandon (USACE, CEERD-EP-E and CEERD-EP-R) will oversee and approve all project activities; approve final project QA needs; authorize necessary actions and adjustments to accomplish program QA objectives.

**Project Manager –** Joseph Kreitinger (USACE, CEERD-EP-R) act as a liaison between agencies and coordinate between field and laboratory activities. He will review QA reports, approve final project QA needs, document and report any field problems to the QA Manager and reach agreement on corrective action. He will document (with the Field Team Leader) field corrective actions taken during the project and will prepare a summary of field QC and corrective action, if any, for the final report.

**Quality Assurance (QA) Manager** – Anthony Bednar (USACE, CEERD-EP-C) will oversee QA activities to ensure compliance with contract specifications; review work completed by project personnel and subcontractors, including analytical laboratories and independent data validation contractors; review program QA activities, quality problems, and quality-related requests. In response to field and analytical findings, he will approve the corrective actions. He will report quality nonconformances to the Project Manager and review all pertinent portions of the deliverables before they are transmitted to ensure conformance with QA/QC procedures and quality work product. He will evaluate the usability of the data and prepare a written report for incorporation into the final report.

**Aquatic Biological Laboratory Lead** – Alan Kennedy (USACE, CEERD-EP-R) will lead and coordinate the conduct of sediment elutriate toxicity and aquatic bioaccumulation tests. He is responsible for all associated analysis and reporting and QA-QC.

**Terrestrial Bioassay Lead** – Richard A. Price (USACE, CEERD-EP-R) will coordinate the conduct of upland and wetland toxicity and bioaccumulation tests. He is responsible for all associated analysis and reporting and QA-QC.

### 3.1 Assessment and Oversight

An ERDC project manager and / or QA-QC officer will oversee all activities. All guidelines, as well as cited test methods, provided in the QAPP will be strictly followed. No alterations to the QAPP will be permitted without written consent from the project manager / QA-QC manager, following approval from CELRB, with description of changes (if any) and justification provided with the reporting of results (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix B 2011).

## 4. DATA QUALITY OBJECTIVES

All physical and biological data will be collected, recorded and analyzed as described in the test-specific guidance manuals, cited below. Analytical DQOs are to achieve the reporting limits (RLs) for solid, suspended phase and aqueous samples listed in section 12. DQOs for sample field-collection are provided in Cleveland Harbor Sampling Plan (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendices A and B 2011). DQO for laboratory toxicity and bioaccumulation tests are described within Laboratory Operations. Toxicity test results will be compared to test species-specific positive and negative controls to validate results.

## 5. STANDARD OPERATING PROCEDURES

All procedures will be executed according to standard guidance (e.g., U.S. EPA, ASTM, etc.), where available, and are briefly described below. Specific test protocols to be used are sited below.

## 6. SAMPLING STRATEGY AND PROCEDURES

See Cleveland Harbor Sampling Plan (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011). Table 12.2 provides sample size, sample preservation requirements, and maximum holding time guidance.

## 7. SAMPLE CUSTODY AND DOCUMENTATION

The Buffalo District field sampling team is responsible for shipping sediments and soils to ERDC (Vicksburg, MS). Samples will be stored in refrigerated containers (cooled to $4 \pm 1°C$[1]) prior to shipment to ERDC, using Chain of Custody procedures. Upon arrival, laboratory QA managers will verify that samples arrived intact, at the proper storage temperature and are adequately identified. Sample temperature ($4 \pm 1°C$) and conditions will be recorded on the cooler log. Any concerns or deviations in regard to sample integrity or in general will be recorded and reported.

When samples arrive at the ERDC site, they will be re-homogenized as needed and divided according to material requirements for testing and characterization efforts. Sample split containers will be labeled in permanent ink by appending the original sample nomenclature in such manner that samples generated by the testing can be traced back to the original bulk sediment sample or composite. Samples will be locked in a refrigerated container until needed for testing. Only authorized personnel will have access to the storage containers and personnel will use a logbook to maintain a record of each entry, in addition to daily storage temperature. Contract personnel will be accompanied by a permanent federal employee(s) when obtaining samples. In-house chain of custody will be maintained for the purpose of tracking dates and amounts of sediment and soil distributed to principal investigators of each work task.

[1] Large samples will be iced upon shipment to initiate cooling to 4°C.

Distributed materials will be stored at 4 ± 1 °C prior to initiating test procedures according to guidance described in U.S. EPA (2001).

Samples will be transferred to designated ERDC personnel using standard chain of custody (COC) sheets (Appendix B), locked in a refrigerated container. Chain of custody forms will accompany the sediment samples as they arrive into the laboratory for testing. The individual relinquishing the samples will sign and record the date and time on the document; the person receiving the samples will repeat the procedure. The records represent the official documentation for all transference of the sample custody throughout testing and analysis.

Minimum documentation to be included is as follows:

- Sample identification
- Sample collection date and time
- Any special notations on sample characteristics
- Initials of the person collecting the sample
- Date the sample was sent to the laboratory
- Shipping company and waybill information

Homogenized sediments and soils will then be distributed to each work task in HDPE containers labeled with permanent ink.

## 8. FIELD OPERATIONS

See Cleveland Harbor Sampling Plan (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011).

## 9. LABORATORY OPERATIONS

The sample custodians are Anthony J. Bednar, Alan J. Kennedy and Richard A. Price. Sample handling and archiving will be executed as described in Section 8 above.

### 9.1. Modified Elutriate Preparation and Testing

Elutriates will be prepared following published methods (Palermo 1985; USACE 2003). All samples for organic compound analysis will be prepared in glass jar containers agitated by shaking for one (1) hour followed by at settling period with ten (10) to fourteen (14) days of aging under site relevant environmentally controlled conditions prior to supernatant collection. Elutriates prepared for inorganic compound analysis will be prepared in glass graduated cylinders and agitated by aeration for one (1) hour with ten (10) to fourteen (14) days of aging under site relevant environmentally controlled conditions prior to supernatant collection. The aging period is implemented to be relevant to the residency time within the CDF. After collection, the supernatant will be split into two fractions, the unfiltered fraction will be analyzed for the constituents of interest while the second fraction is centrifuged at 2500 x g (and or filtered) prior to analysis to removed suspended solids.

## 9.2. Column Settling Tests

Column settling tests will be conducted by the ERDC Hazardous Waste Research Center, according to the procedures outlined in the Upland Testing Manual (UTM), Appendix B (USACE 2003). Settling tests are necessary to provide data for design or evaluation of disposal areas for retention of suspended solids, prediction of total contaminant concentration in the discharge (effluent) and to compare effluent quality with WQS. These tests are designed to define the settling behavior of a particular sediment and to provide information concerning the volumes occupied by newly placed layers of dredged material. If WQS exist for turbidity, a sediment-specific correlation of suspended solids and turbidity must be developed (Thackston and Palermo 2000).

Data obtained from column settling tests is used to determine the size of disposal area required in order for adequate clarification to occur. Conversely, if the size of the disposal area is fixed, production constraints can be determined from the analysis. Predicted SS concentrations from the column settling test are also used with data obtained from effluent elutriate tests (USACE 2003), to obtain predicted total contaminant concentrations in the effluent.

Material designated for column settling tests will be stored at 4 °C until needed for testing, in order to minimize changes in the organic components of the sediment. Salinity of the site water will be measured (YSI Incorporated Model 30/10 FT or calculated from TDS determined gravimetrically) and slurry made up with tap water adjusted to the correct salinity with Instant Ocean® or similar product. Slurry concentration will be based upon the grain size distribution of the material if that information is available, or will use the default value of 150 g/l, as specified in the procedure. Tests will be conducted at ambient temperature in the Hazardous Waste Facility at ERDC. Eight-inch diameter plexiglass columns with staggered sampling ports, as described in the UTM and SETTLE documentation (ERDC EL 2002), will be used in the testing. Columns will be cleaned with tap water to assure all residual solids from previous testing are cleared from the column and all sampling ports. Similarly, tanks, mixers and pumps used to prepare and transfer slurry will be cleaned and/or purged with tap water to eliminate solids from previous testing. Salinity and turbidity meters will be properly cleaned and calibrated prior to use according to manufacturer recommendations. Filtration equipment and filter papers used for determination of suspended solids will be prepared according to the procedures SM 209C as outlined in the SETTLE documentation (ERDC EL 2002). Immediately after filling the column, slurry samples will be obtained from the column sampling ports at 1 ft intervals. These samples will be measured for total solids using procedure SM 209A and turbidity. The mean total solids concentration will be taken to be the starting slurry solids concentration of the column. In addition to obtaining total suspended solids concentrations on all subsequent samples taken over the course of the testing using procedure SM 209A for concentrations above 1 g/L and procedure SM 209C for samples at or below 1 g/L, turbidity is also measured as a check against the total suspended solids concentrations obtained. Raw data will be recorded on laboratory data sheets (included in Appendix E and available from the web http://el.erdc.usace.army.mil/elmodels/zipd/setform.xls) and then transferred to electronic spreadsheets. A laboratory record book is also maintained documenting all activities,

observations, and relevant observations. Left-over materials will be properly manifested and disposed of in an appropriate disposal facility, following completion of the column settling tests.

## 9.3. Biological Testing

### *9.3.1. Aquatic bioassays*

Bioassays will be executed by ERDC according to standard guidance, where available. The aquatic toxicity testing facility at ERDC consists of three laboratories containing five (5) temperature controlled environmental rooms, four (4) temperature controlled water baths and two (2) environmentally controlled incubators. In addition, relevant equipment for processing samples and fulfilling all requirements of laboratory bioassays (e.g., pH meters, centrifuges, etc.) is available. Bioassays will involve freshwater species for sediment elutriate tests. Procedures are briefly described below.

### 9.3.2 Sediment Elutriate Toxicity Tests

Elutriate tests will be conducted using a freshwater cladoceran (*Ceriodaphnia dubia*) and a freshwater fish (*Pimephales promelas*); both are recommended benchmark test species for elutriate exposures (USEPA / USACE 1998a, 1998b) and testing of receiving waters (USEPA 2002). Both organisms are laboratory cultured and will be obtained from a commercial source (e.g., Aquatic Biosystems, Fort Collins, CO; Aquatic Research Organisms, Hampton, NH, or similar vendor). ERDC periodically maintains an in-house culture of *C. dubia* (originally obtained from the aforementioned vendors). Only organisms deemed healthy by best professional judgment will be used in testing. Elutriate preparation will be conducted according to standard guidance for the modified elutriate, or MET (see section 10.1.). The prepared MET will be aged as in Section 10.1 to simulate the residency time at the CDF, centrifuged and/or filtered to remove suspended solids and supplied for biological testing. Tests will utilize < 24-h old *C. dubia* or *P. promelas* on the order of four (4) days old (within a 24-h range in age)[2]. The prepared MET will be considered the 100% (i.e., undiluted) elutriate test concentration. As directed by the Great Lakes Regional Implementation Manual (RIM) (US ACE 1998b), the 100% elutriate concentration will be initially tested, and if test organism survival is fifty (50)% or greater, the elutriate bioassay will be considered completed. However, if mortality exceeds fifty (50)%, the elutriate will be tested with a total of five (5) dilutions at either a 0.5 or 0.6 dilution factor according to the Great Lakes Dredged Material Evaluation Manual (USEPA / USACE 1998). All elutriate testing will be conducted in comparison to a field-collected water from a reference site and a laboratory performance control consisting of dechlorinated tap water (Vicksburg Municipal Water) or a laboratory reconstituted water (e.g., moderately hard reconstituted water; US EPA 2002). According to guidance (US EPA / US ACE 1998a, 1998b), the water for preparing elutriate dilutions can be an approved laboratory water (see above) or reference site water. Each elutriate test concentration will be replicated five (5) times, with each

[2] Note: The Great Lakes Manual (USEPA / USACE 1998b) guidance is for less than three (3) day old fish. However, ERDC recommends holding fish larvae for no less than 48-h to ensure health after shipment. Thus, fish on the order of four (4) days old will be tested, as recommended by national guidance (Inland Testing Manual, USEPA / USACE 1998a). In support, the USEPA (2002) recommends use of 1 to 14-day old *P. promelas* (< 24-h range in age). In the case that healthy less than three (3) day old fish are not available, slightly older *P. promelas* larvae will be used in testing.

replicate containing five (5) *C. dubia* in 50 ml beakers containing at least 30 ml test water or ten (10) *P. promelas* in 250 to 300 ml beakers containing 200 ml test water. An environmental chamber will maintain a temperature of 25 ± 1 °C. At least two (2) hours prior to addition to test water, *C. dubia* will receive a feeding ration of 1:1 *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum)* and yeast-cerophyl-trout chow (YCT) while *P. promelas* will receive a feeding ration of *Artemia* sp.. As specified by guidance (USEPA / USACE 1998b), the *C. dubia* bioassay will be conducted for 48-h without a feeding ration while the *P. promelas* bioassay will be conducted for 96-h with feeding rations of *Artemia* sp. nauplii and a 48-h water exchange[3] (by USEPA/USACE 1998b guidance). Additionally, reference toxicity tests will be conducted using a reference chemical for which control charts have been maintained for each test organism (e.g., KCl or similar toxicant) to determine relative sensitivity with historic information. Reference toxicity tests will be conducted monthly for organisms cultured in-house or with each batch of purchased organisms. The endpoint assessed will be survivorship, defined as lack of motility, determined by gently swirling the water around the organism, if necessary.

Water quality parameters (i.e., temperature, pH, dissolved oxygen, conductivity) will be measured from each replicate at experiment initiation and termination. Ammonia, alkalinity and hardness will be measured for each concentration at test initiation. Environmental chamber temperature will be monitored and recorded daily. Aeration will be provided to test chambers if dissolved oxygen levels fall below 40% saturation. Example data sheets are provided in the appendices.

Standard guidance (USEPA / USACE 1998a, 1998b, USEPA 2002) provides the following criteria for the referenced toxicity tests:

a) At least 90% survival in the negative control.
b) Compliance with the water quality ranges and test conditions.
c) Completion of positive control (reference toxicity test) within test acceptability criteria (TAC) via comparison to a control chart, as specified in USEPA / USACE (1991, 1998b). A reference toxicant test that falls outside TAC does not necessarily invalidate the corresponding toxicity test using site material of interest but does provide additional information to interpret overall results.

All measured analytical and toxicological values during bioassay testing are expressed as mean ± one (1) standard deviation. For acceptable tests, a one-way ANOVA (Systat Software, Inc., Inc., Chicago, IL) will be conducted to determine if statistically significant reductions relative to the reference water exist. Proportional survival data will be arc-sine square root transformed prior to analysis. In addition, if greater than 50% mortality occurs in at least one elutriate concentration, the lethal concentration calculated to induce 50% mortality (LC50) will be determined by the Spearman-Karber or Probit methods.

Table 9.1. Summary of conditions for sediment elutriate toxicity tests.

[3] Note: National guidance (USEPA / USACE (1998a) does not require a water exchange.

| Description | *Ceriodaphnia dubia* | *Pimephales promelas* |
|---|---|---|
| Test Type | Static Non-renewal | Static Non-renewal |
| Test Duration | 48 hours | 96 hours |
| Temperature | Mean: 25.0 ± 1.0°C<br>Instantaneous: 25.0 ± 3.0°C | Mean: 25.0 ± 1.0°C<br>Instantaneous: 25.0 ± 3.0°C |
| Conductivity | Site specific ± 20% | Site specific ± 20% |
| pH | 7-9 SU | 7-9 SU |
| Light Quality | Ambient laboratory | Ambient laboratory |
| Light Intensity | 10-20 uE/$m^2$/s | 10-20 uE/$m^2$/s |
| Photoperiod | 16L:8D | 16L:8D |
| Test Chamber Size | 50 ml containers | 250 - 300 ml containers |
| Test Solution Volume | 15 to 30 mL | 200 mL |
| Renewal of Overlying water | None | USEPA / USACE (1998a): none<br>USEPA / USACE (1998b): at 48-h |
| Age / Size of Test Organisms | < 24-h old neonates | On order of 4-days (USEPA / USACE 1998a)<br>1 to 2 day old (USEPA / USACE 1998b)<br>24 hour range |
| No. Organisms per Chamber | 5 | 10 |
| No. Replicates | 5 | 5 |
| No. Organisms per Concentration | 25 | 50 |
| Feeding Regime | None during testing (ration provided 2-h prior to testing) | 0.1 ml concentrate of *Artemia* sp. nauplii daily |
| Test Chamber Cleaning | None | None |
| Test Solution Aeration | None unless D.O saturation is < 40% saturation | None unless D.O saturation is < 40% saturation |
| Dilution Water | Field-collected site water, moderately hard reconstituted water, dechlorinated tap water or other approved laboratory water | Field-collected site water, moderately hard reconstituted water, dechlorinated tap water or other approved laboratory water |

| | | |
|---|---|---|
| Test Concentrations | If > 50% mortality in undiluted elutriate, five concentrations and control water | If > 50% mortality in undiluted elutriate, five concentrations and control water |
| Dilution Series | 0.5 or 0.6 | 0.5 or 0.6 |
| Endpoint | Survival and immobilization | Survival |
| Sampling and hold time | < 8 weeks for sediment ASAP following elutriate preparation | < 8 weeks for sediment ASAP following elutriate preparation |
| Sample Volume required | 0.5 L per site minimum | 4 L per site minimum |
| Test Acceptability Criterion | At least 90% survival in control | At least 90% survival in control |

9.3.3 Macroinvertebrate Bioaccumulation Test

The biological test species are shown in Table 9.2. The *Lumbriculus variegatus* 28-day bioaccumulation will be used to assess the whole sediment bioaccumulation potential. USACE ITM, Appendix E describes the test procedure. Table 9.3 summarizes test conditions and test acceptability criteria.

9.3.4 Terrestrial Bioassay Tests

*Eisenia fetida* 28-day toxicity/bioaccumuation (USACE UTM, Appendix G) will be utilized. Tests with *E. fetida* tests should use sexually mature fully clitellate earthworms. A summary of the test specifications is given in Table 9.4. Temperature, pH, percent moisture, and salinity should be controlled or monitored throughout the test. Ideally these variables should be the same as in the field, and within the range of the earthworms' requirements. Acceptable temperature range is from 10 to 29 EC with a recommended range of 19 to 25 EC. Acceptable pH range is between 4 and 10. Recommended photoperiod is 24 hr within 100-1080 lux. At the end of the 28-day test period, concentrations of COC in the tissues of earthworms in the dredged material should be statistically compared to concentrations of COC in worms in the reference material.

*Cyperus esculentus, 45-day plant bioaccumulation (USACE UTM, Appendix H)* will be used. Four replicates of each sediment condition are prepared by placing 4,500 g (ODW) of sediment (one 500-mL scoop-full at a time) into each prepared 7.6-l Bain-Marie container. Seedlings are transplanted into the wetland sediment or in premoistened terrestrial sediment. Four replicates of reference sediment or soil are also prepared and planted with four replicates. Day length of 16 hr is maintained. Light fixture faces should be 130 cm from the top of the 19.0-L bucket. Lights are arranged in a pattern of alternating a high-pressure sodium lamp and a high pressure multi-vapor halide lamp. The temperature of the greenhouse is maintained at 32+ 2 EC maximum during the day and 21 + 2 EC minimum at night to simulate a summer environment. Relative humidity is maintained as close to 100 percent as possible, but never less than 50 percent. Soil/sediment moisture content is maintained between 30 and 60 MPa (field capacity is 30 MPa) by adding RO water as necessary. Soil moisture tensiometers, placed in each container, are monitored daily and water added when tensiometers read greater than 60MPa. RO water is added to the outer container up to the level of the inner container and allowed to move through holes in the bottom of the inner container. When tensiometers read less than 40 MPa, the water is siphoned from

the outer container. At the end of the 28-day test period, concentrations of COC in the tissues of plants in the dredged material should be statistically compared to concentrations of COC in plants in the reference material.

### 9.3.5 Wetland Bioassay Tests

*Cyperus esculentus, 45-day bioaccumulation (USACE UTM, Appendix H)* will be performed. The basic apparatus is setup as described in Section 9.3.4. Here, the plants are grown under flooded conditions. The data analysis is the same as that described above.

### 9.3.6 SLRP and SBLT

The SLRP was designed to simulate the water quality of precipitation runoff from dredged material. The procedure evaluates the surface water generated in an upland environment on the CDF as a result of two cases: 1) Precipitation under wet, anaerobic conditions where consolidation is at a minimum as interstitial water is removed. At this stage, suspended solids in precipitation generated surface water within the CDF are possible within the range of 500 to 50,000 mg $l^{-1}$; 2) The opposite worst-case scenario is that of complete dryness with no vegetative cover. Suspended solids in this stage may range from 50 to 5,000 mg $l^{-1}$. The SLRP was developed to provide a faster, less expensive initial evaluation of surface runoff quality from dredged material placed in an upland environment. The test determines runoff quality from wet, anoxic and dry, oxidized conditions. The core of the SLRP procedure is the use of hydrogen peroxide to rapidly oxidize air-dried sediment to simulate the long-term effects of chemical and microbial oxidation on the solubility of specific metals. *USACE UTM* Appendix C describes SLRP in three steps:

**Step 1. Sediment Preparation.**
**Step 1a. Sediment Moisture.**
**Step 1b. Air Drying.**
**Step 1c. Chemical Oxidation.**
**Step 2. SLRP Runoff Water Preparation.**
**Step 2a. Wet Sediment Evaluation**.
**Step 2b. Dry Sediment Evaluation for Organics and Nutrients.**
**Step 3. Chemical Analyses.**

The selection of the appropriate test (SBLT or PCLT) and testing options and procedures are a function of the sediment salinity, the possible presence of Non-Aqueous Phase Liquids (NAPLs), CDF site conditions, and the COC. Table 9.5 summarizes the recommended test for various sediment characteristics. The SBLT test would normally be preferred for freshwater sediments. The sequential batch leach test (SBLT), used to evaluate potential leachate quality in freshwater dredged material, involves exposing anaerobic dredged material to successive aliquots of anaerobic distilled-deionized water (*http://www.wes.army.mil/el/dots/pdfs/mpd941.pdf*). Sediment is prepared and loaded into centrifuge tubes under anaerobic conditions at a 4:1 water to sediment ratio, then sequentially leached for 24 hr with distilled-deionized (DDI) water. Leachate is separated from sediment by centrifugation, and the leachate is chemically analyzed. Fresh DDI water is added to the centrifuge tube to replace that removed, and the process is repeated a minimum of four complete cycles.

### 9.3.7 Optional Testing

Optional tests include the Toxicity Identification Evaluation (TIE) and Wetland Plant (EAV) Treatability Tests. The Toxicity Identification Evaluation (TIE) test consists of the *Hyalella azteca* 10 day survival test. The Wetland Plant (EAV) Treatability Tests consists of the *Cyperus esculentus, 45-day test (USACE UTM, Appendix H modified), C. tentans* 10-day survival and

growth and *Hyalella azteca* 10 day survival tests (Table 9.2). Tables 9.6 and 9.7 summarize *C. tentans* and *Hyalella azteca* test conditions and test acceptability criteria, respectively.

Table 9.2 Biological Test Species and Reference List

| Description | Project Sediment | | Reference Sediment | | Reference Soil | | Littoral Water |
|---|---|---|---|---|---|---|---|
| | Discrete[1] | Composite | Discrete | Composite | Discrete | Composite | |
| ***Aquatic Macroinvertebrate Toxicity Tests*** | | | | | | | |
| *C. tentans* 10-day survival and growth | - | 3 | - | 1 | - | - | - |
| *H. azteca* 10-day survival | - | 3 | - | 1 | - | - | - |
| ***Aquatic Macroinvertebrate Bioaccumulation Tests*** | | | | | | | |
| *Lumbriculus variegatus* 28-day bioaccumulation | - | 3 | - | 1 | - | - | - |
| ***Standard Elutriate Chemistry Test (filtered and unfiltered)*** | | | | | | | |
| Effluent Elutriate Test (USACE UTM, Appendix B) | | 6 | | 1 | | | |
| ***Elutriate Aquatic Toxicity Tests*** | | | | | | | |
| *Pimephales promelas*, 4-day (GLTM, Appendix G) | | 3 | | 1 | | | |
| *Ceriodaphnia dubia*, 2-day (GLTM, Appendix G) | | 3 | | 1 | | | |
| ***Column Settling Test (Optional)*** | | | | | | | |
| Column Settling (USACE UTM, Appendix B) | | 2 | | | | | |
| **Surface Runoff (SLRP) and Leachate (SBLT) Tests** | | | | | | | |
| Simplified Laboratory Runoff Procedure (USACE UTM, Appendix C) | | - | | | | | |
| Sequential Batch Leachate Test (USACE UTM, Appendix D) | | - | | | | | |
| ***Terestrial Macroinvertebrate Toxicity/Bioaccumulation Tests*** | | | | | | | |
| *Esenia fetida* 28-day toxicity/bioaccumuation (USACE UTM, Appendix G) | | 2 | | | | 1 | |
| ***Terestrial Plant Bioaccumulation*** | | | | | | | |
| *Cyperus esculentus*, *45-day bioaccumulation (USACE UTM, Appendix H)* | | - | | | | - | |
| ***Wetland Plant Bioaccumulation*** | | | | | | | |
| *Cyperus esculentus*, *45-day bioaccumulation (USACE UTM, Appendix H)* | | - | | | | - | |
| ***Toxicity Identification Evaluation (TIE) (OPTIONAL)*** | | | | | | | |
| *Hyalella azteca* | | 2 | | | | | |
| ***Wetland Plant (EAV) Treatability Test (OPTIONAL)*** | | | | | | | |
| *Cyperus esculentus*, *45-day test (USACE UTM, Appendix H modified)* | | 2 | | 1 | | | |
| *C. tentans* 10-day survival and growth | | 2 | | 1 | | | |
| *H. azteca* 10-day survival | | 2 | | 1 | | | |

1. Includes QA/QC duplicate analysis

Table 9.3

**SUMMARY OF TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA FOR THE OLIGOCHAETE, *Lumbriculus variegatus*, SEDIMENT BIOACCUMULATION TESTS**

| | |
|---|---|
| 1. Test type: | Static Non-renewal or Overlying Water Renewal |
| 2. Test duration: | 28 d |
| 3. Temperature: | 20 - 25°C |
| 4. Salinity: | 0 ‰ |
| 5. Light quality: | Ambient Laboratory |
| 6. Light intensity: | 10-20 uE/m²/s (50-100 ft-c) |
| 7. Photoperiod: | 16L/8D |
| 8. Test chamber size: | 4 L minimum |
| 9. Test solution volume: | 1 L |
| 10. Sediment depth: | 3 cm |
| 11 Renewal of test solutions: | Variable |
| 12. Age of test organisms: | Mixed Age Adults |
| 13. No. organisms per test chamber: | 5 g (~500-1000) (Minimum) |
| 14. No. replicate chambers per sediment: | 4 minimum |
| 15. No. organisms per sediment: | N/A |
| 16. Feeding regime: | None |
| 17. Test chamber cleaning: | None |
| 18. Test solution aeration: | If needed to maintain DO> 40% saturation (< 100 bubbles/min.) |
| 19. Dilution water: | Moderately hard synthetic water prepared using Millipore MILLI-Q® or equivalent, deionized water and reagent grade chemicals or 20% DMW, receiving water, or synthetic water modified to reflect receiving water hardness |
| 20. Test concentrations: | Site sediment, a reference sediment and a control sediment |
| 21. Dilution series: | N/A |
| 22. Endpoint: | Bioaccumulation |
| 23. Sampling and sample holding requirements: | <6 wk |
| 24. Sample volume required: | 4 L |
| 25. Test acceptability criterion: | Adequate mass of organisms at test completion for detection of target analyte(s) |

Table 9.4

| Test Specifications for the 28-day *Eisenia fetida* Bioaccumulation Test | |
|---|---|
| **Test Duration** | **28 days** |
| Biological Endpoint | Contaminant accumulation |
| Temperature | Same as field condition if within 10-29 °C |
| Photoperiod | 24 hr/ 100-1080 lx |
| pH | Same as field condition if within 4-10 |
| % moisture | Same as field condition |
| Salinity | Same as field condition |
| Test Containers | Plexiglas cylinders |

Table 9.5 Characteristics for Recommended Leach Test

| Sediment/ Site Characteristics | Recommended Leach Test |
|---|---|
| Sediments containing NAPL | PCLT |
| Saltwater Sediments with freshwater infiltration | PCLT |
| Saltwater Sediments without freshwater infiltration | SBLT |
| Freshwater Sediments | SBLT |
| Freshwater Sediments with Hydrophobic Organics as the only COC | SBLT (single cycle) |

Table 9.6

**SUMMARY OF TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA FOR MIDGES, *Chironomus tentans* AND *C. riparius*, ACUTE TOXICITY SEDIMENT TESTS**

| | |
|---|---|
| 1. Test type: | Static Non-renewal |
| 2. Test duration: | 10 d |
| 3. Temperature: | 20 or 25°C |
| 4. Salinity: | 0 ‰ |
| 5. Light quality: | Ambient Laboratory |
| 6. Light intensity: | 10-20 uE/m$^2$/s (50-100 ft-c) |
| 7. Photoperiod: | 16L/8D |
| 8. Test chamber size: | 300 mL minimum |
| 9. Test solution volume: | 100 mL sediment minimum; overlying water variable depending on test type |
| 10. Sediment depth: | 2 cm minimum |
| 11. Renewal of test solutions: | None |
| 12. Age of test organisms: | 1st - 3rd Instar |
| 13. No. organisms per test chamber: | 10 minimum |
| 14. No. replicate chambers per concentration: | 5 minimum |
| 15. No. organisms per concentration: | 50 minimum |
| 16. Feeding regime: | Variable (None, Tetramin, YCT[1]) |
| 17. Test chamber cleaning: | None |
| 18. Test solution aeration: | Trickle-flow (< 100 bubbles/min.) |
| 19. Dilution water: | Variable |
| 20. Test concentrations: | Site sediment, a reference sediment and a control sediment |
| 21. Dilution series: | N/A |
| 22. Endpoint: | Survival |
| 23. Sampling and sample holding requirements: | <8 wk |
| 24. Sample volume required: | 4 L |
| 25. Test acceptability criterion: | ≥ 70% survival in controls |

[1] Slurry of Yeast, YCT, Trout chow.

Table 9.7

**SUMMARY OF TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA FOR THE FRESHWATER AMPHIPOD, *Hyalella azteca*, ACUTE TOXICITY SEDIMENT TESTS**

| | |
|---|---|
| 1. Test type: | Static Non-renewal |
| 2. Test duration: | 10 d |
| 3. Temperature: | 20 - 25°C |
| 4. Salinity | 0-15 ‰ |
| 5. Light quality: | Ambient Laboratory |
| 6. Light intensity: | 10-20 uE/m$^2$/s (50-100 ft-c) |
| 7. Photoperiod: | 16L/8D |
| 8. Test chamber size: | 300 mL minimum |
| 9. Test solution volume: | Variable, depending on test type |
| 10. Sediment depth: | 2 cm minimum |
| 11. Renewal of test solutions: | None |
| 12. Age of test organisms: | 7 - 14 d |
| 13. No. organisms per test chamber: | 10 minimum |
| 14. No. replicate chambers per sediment: | 5 minimum |
| 15. No. organisms per sediment: | 50 minimum |
| 16. Feeding regime: | Variable (None, Tetrafin, YCT*, rabbit chow, maple leaves) |
| 17. Test chamber cleaning: | None |
| 18. Test solution aeration: | Trickle-flow (<100 bubbles/min.) |
| 19. Dilution water: | Moderately hard synthetic water prepared using Millipore MILLI-Q® or equivalent deionized water and reagent grade chemicals or 20% DMW, receiving water, or synthetic water modified to reflect receiving water hardness |
| 20. Test concentrations: | Site sediment, a reference sediment and a control sediment |
| 21. Dilution series: | N/A |
| 22. Endpoint: | Survival |
| 23. Sampling and sample holding requirements: | <8 wk |
| 24. Sample volume required: | 2 L |
| 25. Test acceptability criterion: | ≥ 80% survival in controls |

* Slurry of Yeast, Cereal Flakes, Trout Chow

## 10. RECORD KEEPING

All data will initially be recorded onto datasheets and will be transferred to corresponding electronic datasheets in computerized systems. The initials of the responsible technician will accompany each value recorded so that all information can be tracked to individuals if further explanation is necessary. Any recording errors on hardcopies will be crossed out with a single line, accompanied by the technician initials, date and corrected number. All electronic data will be backed up on a separate hard drive daily. Data will include sample characterization (pH, salinity, % water, etc.) upon arrival to ERDC-Vicksburg and after soil processing, as well as any laboratory notes and details regarding the bioaccumulation evaluation.

## 11. CALIBRATION PROCEDURES

All laboratory instruments and probes will be used and calibrated, where necessary, in strict compliance with manufacturer provided users manuals. All relevant malfunctions (if any) that influence data will be recorded and reported.

- Ammonia sensitive electrode
- Dissolved Oxygen Meters
- Environmental chamber (Caron) – temperature
- Hydrometer
- Liquid limit device
- Mettler and Sartorius balances (or similar), calibrated annually by contract vendor
- Muffle furnace
- Ovens
- pH meter
- Pycnometer
- Refractometers
- REMCOR units – temperature
- Tensiometer

## 12. ANALYTICAL PROCEDURES

All chemical analyses (i.e., sediment, tissue) will be conducted by the Environmental Chemistry Branch (ECB) or NELAP approved laboratories under contract to the ECB according to USEPA guidelines or by ASTM published methods. The analytes of interest and the analytical methods to be used for the respective analytical groups are listed in (Evaluation of Beneficial Uses of Cleveland Harbor Dredged Material: Interim Capacity Management and Long Term Planning - Appendix A 2011). Table 12.1 lists the MDLs and method DLs for each analyte.

Table 12.1.1a Water

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Water
Analytical Group: Semi Volatile Organic Compounds
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (ug/L) (applicable units) | Analytical Method[1] (ug/L) | | Achievable Laboratory Limits[2] (ug/L) | |
|---|---|---|---|---|---|---|
| | | | MDLs* | Method QLs* | MDLs | QLs |
| 1,4-Dichlorobenzene | 106-46-7 | **9.4** | | | 5.00 | 5.00 |
| 2,4,5-Trichlorophenol | 95-95-4 | **NA** | | | 0.500 | 5.00 |
| 2,4,6-Trichlorophenol | 88-06-2 | **4.9** | | | 0.500 | 5.00 |
| 2,4-Dichlorophenol | 120-83-2 | **0.3** | | | 0.400 | 5.00 |
| 2,4-Dimethylphenol | 105-67-9 | **15** | | | 0.500 | 5.00 |
| 2,4-Dinitrophenol | 51-28-5 | **55** | | | 0.730 | 5.00 |
| 2,4-Dinitrotoluene | 121-14-2 | **44** | | | 3.40 | 5.00 |
| 2,6-Dinitrotoluene | 606-20-2 | **81** | | | 0.400 | 5.00 |
| 2-Chloronaphthalene | 91-58-7 | **NA** | | | 0.400 | 5.00 |
| 2-Chlorophenol | 95-57-8 | **0.1** | | | 0.500 | 5.00 |
| 2-Methylnaphthalene | 91-57-6 | **NA** | | | 0.400 | 5.00 |
| 2-Methylphenol | 95-48-7 | **67** | | | 0.500 | 5.00 |
| 2-Nitroaniline | 88-74-4 | **NA** | | | 0.400 | 5.00 |
| 2-Nitrophenol | 88-75-5 | **NA** | | | 0.400 | 5.00 |
| 3,3´-Dichlorobenzidine | 91-94-1 | **NA** | | | 0.700 | 5.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3-Nitroaniline | 99-09-2 | **NA** | | | 1.00 | 5.00 |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | **NA** | | | 0.200 | 5.00 |
| 4-Bromophenyl phenyl ether | 101-55-3 | **NA** | | | 0.500 | 5.00 |
| 4-Chloro-3-methylphenol | 59-50-7 | **NA** | | | 0.500 | 5.00 |
| 4-Chloroaniline | 106-47-8 | **NA** | | | 5.00 | 5.00 |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | **NA** | | | 0.500 | 5.00 |
| 4-Methylphenol | 106-44-5 | **53** | | | 0.400 | 5.00 |
| 4-Nitroaniline | 100-01-6 | **NA** | | | 0.500 | 5.00 |
| 4-Nitrophenol | 100-02-7 | **NA** | | | 0.400 | 5.00 |
| Acenaphthene | 83-32-9 | **15** | | | 0.500 | 5.00 |
| Acenaphthylene | 208-96-8 | **13** | | | 0.500 | 5.00 |
| Aniline | 62-53-3 | **4.1** | | | 5.00 | 5.00 |
| Anthracene | 120-12-7 | **0.02** | | | 0.700 | 5.00 |
| Benzidine | 92-87-5 | **NA** | | | 5.00 | 5.00 |
| Benzo (a) anthracene | 56-55-3 | **4.7** | | | 0.800 | 5.00 |
| Benzo (a) pyrene | 50-32-8 | **0.00002** | | | 0.700 | 5.00 |
| Benzo (b) fluoranthene | 205-99-2 | **2.6** | | | 0.700 | 5.00 |
| Benzo (b+k) fluoranthene | 205-99-2, 207-08-9 | **NA** | | | NA | 5.00 |
| Benzo (g,h,i) perylene | 191-24-2 | **NA** | | | 0.800 | 5.00 |
| Benzo (k) fluoranthene | 207-08-9 | **NA** | | | 0.800 | 5.00 |
| Benzoic acid | 65-85-0 | **NA** | | | 5.00 | 5.00 |
| Benzyl alcohol | 100-51-6 | **NA** | | | 0.400 | 5.00 |
| Bis(2-chloroethoxy)methane | 111-91-1 | **NA** | | | 0.500 | 5.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Bis(2-chloroethyl)ether | 111-44-4 | **NA** | | | 0.500 | 5.00 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | **NA** | | | 5.00 | 5.00 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | **8.4** | | | 1.70 | 5.00 |
| Butyl benzyl phthalate | 85-68-7 | **23** | | | 1.00 | 5.00 |
| Chrysene | 218-01-9 | **4.7** | | | 0.800 | 5.00 |
| Dibenz (a,h) anthracene | 53-70-3 | **NA** | | | 0.600 | 5.00 |
| Dibenzofuran | 132-64-9 | **4** | | | 5.00 | 5.00 |
| Diethyl phthalate | 84-66-2 | **220** | | | 0.800 | 5.00 |
| Dimethyl phthalate | 131-11-3 | **1100** | | | 0.800 | 5.00 |
| Di-n-butyl phthalate | 84-74-2 | **31** | | | 0.800 | 5.00 |
| Di-n-octyl phthalate | 117-84-0 | **NA** | | | 0.900 | 5.00 |
| Fluoranthene | 206-44-0 | **0.8** | | | 0.800 | 5.00 |
| Fluorene | 86-73-7 | **19** | | | 0.500 | 5.00 |
| Hexachlorobenzene | 118-74-1 | **0.00045** | | | 0.600 | 5.00 |
| Hexachlorocyclopentadiene | 77-47-4 | **NA** | | | 5.00 | 5.00 |
| Hexachloroethane | 67-72-1 | **5.3** | | | 5.00 | 5.00 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | **NA** | | | 0.800 | 5.00 |
| Isophorone | 78-59-1 | **920** | | | 0.500 | 5.00 |
| Nitrobenzene | 98-95-3 | **380** | | | 0.500 | 5.00 |
| N-Nitrosodimethylamine | 62-75-9 | **NA** | | | 0.500 | 5.00 |
| N-Nitrosodi-n-propylamine | 621-64-7 | **NA** | | | 0.500 | 5.00 |
| N-Nitrosodiphenylamine | 86-30-6 | **NA** | | | 0.700 | 5.00 |
| PAHs, High Molecular Weight | PAHs, HMW | **NA** | | | NA | 5.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| PAHs, Low Molecular Weight | PAHs, LMW | **NA** | | | NA | 5.00 |
| Pentachlorophenol | 87-86-5 | **1.0** | | | 0.600 | 5.00 |
| Phenanthrene | 85-01-8 | **2.3** | | | 0.700 | 5.00 |
| Phenol | 108-95-2 | **1.0** | | | 0.400 | 5.00 |
| Pyrene | 129-00-0 | **4.6** | | | 0.800 | 5.00 |
| Pyridine | 110-86-1 | **NA** | | | 5.00 | 5.00 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.1b Water

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Water
Analytical Group: Volatile Organic Compounds
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (applicable units) | Analytical Method[1] (ug/kg) | | Achievable Laboratory Limits[2] (ug/kg) | |
|---|---|---|---|---|---|---|
| | | | MDLs* | Method QLs* | MDLs | QLs |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | **85** | | | 0.23 | 1 |
| 1,1,1-Trichloroethane | 71-55-6 | **76** | | | 0.2 | 1 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | **1.7** | | | 0.22 | 1 |
| 1,1,2-Trichloroethane | 79-00-5 | **6** | | | 0.22 | 1 |
| 1,1-Dichloroethane | 75-34-3 | **410** | | | 0.18 | 1 |
| 1,1-Dichloroethene | 75-35-4 | **NA** | | | 0.23 | 1 |
| 1,1-Dichloropropene | 563-58-6 | **NA** | | | 0.16 | 1 |
| 1,2,3-Trichlorobenzene | 87-61-6 | **NA** | | | 0.14 | 1 |
| 1,2,3-Trichloropropane | 96-18-4 | **NA** | | | 0.24 | 1 |
| 1,2,4-Trichlorobenzene | 120-82-1 | **NA** | | | 0.15 | 1 |
| 1,2,4-Trimethylbenzene | 95-63-6 | **15** | | | 0.21 | 1 |
| 1,2-Dibromo-3-Chloropropane | 96-12-8 | **NA** | | | 0.33 | 1 |
| 1,2-Dibromoethane | 106-93-4 | **NA** | | | 0.21 | 1 |
| 1,2-Dichlorobenzene | 95-50-1 | **23** | | | 0.23 | 1 |
| 1,2-Dichloroethane | 107-06-2 | **3.8** | | | 0.18 | 1 |
| 1,2-Dichloroethene, Total | 540-59-0 | **NA** | | | 0.31 | 1 |
| 1,2-Dichloropropane | 78-87-5 | **9.1** | | | 0.21 | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1,3,5-Trimethylbenzene | 108-67-8 | **26** | | | 0.22 | 1 |
| 1,3-Dichlorobenzene | 541-73-1 | **22** | | | 0.19 | 1 |
| 1,3-Dichloropropane | 142-28-9 | **NA** | | | 0.2 | 1 |
| 1,4-Dioxane | 123-91-1 | **0.032** | | | 9.5 | 50 |
| 2,2-Dichloropropane | 594-20-7 | **NA** | | | 0.23 | 1 |
| 2-Butanone | 78-93-3 | **22000** | | | 1 | 5 |
| 2-Chloroethyl vinyl ether | 110-75-8 | **NA** | | | 0.14 | 1 |
| 2-Chlorotoluene | 95-49-8 | **NA** | | | 0.23 | 1 |
| 2-Hexanone | 591-78-6 | **NA** | | | 0.82 | 5 |
| 4-Chlorotoluene | 106-43-4 | **NA** | | | 0.25 | 1 |
| 4-Isopropyltoluene | 99-87-6 | **16** | | | 0.19 | 1 |
| 4-Methyl-2-pentanone | 108-10-1 | **NA** | | | 0.74 | 5 |
| Acetone | 67-64-1 | **NA** | | | 1.7 | 5 |
| Benzene | 71-43-2 | **12** | | | 0.19 | 1 |
| Bromobenzene | 108-86-1 | **NA** | | | 0.2 | 1 |
| Bromochloromethane | 74-97-5 | **NA** | | | 0.37 | 1 |
| Bromodichloromethane | 75-27-4 | **6.8** | | | 0.2 | 1 |
| Bromoform | 75-25-2 | **52** | | | 0.17 | 1 |
| Bromomethane | 74-83-9 | **16** | | | 0.29 | 1 |
| Carbon disulfide | 75-15-0 | **15** | | | 0.13 | 1 |
| Carbon tetrachloride | 56-23-5 | **2.4** | | | 0.2 | 1 |
| Chlorobenzene | 108-90-7 | **47** | | | 0.18 | 1 |
| Chloroethane | 75-00-3 | **NA** | | | 0.39 | 1 |
| Chloroform | 67-66-3 | **56** | | | 0.2 | 1 |
| Chloromethane | 74-87-3 | **110** | | | 0.28 | 1 |
| cis-1,2-Dichloroethene | 156-59-2 | **NA** | | | 0.18 | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | 10061-01-5 | **NA** | | | 0.18 | 1 |
| Cyclohexane | 110-82-7 | **NA** | | | 0.18 | 1 |
| Dibromochloromethane | 124-48-1 | **6.8** | | | 0.27 | 1 |
| Dibromomethane | 74-95-3 | **NA** | | | 0.21 | 1 |
| Dichlorodifluoromethane | 75-71-8 | **NA** | | | 0.38 | 1 |
| Ethylbenzene | 100-41-4 | **61** | | | 0.18 | 1 |
| Fluorobenzene | 462-06-6 | **NA** | | | NA | 1 |
| Freon TF | 76-13-1 | **NA** | | | 0.2 | 1 |
| Hexachlorobutadiene | 87-68-3 | **0.22** | | | 0.21 | 1 |
| Isobutyl alcohol | 78-83-1 | **NA** | | | 11 | 50 |
| Isopropylbenzene | 98-82-8 | **4.8** | | | 0.22 | 1 |
| m&p-Xylene | 179601-23-1 | **27** | | | 0.4 | 1 |
| Methyl acetate | 79-20-9 | **NA** | | | 0.39 | 1 |
| Methyl iodide | 74-88-4 | **NA** | | | 0.18 | 1 |
| Methyl t-butyl ether | 1634-04-4 | **730** | | | 0.21 | 1 |
| Methylcyclohexane | 108-87-2 | **NA** | | | 0.16 | 1 |
| Methylene Chloride | 75-09-2 | **47** | | | 0.25 | 1 |
| Naphthalene | 91-20-3 | **21** | | | 0.15 | 1 |
| n-Butylbenzene | 104-51-8 | **NA** | | | 0.19 | 1 |
| n-Propylbenzene | 103-65-1 | **NA** | | | 0.22 | 1 |
| o-Xylene | 95-47-6 | **27** | | | 0.2 | 1 |
| sec-Butylbenzene | 135-98-8 | **NA** | | | 0.22 | 1 |
| Styrene | 100-42-5 | **32** | | | 0.19 | 1 |
| tert-Butylbenzene | 98-06-6 | **NA** | | | 0.23 | 1 |
| Tetrachloroethene | 127-18-4 | **NA** | | | 0.34 | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tetrahydrofuran | 109-99-9 | **11000** | | | 1.9 | 14 |
| Toluene | 108-88-3 | **62** | | | 0.19 | 1 |
| trans-1,2-Dichloroethene | 156-60-5 | **NA** | | | 0.14 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | **NA** | | | 0.2 | 1 |
| Trichloroethene | 79-01-6 | **NA** | | | 0.17 | 1 |
| Trichlorofluoromethane | 75-69-4 | **NA** | | | 0.36 | 1 |
| Vinyl acetate | 108-05-4 | **NA** | | | 0.26 | 1 |
| Vinyl chloride | 75-01-4 | **0.48** | | | 0.34 | 1 |
| Xylenes, Total | 1330-20-7 | **27** | | | 0.61 | 1 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.1c Water

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Water
Analytical Group: Metals
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (ug/L) (applicable units) | Analytical Method[1] (mg/L) | | Achievable Laboratory Limits[2] (mg/L) | |
|---|---|---|---|---|---|---|
| | | | MDLs* | Method QLs* | MDLs | QLs |
| Aluminum | 7429-90-5 | 970 | | | 0.0250 | 0.0500 |
| Antimony | 7440-36-0 | 9.7 | | | 5.00E-4 | 0.00100 |
| Arsenic | 7440-38-2 | 10 | | | 5.00E-4 | 0.00100 |
| Barium | 7440-39-3 | 220 | | | 5.00E-4 | 0.00100 |
| Beryllium | 7440-41-7 | 17 | | | 5.00E-4 | 0.00100 |
| Cadmium | 7440-43-9 | 14 | | | 5.00E-4 | 0.00100 |
| Calcium | 7440-70-2 | NA | | | 0.0250 | 0.0500 |
| Chromium | 7440-47-3 | 100 | | | 5.00E-4 | 0.00100 |
| Cobalt | 7440-48-4 | 24 | | | 5.00E-4 | 0.00100 |
| Copper | 7440-50-8 | 500 | | | 5.00E-4 | 0.00100 |
| Iron | 7439-89-6 | 300 | | | 0.0100 | 0.0200 |
| Lead | 7439-92-1 | 100 | | | 5.00E-4 | 0.00100 |
| Magnesium | 7439-95-4 | NA | | | 0.0250 | 0.0500 |
| Manganese | 7439-96-5 | 50 | | | 5.00E-4 | 0.00100 |
| Nickel | 7440-02-0 | 200 | | | 5.00E-4 | 0.00100 |
| Phosphorus | 7723-14-0 | NA | | | 0.0100 | 0.0200 |
| Potassium | 7440-09-7 | NA | | | 0.0250 | 0.0500 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Selenium | 7782-49-2 | 5 | | | 5.00E-4 | 0.00100 |
| Silver | 7440-22-4 | 0.06 | | | 5.00E-4 | 0.00100 |
| Sodium | 7440-23-5 | NA | | | 0.0250 | 0.0500 |
| Thallium | 7440-28-0 | 17 | | | 5.00E-4 | 0.00100 |
| Vanadium | 7440-62-2 | 44 | | | 5.00E-4 | 0.00100 |
| Zinc | 7440-66-6 | 5000 | | | 5.00E-4 | 0.00100 |
| Mercury | 7439-97-6 | 0.0031 | | | 5.00E-6 | 5.00E-6 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.1d Water

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Water
Analytical Group: PCBs
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (ug/L) (applicable units) | Analytical Method[1] | | Achievable Laboratory Limits[2] (ug/L) | |
|---|---|---|---|---|---|---|
| | | | MDLs* | Method QLs* | MDLs | QLs |
| PCB-1016 | 12674-11-2 | 0.000026 | | | 0.0500 | 0.170 |
| PCB-1221 | 11104-28-2 | 0.000026 | | | 0.0500 | 0.170 |
| PCB-1232 | 11141-16-5 | 0.000026 | | | 0.0500 | 0.170 |
| PCB-1242 | 53469-21-9 | 0.000026 | | | 0.0500 | 0.170 |
| PCB-1248 | 12672-29-6 | 0.000026 | | | 0.0500 | 0.170 |
| PCB-1254 | 11097-69-1 | 0.000026 | | | 0.0500 | 0.170 |
| PCB-1260 | 11096-82-5 | 0.000026 | | | 0.0500 | 0.170 |
| Total PCB | 1336-36-3 | NA | | | NA | NA |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.1e Water

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Water
Analytical Group: Pesticides
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (ug/L) (applicable units) | Analytical Method[1] (ug/L) | | Achievable Laboratory Limits[2] (ug/L) | |
|---|---|---|---|---|---|---|
| | | | MDLs* | Method QLs* | MDLs | QLs |
| Alpha-BHC | 319-84-6 | NA | | | 0.00300 | 0.0125 |
| Gamma-BHC (Lindane) | 58-89-9 | NA | | | 0.00300 | 0.0125 |
| Beta-BHC | 319-85-7 | NA | | | 0.00300 | 0.0125 |
| Delta-BHC | 319-86-8 | NA | | | 0.00300 | 0.0125 |
| Heptachlor | 76-44-8 | NA | | | 0.00300 | 0.0125 |
| Aldrin | 309-00-2 | NA | | | 0.00300 | 0.0125 |
| Heptachlor Epoxide | 1024-57-3 | NA | | | 0.00300 | 0.0125 |
| Endosulfan I | 959-98-8 | NA | | | 0.00300 | 0.0125 |
| 4,4-DDE | 72-55-9 | NA | | | 0.00300 | 0.0125 |
| Dieldrin | 60-57-1 | 0.0000065 | | | 0.00300 | 0.0125 |
| Endrin | 72-20-8 | 0.036 | | | 0.00300 | 0.0125 |
| 4,4-DDD | 72-54-8 | NA | | | 0.00300 | 0.0125 |
| Endosulfan II | 33213-65-9 | NA | | | 0.00300 | 0.0125 |
| Endrin Aldehyde | 7421-93-4 | NA | | | 0.00300 | 0.0125 |
| 4,4-DDT | 50-29-3 | 0.000011 | | | 0.00300 | 0.0125 |
| Endosulfan Sulfate | 1031-07-8 | NA | | | 0.00300 | 0.0125 |
| Methoxychlor | 72-43-5 | NA | | | 0.00300 | 0.0125 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Endrin Ketone | 53494-70-5 | NA | | | 0.00300 | 0.0125 |
| Alpha-Chlordane | 5103-71-9 | 0.00025 | | | 0.00300 | 0.125 |
| Gamma-Chlordane | 5566-34-7 | 0.00025 | | | 0.00300 | 0.0125 |
| Toxaphene | 8001-35-2 | 0.000068 | | | 0.00300 | 0.500 |
| Total DDT | DDT, Total | NA | | | NA | NA |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.2a Sediment

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Soil/Sediment
Analytical Group: Semi Volatile Organic Compounds
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (mg/kg) (applicable units) | Analytical Method[1] (ug/kg) | | Achievable Laboratory Limits[2] (ug/kg) | |
|---|---|---|---|---|---|---|
| | | | MDLs | Method QLs | MDLs | QLs |
| 1,4-Dichlorobenzene | 106-46-7 | 0.318[c] | | | 27.6 | 83.0 |
| 2,4,5-Trichlorophenol | 95-95-4 | 9[b] | | | 27.6 | 83.0 |
| 2,4,6-Trichlorophenol | 88-06-2 | 0.213[c] | | | 27.6 | 83.0 |
| 2,4-Dichlorophenol | 120-83-2 | 0.0817[c] | | | 27.6 | 83.0 |
| 2,4-Dimethylphenol | 105-67-9 | 0.01[b] | | | 27.6 | 83.0 |
| 2,4-Dinitrophenol | 51-28-5 | 20[b] | | | 27.6 | 83.0 |
| 2,4-Dinitrotoluene | 121-14-2 | 0.0144[c] | | | 27.6 | 83.0 |
| 2,6-Dinitrotoluene | 606-20-2 | 61[a] | | | 27.6 | 83.0 |
| 2-Chloronaphthalene | 91-58-7 | 6300[a] | | | 27.6 | 83.0 |
| 2-Chlorophenol | 95-57-8 | 0.0319[c] | | | 27.6 | 83.0 |
| 2-Methylnaphthalene | 91-57-6 | 0.0202[c] | | | 27.6 | 83.0 |
| 2-Methylphenol | 95-48-7 | 3100[a] | | | 27.6 | 83.0 |
| 2-Nitroaniline | 88-74-4 | 610[a] | | | 27.6 | 83.0 |
| 2-Nitrophenol | 88-75-5 | NA | | | 27.6 | 83.0 |
| 3,3´-Dichlorobenzidine | 91-94-1 | 0.127[c] | | | 27.6 | 83.0 |
| 3-Nitroaniline | 99-09-2 | NA | | | 27.6 | 83.0 |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | 4.9[a] | | | 27.6 | 83.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Bromophenyl phenyl ether | 101-55-3 | 1.55[c] | | | 27.6 | 83.0 |
| 4-Chloro-3-methylphenol | 59-50-7 | 6100[a] | | | 27.6 | 83.0 |
| 4-Chloroaniline | 106-47-8 | 2.4[a] | | | 27.6 | 83.0 |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | NA | | | 27.6 | 83.0 |
| 4-Methylphenol | 106-44-5 | 0.0202[c] | | | 27.6 | 83.0 |
| 4-Nitroaniline | 100-01-6 | 24[a] | | | 27.6 | 83.0 |
| 4-Nitrophenol | 100-02-7 | 7[b] | | | 27.6 | 83.0 |
| Acenaphthene | 83-32-9 | 0.00671[c] | | | 27.6 | 83.0 |
| Acenaphthylene | 208-96-8 | 0.00587[c] | | | 27.6 | 83.0 |
| Aniline | 62-53-3 | 85[a] | | | 27.6 | 83.0 |
| Anthracene | 120-12-7 | 0.0572[c] | | | 27.6 | 83.0 |
| Benzidine | 92-87-5 | 0.0005[a] | | | 27.6 | 83.0 |
| Benzo(a)anthracene | 56-55-3 | 0.108[c] | | | 27.6 | 83.0 |
| Benzo(a)pyrene | 50-32-8 | 0.015[a] | | | 27.6 | 83.0 |
| Benzo(b)fluoranthene | 205-99-2 | 0.15[a] | | | 27.6 | 83.0 |
| Benzo(b+k)fluoranthene | 205-99-2,207-08-9 | 0.24[c] | | | 27.6 | 83.0 |
| Benzo(g,h,i)perylene | 191-24-2 | 0.17[c] | | | 27.6 | 83.0 |
| Benzo(k)fluoranthene | 207-08-9 | 0.24[c] | | | 27.6 | 83.0 |
| Benzoic acid | 65-85-0 | 0.65[c] | | | 27.6 | 83.0 |
| Benzyl alcohol | 100-51-6 | 6100[a] | | | 27.6 | 83.0 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 180[a] | | | 27.6 | 83.0 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.21[a] | | | 27.6 | 83.0 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 4.6[a] | | | 27.6 | 83.0 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.18[c] | | | 27.6 | 83.0 |
| Butyl benzyl phthalate | 85-68-7 | 0.239[b] | | | 27.6 | 83.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Chrysene | 218-01-9 | 0.166[c] | | | 27.6 | 83.0 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.015[a] | | | 27.6 | 83.0 |
| Dibenzofuran | 132-64-9 | 0.449[c] | | | 27.6 | 83.0 |
| Diethyl phthalate | 84-66-2 | 0.295[c] | | | 27.6 | 83.0 |
| Dimethyl phthalate | 131-11-3 | NA | | | 27.6 | 83.0 |
| Di-n-butyl phthalate | 84-74-2 | 6.47[c] | | | 27.6 | 83.0 |
| Di-n-octyl phthalate | 117-84-0 | NA | | | 27.6 | 83.0 |
| Fluoranthene | 206-44-0 | 0.423[c] | | | 27.6 | 83.0 |
| Fluorene | 86-73-7 | 0.0774[c] | | | 27.6 | 83.0 |
| Hexachlorobenzene | 118-74-1 | 0.02[c] | | | 27.6 | 83.0 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.901[c] | | | 27.6 | 83.0 |
| Hexachloroethane | 67-72-1 | 0.584[c] | | | 27.6 | 83.0 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.15[a] | | | 27.6 | 83.0 |
| Isophorone | 78-59-1 | 510[a] | | | 27.6 | 83.0 |
| Nitrobenzene | 98-95-3 | 4.8[a] | | | 27.6 | 83.0 |
| N-Nitrosodimethylamine | 62-75-9 | 0.0023[a] | | | 27.6 | 83.0 |
| N-Nitrosodi-n-propylamine | 621-64-7 | 0.069[a] | | | 27.6 | 83.0 |
| N-Nitrosodiphenylamine | 86-30-6 | 0.545[b] | | | 27.6 | 83.0 |
| PAHs, High Molecular Weight | PAHs, HMW | 0.19[c] | | | 27.6 | 83.0 |
| PAHs, Low Molecular Weight | PAHs, LMW | 0.076[c] | | | 27.6 | 83.0 |
| Pentachlorophenol | 87-86-5 | 0.89[a] | | | 27.6 | 83.0 |
| Phenanthrene | 85-01-8 | 0.204[c] | | | 27.6 | 83.0 |
| Phenol | 108-95-2 | 0.0491[c] | | | 27.6 | 83.0 |
| Pyrene | 129-00-0 | 0.195[c] | | | 27.6 | 83.0 |
| Pyridine | 110-86-1 | 78[a] | | | 27.6 | 83.0 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

a

b

c

d

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.2b Sediment

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Soil/Sediment
Analytical Group: Volatile Organic Compounds
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (applicable units) | Analytical Method[1] (ug/kg) | | Achievable Laboratory Limits[2] (ug/kg) | |
|---|---|---|---|---|---|---|
| | | | MDLs | Method QLs | MDLs | QLs |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 1.9[a] | | | 36 | 100 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.0302[c] | | | 36 | 100 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.127[b] | | | 37 | 100 |
| 1,1,2-Trichloroethane | 79-00-5 | 1.1[a] | | | 42 | 100 |
| 1,1-Dichloroethane | 75-34-3 | 3.3[a] | | | 36 | 100 |
| 1,1-Dichloroethene | 75-35-4 | 0.0194[c] | | | 21 | 100 |
| 1,1-Dichloropropene | 563-58-6 | NA | | | 22 | 100 |
| 1,2,3-Trichlorobenzene | 87-61-6 | 0.858[c] | | | 25 | 100 |
| 1,2,3-Trichloropropane | 96-18-4 | 0.005[a] | | | 54 | 100 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 2.1[c] | | | 16 | 100 |
| 1,2,4-Trimethylbenzene | 95-63-6 | 62[a] | | | 34 | 100 |
| 1,2-Dibromo-3-Chloropropane | 96-12-8 | 0.0054[a] | | | 46 | 100 |
| 1,2-Dibromoethane | 106-93-4 | 0.034[a] | | | 50 | 100 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.294[c] | | | 28 | 100 |
| 1,2-Dichloroethane | 107-06-2 | 0.002[d] | | | 33 | 100 |
| 1,2-Dichloroethene, Total | 540-59-0 | 700[a] | | | 34 | 100 |
| 1,2-Dichloropropane | 78-87-5 | 0.89[a] | | | 38 | 100 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1,3,5-Trimethylbenzene | 108-67-8 | 780[a] | | | 32 | 100 |
| 1,3-Dichlorobenzene | 541-73-1 | 1.315[c] | | | 25 | 100 |
| 1,3-Dichloropropane | 142-28-9 | 1600[a] | | | 33 | 100 |
| 1,4-Dioxane | 123-91-1 | 4.9[a] | | | 2700 | 5000 |
| 2,2-Dichloropropane | 594-20-7 | NA | | | 46 | 100 |
| 2-Butanone | 78-93-3 | 1.8[d] | | | 110 | 100 |
| 2-Chloroethyl vinyl ether | 110-75-8 | NA | | | 13 | 100 |
| 2-Chlorotoluene | 95-49-8 | 1600[a] | | | 33 | 100 |
| 2-Hexanone | 591-78-6 | 210[a] | | | 100 | 100 |
| 4-Chlorotoluene | 106-43-4 | 5500[a] | | | 34 | 100 |
| 4-Isopropyltoluene | 99-87-6 | NA | | | 18 | 100 |
| 4-Methyl-2-pentanone | 108-10-1 | 5300[a] | | | 21 | 100 |
| Acetone | 67-64-1 | 61000[a] | | | 100 | 100 |
| Benzene | 71-43-2 | 0.009[d] | | | 31 | 100 |
| Bromobenzene | 108-86-1 | 300[a] | | | 37 | 100 |
| Bromochloromethane | 74-97-5 | NA | | | 53 | 100 |
| Bromodichloromethane | 75-27-4 | 0.27[a] | | | 37 | 100 |
| Bromoform | 75-25-2 | 0.492[c] | | | 39 | 100 |
| Bromomethane | 74-83-9 | 7.3[a] | | | 35 | 100 |
| Carbon disulfide | 75-15-0 | 0.0239[c] | | | 19 | 100 |
| Carbon tetrachloride | 56-23-5 | 0.25[d] | | | 32 | 100 |
| Chlorobenzene | 108-90-7 | 0.291[c] | | | 23 | 100 |
| Chloroethane | 75-00-3 | 15000[a] | | | 60 | 100 |
| Chloroform | 67-66-3 | 0.29[a] | | | 33 | 100 |
| Chloromethane | 74-87-3 | 120[a] | | | 37 | 100 |

| | | | | | | |
|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 156-59-2 | 0.07[d] | | | 21 | 100 |
| cis-1,3-Dichloropropene | 10061-01-5 | NA | | | 32 | 100 |
| Cyclohexane | 110-82-7 | 7000[a] | | | 35 | 100 |
| Dibromochloromethane | 124-48-1 | 0.68[a] | | | 37 | 100 |
| Dibromomethane | 74-95-3 | 25[a] | | | 25 | 100 |
| Dichlorodifluoromethane | 75-71-8 | 180[a] | | | 50 | 100 |
| Ethylbenzene | 100-41-4 | 0.175[c] | | | 50 | 100 |
| Fluorobenzene | 462-06-6 | NA | | | 50 | 100 |
| Freon TF | 76-13-1 | 43000[a] | | | 28 | 100 |
| Hexachlorobutadiene | 87-68-3 | 0.0265[c] | | | 50 | 100 |
| Isobutyl alcohol | 78-83-1 | 23000[a] | | | 2500 | 5000 |
| Isopropylbenzene | 98-82-8 | 0.086[c] | | | 50 | 100 |
| m&p-Xylene | 179601-23-1 | NA | | | 50 | 100 |
| Methyl acetate | 79-20-9 | 78000[a] | | | 50 | 100 |
| Methyl iodide | 74-88-4 | NA | | | 50 | 100 |
| Methyl t-butyl ether | 1634-04-4 | 43[a] | | | 50 | 100 |
| Methylcyclohexane | 108-87-2 | NA | | | 50 | 100 |
| Methylene Chloride | 75-09-2 | 11[a] | | | 50 | 100 |
| Naphthalene | 91-20-3 | 0.0994[b] | | | 50 | 100 |
| n-Butylbenzene | 104-51-8 | NA | | | 50 | 100 |
| n-Propylbenzene | 103-65-1 | 3400[a] | | | 50 | 100 |
| o-Xylene | 95-47-6 | 3800[a] | | | 50 | 100 |
| sec-Butylbenzene | 135-98-8 | NA | | | 50 | 100 |
| Styrene | 100-42-5 | 0.254[c] | | | 50 | 100 |
| tert-Butylbenzene | 98-06-6 | NA | | | 50 | 100 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tetrachloroethene | 127-18-4 | 0.11[d] | | | 50 | 100 |
| Tetrahydrofuran | 109-99-9 | NA | | | 500 | 1000 |
| Toluene | 108-88-3 | 4.1[d] | | | 50 | 100 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.23[d] | | | 50 | 100 |
| trans-1,3-Dichloropropene | 10061-02-6 | NA | | | 50 | 100 |
| Trichloroethene | 79-01-6 | 0.023[d] | | | 50 | 100 |
| Trichlorofluoromethane | 75-69-4 | 790[a] | | | 50 | 100 |
| Vinyl acetate | 108-05-4 | 970[a] | | | 50 | 100 |
| Vinyl chloride | 75-01-4 | 0.005[d] | | | 50 | 100 |
| Xylenes, Total | 1330-20-7 | 96[d] | | | 50 | 100 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

a

b

c

d

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.2c Sediment

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Soil/Sediment
Analytical Group: Metals
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (mg/kg) (applicable units) | Analytical Method[1] (mg/kg) | | Achievable Laboratory Limits[2] (mg/kg) | |
|---|---|---|---|---|---|---|
| | | | MDLs | Method QLs | MDLs | QLs |
| Aluminum | 7429-90-5 | 77000[a] | | | 1.0 | 5.00 |
| Antimony | 7440-36-0 | 0.27[b] | | | 0.0100 | 0.0500 |
| Arsenic | 7440-38-2 | 0.39[a] | | | 0.0100 | 0.0500 |
| Barium | 7440-39-3 | 283[b] | | | 0.0100 | 0.0500 |
| Beryllium | 7440-41-7 | 10[b] | | | 0.0100 | 0.0500 |
| Cadmium | 7440-43-9 | 0.36[b] | | | 0.0100 | 0.0500 |
| Calcium | 7440-70-2 | NA | | | 1.0 | 5.00 |
| Chromium | 7440-47-3 | 26[b] | | | 0.0100 | 0.0500 |
| Cobalt | 7440-48-4 | 13[b] | | | 0.0100 | 0.0500 |
| Copper | 7440-50-8 | 28[b] | | | 0.0100 | 0.0500 |
| Iron | 7439-89-6 | 20000[c] | | | 1.0 | 5.00 |
| Lead | 7439-92-1 | 11[b] | | | 0.0100 | 0.0500 |
| Magnesium | 7439-95-4 | NA | | | 1.00 | 5.00 |
| Manganese | 7439-96-5 | 220[b] | | | 0.0100 | 0.0500 |
| Nickel | 7440-02-0 | 22.7[c] | | | 0.0100 | 0.0500 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Phosphorus | 7723-14-0 | 1.6[c] | | | 0.400 | 2.00 |
| Potassium | 7440-09-7 | NA | | | 1.00 | 5.00 |
| Selenium | 7782-49-2 | 0.52[b] | | | 0.0100 | 0.0500 |
| Silver | 7440-22-4 | 0.5[c] | | | 0.0100 | 0.0500 |
| Sodium | 7440-23-5 | NA | | | 1.00 | 5.00 |
| Thallium | 7440-28-0 | 1[b] | | | 0.0100 | 0.0500 |
| Vanadium | 7440-62-2 | 2[b] | | | 0.0100 | 0.0500 |
| Zinc | 7440-66-6 | 46[b] | | | 0.0100 | 0.0500 |
| Mercury | 7439-97-6 | 0.00051 | | | 0.00400 | 0.00400 |

[1]Analytical MDLs and QLs are those documented in validated methods.
[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

a

b, cEcological Screening Levels, U.S. EPA, Region 5, 2003.
http://www.epa.gov/reg5rcra/ca/edql.ht
d

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.2d Sediment

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Soil/Sediment
Analytical Group: PCBs
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (mg/kg) (applicable units) | Analytical Method[1] (ug/kg) | | Achievable Laboratory Limits[2] (ug/kg) | |
|---|---|---|---|---|---|---|
| | | | MDLs | Method QLs | MDLs | QLs |
| PCB-1016 | 12674-11-2 | 3.9[a] | | | 2.07 | 3.30 |
| PCB-1221 | 11104-28-2 | 0.14[a] | | | 2.16 | 3.30 |
| PCB-1232 | 11141-16-5 | 0.14[a] | | | 2.16 | 3.30 |
| PCB-1242 | 53469-21-9 | 0.22[a] | | | 2.16 | 3.30 |
| PCB-1248 | 12672-29-6 | 0.22[a] | | | 2.16 | 3.30 |
| PCB-1254 | 11097-69-1 | 0.22[a] | | | 2.16 | 3.30 |
| PCB-1260 | 11096-82-5 | 0.22[a] | | | 2.14 | 3.30 |
| Total PCB | 1336-36-3 | 0.0598[c] | | | NA | NA |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

a

c

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.1.2e Sediment

## QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) -- Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Soil/Sediment
Analytical Group: Pesticides
Concentration Level:

| Analyte | CAS Number | Project Quantitation Limit Goal (mg/kg) (applicable units) | Analytical Method[1] (ug/kg) | | Achievable Laboratory Limits[2] (ug/kg) | |
|---|---|---|---|---|---|---|
| | | | MDLs | Method QLs | MDLs | QLs |
| Alpha-BHC | 319-84-6 | 0.006[c] | | | 0.113 | 0.420 |
| Gamma-BHC (Lindane) | 58-89-9 | 0.00237[c] | | | 0.129 | 0.420 |
| Beta-BHC | 319-85-7 | 0.00398[b] | | | 0.126 | 0.420 |
| Delta-BHC | 319-86-8 | 9.94[b] | | | 0.108 | 0.420 |
| Heptachlor | 76-44-8 | 0.0006[c] | | | 0.131 | 0.420 |
| Aldrin | 309-00-2 | 0.002[c] | | | 0.0760 | 0.420 |
| Heptachlor Epoxide | 1024-57-3 | 0.00247[c] | | | 0.142 | 0.420 |
| Endosulfan I | 959-98-8 | 0.00326[c] | | | 0.256 | 0.420 |
| 4,4-DDE | 72-55-9 | 0.00316[c] | | | 0.126 | 0.420 |
| Dieldrin | 60-57-1 | 0.0019[c] | | | 0.0930 | 0.420 |
| Endrin | 72-20-8 | 0.00222[c] | | | 0.105 | 0.420 |
| 4,4-DDD | 72-54-8 | 0.00488[c] | | | 0.0900 | 0.420 |
| Endosulfan II | 33213-65-9 | 0.00194[c] | | | 0.296 | 0.420 |
| Endrin Aldehyde | 7421-93-4 | NA | | | 0.205 | 0.420 |
| 4,4-DDT | 50-29-3 | 0.00416[c] | | | 0.0400 | 0.420 |
| Endosulfan Sulfate | 1031-07-8 | 0.0346[c] | | | 0.117 | 0.420 |
| Methoxychlor | 72-43-5 | 0.0136[c] | | | 0.199 | 0.420 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Endrin Ketone | 53494-70-5 | NA | | | 0.0480 | 0.420 |
| Alpha-Chlordane | 5103-71-9 | NA | | | 0.118 | 0.420 |
| Gamma-Chlordane | 5566-34-7 | NA | | | 0.127 | 0.420 |
| Toxaphene | 8001-35-2 | 0.0001[c] | | | 0.00300 | 0.420 |
| Total DDT | DDT, Total | 0.00528[c] | | | 0.0400 | 0.420 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

a

b

c

d

*The analytical method MDLs and Method QLs and achievable laboratory limits MDLs and Method QLs are equivalent.

Table 12.2

## QAPP Worksheet #19 (UFP-QAPP Manual Section 3.1.1) -- Analytical SOP Requirements Table

For each matrix, analytical group, and concentration level, list the analytical and preparation method/SOP and associated sample volume, container specifications, preservation requirements, and maximum holding time.

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation Method / SOP Reference | Sample Size | Containers (number, size, and type) | Preservation Requirements (chemical, temperature, light protected) | Maximum Holding Time (preparation / analysis) |
|---|---|---|---|---|---|---|---|
| Sediment | Metals - 23 TAL | 0.01 – 2 mg/kg | EPA 6000/7000 | 5 g | 1 - Glass or plastic | 4 C | 6 months |
| Sediment | AVS/SEM | AVS = 30 mg/kg; SEM = 0.01 – 2 mg/kg | EPA 9030 and 6000/7000 | 4 oz jar | 1 - Amber glass | 4 C | 6 months |
| Sediment | Chromium VI | 0.01 mg/kg | EPA 6000/7000 | 5 g | 1 - Glass or plastic | 4 C | 6 months |
| Sediment | Total Cyanide | 1.0 mg/kg | EPA 9010B/9012A | 4 oz jar | 1 - Amber glass | 4 C | 12 days |
| Sediment | TKN | 400 mg/kg | EPA 351 | 4 oz jar | 1 - Amber glass | 4 C | 28 days |
| Sediment | Ammonia Nitrogen | 0.88 mg/kg | EPA 350 | 4 oz jar | 1 - Amber glass | 4 C | 28 days |
| Sediment | Total Phosphorus | 2 mg/kg | EPA 6000/7000 | 5 g | 1 - Glass or plastic | 4 C | 6 months |
| Sediment | Volatile Organics | 100 ug/kg | EPA 8260B | 5 g | 1 - VOA Vial 40 ml with Methanol; 2 – VOA Vials 40 ml with DI water | 4 C; Methanol for 1; None for other 2 | 14 days |
| Sediment | B/N/A | 83 ug/kg | EPA 8270C | 4 oz jar | 2 - Amber glass | 4 C | 14 days/40 days |
| Sediment | OC Pesticides | 0.42 ug/kg | EPA 8081A | 4 oz jar | 1 - Amber glass | 4 C | 14 days/40 days |
| Sediment | PCB - Arochlors | 3.3 ug/kg | EPA 8082 | 4 oz jar | 1 - Amber glass | 4 C | 14 days/40 days |
| Sediment | Dissolved & Total PAHs (Parent and Alkylated) | 10 ug/kg | ASTM D7363 | 4 oz jar | 1 - Amber glass | 4 C | 14 days/40 days |
| Sediment | Total Organic Carbon | 1000 mg/kg | EPA 9060 | 4 oz jar | 1 - Amber glass | 4 C | 28 days |
| Sediment | Grain Size | 0.1 | D422 – Routine List | 16 oz jar | 1 - Clear glass, wide mouth | 4 C | 6 months |
| Sediment | Atterberg Limits | 0.1 | D4318 | 16 oz jar | 1 - Clear glass, wide mouth | 4 C | 6 months |
| Sediment | Percent Moisture | 0.01 | D2216 | 4 oz jar | 1 - Clear glass, wide mouth | 4 C | 14 days |
| Sediment | Percent Organic Matter | 0.1 | D2974 | 4 oz jar | 1 – Clear glass, wide mouth | 4 C | 14 days |
| Sediment | Proctor | 1.0 | ASTM d698-00a or ASTM d1557-00 | 5 gal bucket or 10" Shelby Tube | 5 gal bucket or 10" Shelby Tube | 4 C | 6 months |
| Sediment | Permeability | 1.0 | ASTM D5084-00E1 | 5 gal bucket or 10" Shelby Tube | 5 gal bucket or 10" Shelby Tube | 4 C | 6 months |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Water | Metals – 13 PP | 0.001 mg/L | EPA 6000/7000 | 500 mL | 1 – Plastic bottle | 4 C; Nitric Acid | 6 months |
| Water | Chromium IV | 0.001 mg/L | EPA 7195 | 200 mL | 1 – Plastic bottle | 4 C | 48 hours |
| Water | Total Cyanide | 10 ug/L | EPA 9010B/9012A | 250 mL | 1 – Plastic bottle | 4 C; Sodium Hydroxide | 12 days |
| Water | Ammonia Nitrogen | 0.1 mg/L | EPA 350 | 250 mL | 1 – Plastic bottle | 4 C; Sulfuric | 28 days |
| Water | Total Phosphorus | 0.05 mg/L | EPA 6000/7000 | 500 mL | 1 – Plastic bottle | 4 C; Nitric Acid | 6 months |
| Water | Volatile Organics | 1 ug/L | EPA 8260B | 40 mL | 3 – VOA Vials | 4 C; Hydrochloric Acid | 7 days |
| Water | Dissolved PAHs (Parent and Alkylated, ASTM D7363) | 1.0 ng/L | ASTM D7363 | 1 L | 2 – Amber Glass | 4 C | 7 days/ 40 days |
| Water | BNA | 5 ug/L | EPA 8270C | 1 L | 2 – Amber Glass | 4 C | 7 days/ 40 days |
| Water | Total Organic Carbon | 0.1 mg/L | EPA 9060 | 250 mL | 1 – Plastic bottle | 4 C; Sulfuric | 28 days |
| Water | OC Pesticides | 0.01 ug/L | EPA 8081A | 1 L | 2 – Amber Glass | 4 C | 7 days/ 40 days |
| Water | PCBs - Arochlors | 0.2 ug/L | EPA 8082 | 1 L | 2 – Amber Glass | 4 C | 7 days/ 40 days |
| Water | Turbidity | 1.0 | SM 2130 | 1 L | 1 – Plastic bottle | 4 C | 7 days |
| Water | Total Suspended Solids | 0.1 mg/L | SM 2540 | 250 mL | 1 – Plastic bottle | 4 C | 7 days |
| | | | | | | | |
| Tissues | Metals – 13 PP | 0.002 mg/kg | EPA 6000/7000 | 5 g | 1 - Glass jar | Freeze | 6 months |
| Tissues | Percent Lipids | 0.1 | Gravimetric | 30 g | 1 - Glass jar | Freeze | 14 days |
| Tissues | OC Pesticides | 0.8 ug/kg | EPA 8081 | 30 g | 1 - Glass jar | Freeze | 14 days/40 days |
| Tissues | PCBs -- Arochlors | 4.0 ug/kg | EPA 8082 | 30 g | 1 - Glass jar | Freeze | 14 days/40 days |

Solid samples will be prepared for organic analysis using accelerated solvent extraction following method 3545. Water samples will be prepared for organic analysis using solid phase extraction or separatory funnel solvent extraction following methods 3535 and 3510. Solid and liquid samples for metals analysis will be prepared by acid digestion following methods 3050 and 3005, respectively, as needed for the latter.

## 13. DATA QA-QC, VALIDATION, REDUCTION AND REPORTING

Validation of biological data involves screening, editing, verifying and reviewing all data being generated to ensure the data are being generated according to the project plan and standard operating procedures (SOPs) and that the data are traceable and defensible. All data recording will be conducted at the time of sample preparation in a bound laboratory book and with signatures and dates of ERDC personnel performing sample preparation and testing. Data will initially be recorded onto bench sheets (examples provided in Appendices C, D, E, F, G, H) and will be transferred to corresponding electronic datasheets in computerized systems. The initials of the responsible technician(s) will accompany each value recorded so that all information can be tracked to individuals if further explanation is necessary. Any recording errors on hardcopies will be crossed out with a single line, accompanied by the technician initials, date and corrected number. All electronic data will be backed up on a separate hard drive daily. In addition, assigned QA Managers as specified in Section 3 will review all data (e.g., mortality, pH, salinity, grain size analysis, etc.) as appropriate, for acceptability in relation to test-specific guidelines to assure data quality objectives (DQOs) are met.

Data obtained from biological testing will be statistically summarized as appropriate according to specific guidance. Statistical analysis will be conducted to identify if outliers exist and if data points are eliminated from statistical comparisons, justification will be provided.

Data from column settling tests will be reported as raw data only (data sheets in the appendices), which will be input to electronic spreadsheets to facilitate subsequent analysis and ADDAMS SETTLE data files. Data from physical characterization will be reported as raw data on laboratory data sheets (see appendices), or as soil parameters calculated from the data, as appropriate.

## 14. INTERNAL QUALITY CONTROL CHECKS

### 14.1. Quality Control Considerations for Biological Analyses

To assure the quality of biological analyses, the source and health of the organisms used in assays will be assessed and reported. Shipped organisms will be acclimated to laboratory conditions as recommended by the supplier. During this time, organisms will be observed and any deceased individuals or individuals behaving erratically will be removed. Mishandled, dropped or unhealthy organisms will not be used in the evaluation. The number of organisms loaded into each exposure chamber will be double counted to assure accuracy. In addition, twenty percent of test replicates will be recounted by a different technician to validate consistency at test terminations.

For tests which guidance specifies, negative controls (e.g., uncontaminated sediment) and positive controls (i.e., reference toxicant tests) will be conducted according to (USEPA / USACE 1991, 1998) to assess the overall health and suitability of test organisms. The results of references toxicity tests (i.e., LC50 values) will be compared to a control chart. Reference toxicant tests will use reagent grade chemicals that are recommended by the cited guidance. All environmental ranges recommended by standard guidance specific to the persistence of each test organism will be adhered to and deviations, if any, will be reported. As part of the study report, the acceptability of test results (e.g., acceptable control survival achieved) and an evaluation of the data generated will be included. Deviations from test specifications will also be reported.

14.2. Quality Control Considerations for Physical/Chemical Analyses

The physical analyses of sediments and reference soil will comply with quality control measures specified in the Upland Testing Manual (UTM) and the Inland Testing Manual (UTM). All method specific quality control procedures will be used during chemical analysis, which include: blanks, blank spike, laboratory control, duplicates, matrix spike, and matrix spike duplicate samples.

## 15. PERFORMANCE AND SYSTEM AUDITS

Internal performance audits for the bioassay studies and other laboratory work will be conducted to ensure: 1) that the personnel have the proper training, 2) that appropriate work plans and procedures are being followed, and 3) that the study is on schedule. These audits should be frequent enough to ensure the integrity and completeness of the work being conducted and will be performed by persons not directly involved in conducting the studies.

Management surveillance and audits will be conducted on all field and laboratory activities and the personnel that perform them. The QA Managers are responsible for ensuring that the project team executes the bioassays and analyses in accordance with all procedural and project requirements. In addition, the QA Managers (see Section 3) will review all logs and notes to ensure quality performance and adherence to the sampling plan and work plan. Audits will be conducted on an as-needed basis (at least monthly) to ensure quality and completeness of the work being performed.

## 16. FACILITIES

ERDC Vicksburg has the necessary facilities and equipment for the discussed analyses. Sampled shipments will be initially brought to the ERDC shipping and receiving department and the project manager will be contacted to initiate proper COC. Samples will be stored in rented refrigerated containers and handled, prepared and tested as described in Sections 8 and 10. Data analysis and reduction will be conducted using computers with preinstalled software packages (e.g., MS Office, Sigma Stat, SPSS Chicago, IL, SAS). ERDC facilities include general laboratories, specialized analytical laboratories, aquatic toxicity laboratories, and greenhouses.

Column settling tests will be conducted in the Hazardous Waste Research Center (HWRC) in EL. The HWRC was established in 1988 and offers a full service research and evaluation

facility complete with safety equipment, a high-bay pilot studies area, and a large-scale pilot studies facility. The HWRC is permitted by the U.S. Environmental Protection Agency (EPA), and State of Mississippi Department of Environmental Quality (DEQ), to perform research investigations and treatment of most listed and characteristic hazardous wastes onsite. It is nationally recognized by EPA's Technology Innovation Office as a premier facility for this type of research. Sediment characterization, column settling tests, and other tests and data analysis are frequently performed in the ERDC-EL in support of District 404 permit evaluations. A listing of current staff and their relevant expertise can be found on the ERDC web site at http://el.erdc.usace.army.mil/hwrc/exprtis.html and in the individual staff bios.

The Environmental Toxicology Research Facility at ERDC consists of four laboratories containing eight (8) temperature controlled environmental rooms, four (4) temperature controlled water baths and two (2) environmentally controlled incubators. All aquatic and terrestrial testing will be conducted using these facilities.

## 17. PREVENTATIVE MAINTENANCE

All required equipment will be carefully inspected prior to this evaluation, cleaned and calibrated (if applicable) and spare units will be available (e.g., pH meters, refractometers, etc.). Meter calibrations will be routinely performed using manufacturer-supplied standards. Analytical instrumentation is maintained under service contract specified to maintain the equipment to perform at the instrument manufacturer's specifications.

## 18. CALCULATION OF DATA QUALITY INDICATORS

Where applicable, data quality will be determined by calculating the relative percent difference and coefficient of variation between replicates. In addition, twenty percent of counts / measurements will be determined twice, where applicable.

With the exception of Atterberg limits, geotechnical testing is unreplicated, so results of replicates cannot be used to assess the quality of the data. The exception to this is Atterberg limits, which are done on two subsamples. The results must fall within acceptable limits. Similarly, due to material limitations, total solids concentrations obtained from column testing are also unreplicated. However, given the number of data points generated over the period of testing, outliers in column settling data can readily be identified when checked against measured turbidity values. This is normally done as part of the subsequent data analysis. Raw data obtained from column testing and physical characterization will be checked for reasonableness and consistency. Geotechnical testing calculations reported on the laboratory data sheets will be checked and any errors in calculation noted and returned to the analysts for correction. Any anomalies observed in the data or testing procedures that appear to significantly affect the utility of the data, will be identified and corrective action recommended.

## 19. CORRECTIVE ACTIONS

Equipment will be regularly monitored and maintained to assure compliance. In case of failure or malfunction, Hermetic Rush Services (Vicksburg, MS) will immediately repair equipment. In

addition, spare equipment is available if needed. All relevant malfunctions, corrective actions and alterations (if any) that may influence data will be recorded and reported (Appendix A).

## 20. QA REPORTS TO MANAGEMENT

Periodic reports to management will include the following:

1. Assessment of data accuracy and completeness
2. Results of performance and audits
3. Occurrence of significant problems and solutions

## 21. REFERENCES

American Standards Testing Methods International. 1998. " D2216-05 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass", ASTM International, West Conshohocken, PA

American Standards Testing Methods International. 2000. " D4959-00 Standard Test Method for Determination of Water (Moisture) Content of Soil By Direct Heating", ASTM International, West Conshohocken, PA

American Standards Testing Methods International. 2002. "D422-63(2002) Standard Test Method for Particle-Size Analysis of Soils", ASTM International, West Conshohocken, PA.

American Standards Testing Methods International. 2002. " D854-02 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer", ASTM International, West Conshohocken, PA.

ERDC EL 2002. Settling Column Test Procedures. US Army Corps of Engineers, Vicksburg, MS. http://el.erdc.usace.army.mil/elmodels/zipd/setpro.pdf

Palermo, M. R. (1985). "Interim Guidance for Predicting Quality of Effluent Discharged from Confined Dredged Material Disposal Areas Test Procedures," EEDP-04-02

US Environmental Protection Agency / US Army Corps of Engineers. 1991. Evaluation of Dredged Material Proposed for Ocean Disposal. US Environmental Protection Agency, EPA 503/8-91/001, Washington, D.C.

US Environmental Protection Agency / US Army Corps of Engineers (US EPA / USACE). 1998a. Evaluation of Material Proposed for Discharge to Waters of the U.S. - Testing Manual (Inland Testing Manual). EPA-823-B-98-004, Office of Water, Washington DC.

US Environmental Protection Agency / US Army Corps of Engineers (US EPA / USACE). 1998b. Great Lakes Dredged Material Testing and Evaluation Manual. Prepared by US EPA Regions 2, 3 and 5, Great Lakes National Program Office and US Army Corps of Engineers Great Lakes and Ohio River Division. Office of Water, Washington DC.

US Environmental Protection Agency. 2001. Methods for collection, storage and manipulation of sediments for chemical and toxicological analysis: technical manual. EPA-823-B-01-002. US EPA, Office of Water, Washington, D.C.

US Environmental Protection Agency. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th edition. EPA-821-R-02-012, Office of Water, Washington, D.C.

U.S. Army Corps of Engineers. 2003. “Evaluation of dredged material proposed for disposal at island, near shore, or upland confined disposal facilities - Testing Manual,” Technical Report ERDC/EL TR-03-1, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

## 22. APPENDICES

Appendix A: Alteration Checklist

**ALTERATION CHECKLIST**

Sample Program Identification: _____

Material to be Sampled: _____

Measurement Parameter: _____

Standard Procedure for Analysis: _____

_____

Reference: _____

_____

_____

Variation from Standard Procedure: _____

_____

_____

Reason for Variation: _____

_____

_____

Resultant Change in Field Sampling Procedure: _____

_____

_____

Special Equipment, Material, or Personnel Required: _____

_____

_____

Author's Name: _____ Date: _____

Approval: _____ Title: _____

Date: _____

_____

# Appendix B: Example chain of custody sheet (COC)

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | | | | | NO. OF CONTAINERS | ANALYSES | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLERS: (Signature) | | | | | | | | | | | | | |
| STA NO. | DATE | TIME | COMP | GRAB | STATION LOCATION | | | | | | | | REMARKS |
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| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| Relinquished by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

# Appendix C: Geotechnical Laboratory Sheets

## ORGANIC CONTENT DETERMINATION

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | | | | DATE | |
| | | | | TECHNICIAN | |
| | BORING | | | | |
| | SAMPLE | | | | |
| | TARE NUMBER | | | | |
| WEIGHT IN GRAMS | A. TARE + SOIL (DRIED AT 110$^0$) | | | | |
| | B. TARE + SOIL (DRIED AT 550$^0$) | | | | |
| | C. TARE WEIGHT | | | | |
| | D. ORGANIC CONTENT (WT.) ( A - B) | | | | |
| | E. SOIL (DRIED AT 110$^0$) ( A - C) | | | | |
| | ORGANIC CONTENT (%) (D / E x100) | | | | |
| | BORING | | | | |
| | SAMPLE | | | | |
| | TARE NUMBER | | | | |
| WEIGHT IN GRAMS | A. TARE + SOIL (DRIED AT 110$^0$) | | | | |
| | B. TARE + SOIL (DRIED AT 550$^0$) | | | | |
| | C. TARE WEIGHT | | | | |
| | D. ORGANIC CONTENT (WT.) ( A - B) | | | | |
| | E. SOIL (DRIED AT 110$^0$) ( A - C) | | | | |
| | ORGANIC CONTENT (%) (D / E x100) | | | | |
| | BORING | | | | |
| | SAMPLE | | | | |
| | TARE NUMBER | | | | |
| WEIGHT IN GRAMS | A. TARE + SOIL (DRIED AT 110$^0$) | | | | |
| | B. TARE + SOIL (DRIED AT 550$^0$) | | | | |
| | C. TARE WEIGHT | | | | |
| | D. ORGANIC CONTENT (WT.) ( A - B) | | | | |
| | E. SOIL (DRIED AT 110$^0$) ( A - C) | | | | |
| | ORGANIC CONTENT (%) (D / E x100) | | | | |

$$\% \text{ ORGANIC} = \frac{\text{WT. OF SOIL DRIED AT } 110^0 - \text{WT. OF SOIL DRIED AT } 550^0}{\text{WT. OF SOIL DRIED AT } 110^0} \times 100$$

REMARKS

COMPUTER DATA SHEET FOR GRAIN SIZE ANALYSIS 05.02.05

TITLE

JOB NUMBER

BORING | SAMPLE | DEPTH/ELEV | DATE

LL | PL | GS | OPT | TOTAL WEIGHT | PARTIAL WEIGHT | NAT WC

CLASSIFICATION

REMARKS

SIEVE ANALYSIS

| STANDARD SIEVE SIZE OR OPENING | C D E | WEIGHT IN GRAMS |
|---|---|---|
| 3 IN | C | |
| 2 IN | D | |
| 1-1/2 IN | E | |
| 1 IN | F | |
| 3/4 IN | G | |
| 1/2 IN | I | |
| 3/8 IN | J | |
| No 3 | K | |
| No 4 | L | |
| No 6 | M | |
| No 10 | N | |
| No 16 | O | |
| No 20 | P | |
| No 30 | Q | |
| No 40 | R | |
| No 50 | S | |
| No 70 | T | |
| No 100 | U | |
| No 140 | V | |
| No 200 | W | |

HYDROMETER ANALYSIS

NUMBER | DISPERSING CORR. | MENISCUS CORR.

| CLOCK TIME | ELAPSED TIME | TEMP C. | READING |
|---|---|---|---|
| | 1 MN | | |
| | 2 MN | | |
| | 4 MN | | |
| | 15 MN | | |
| | 30 MN | | |
| | 1 HR | | |
| | 2 HR | | |
| | 4 HR | | |
| | 24 HR | | |

WEIGHT OF -4 PAN _____

WEIGHT OF -200 PAN _____

WES Form 1 DEC 80 2213

## WATER CONTENT - GENERAL

DATE _____

PROJECT _____

BORING NO. _____

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample or Specimen No. | | | | | | | | |
| Tare No. | | | | | | | | |
| Weight in grams | Tare plus wet soil | | | | | | | |
| | Tare plus dry soil | | | | | | | |
| | Water | $W_w$ | | | | | | |
| | Tare | | | | | | | |
| | Dry soil | $W_s$ | | | | | | |
| Water content | | w | % | % | % | % | % | % |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample or Specimen No. | | | | | | | | |
| Tare No. | | | | | | | | |
| Weight in grams | Tare plus wet soil | | | | | | | |
| | Tare plus dry soil | | | | | | | |
| | Water | $W_w$ | | | | | | |
| | Tare | | | | | | | |
| | Dry soil | $W_s$ | | | | | | |
| Water content | | w | % | % | % | % | % | % |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample or Specimen No. | | | | | | | | |
| Tare No. | | | | | | | | |
| Weight in grams | Tare plus wet soil | | | | | | | |
| | Tare plus dry soil | | | | | | | |
| | Water | $W_w$ | | | | | | |
| | Tare | | | | | | | |
| | Dry soil | $W_s$ | | | | | | |
| Water content | | w | % | % | % | % | % | % |

$$w\% = \frac{\text{(tare plus wet soil)} - \text{(tare plus dry soil)}}{\text{(tare plus dry soil)} - \text{(tare)}} \times 100 = \frac{W_w}{W_s} \times 100$$

Remarks _____

_____

Technician _____ Computed by _____ Checked by _____

ENG FORM 1 JUN 65 3835

## SPECIFIC GRAVITY TESTS

Date _____

Project _____

Boring No. _____

### SPECIFIC GRAVITY OF SOLIDS ($G_s$)

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample or Specimen No. | | | | | | |
| Flask No. | | | | | | |
| Temperature of water and soil, T, °C | | | | | | |
| Dish No. | | | | | | |
| Weight in grams | Dish + dry soil | | | | | |
| | Dish | | | | | |
| | Dry soil | $W_s$ | | | | |
| | Flask + water at T, °C | $W_{bw}$ | | | | |
| | $W_s + W_{bw}$ | | | | | |
| | Flask + water + immersed soil | $W_{bws}$ | | | | |
| | Displaced water, $W_s + W_{bw} - W_{bws}$ | | | | | |
| Correction factor | | K | | | | |
| $(W_s K) \div (W_s + W_{bw} - W_{bws})$ | | $G_s$ | | | | |

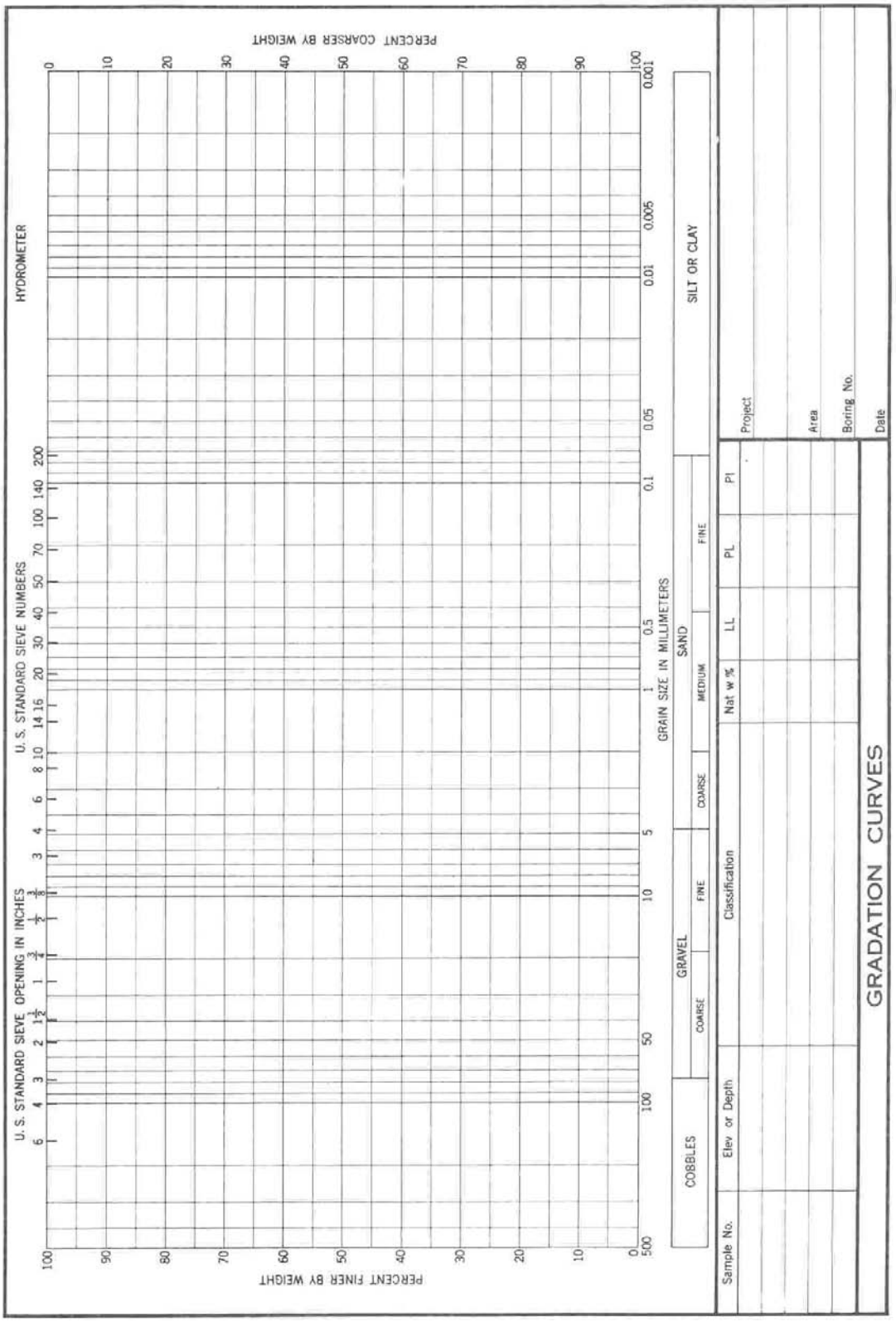
### APPARENT ($G_a$) AND BULK ($G_m$) SPECIFIC GRAVITY

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample or Specimen No. | | | | | | |
| Temperature of water and soil, T, °C | | | | | | |
| Weight in grams | Tare + saturated surface-dry soil | | | | | |
| | Tare | | | | | |
| | Saturated surface-dry soil | B | | | | |
| | (Wire basket + soil) in water | | | | | |
| | Wire basket in water | | | | | |
| | Saturated soil in water | C | | | | |
| | Tare + dry soil | | | | | |
| | Tare | | | | | |
| | Dry soil | A | | | | |
| Correction factor | | K | | | | |
| $(AK) \div (A - C)$ (Apparent) | | $G_a$ | | | | |
| $(AK) \div (B - C)$ (Bulk) | | $G_m$ | | | | |

Remarks _____

Technician _____ Computed by _____ Checked by _____

ENG FORM 1 JUN 65 3840 EM 1110-2-1906 D41511 PLATE IV-1


PERCENT COARSER BY WEIGHT
PERCENT FINER BY WEIGHT
HYDROMETER
U. S. STANDARD SIEVE NUMBERS
U. S. STANDARD SIEVE OPENING IN INCHES
GRAIN SIZE IN MILLIMETERS
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GRAVEL
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FINE
SAND
COARSE
MEDIUM
FINE
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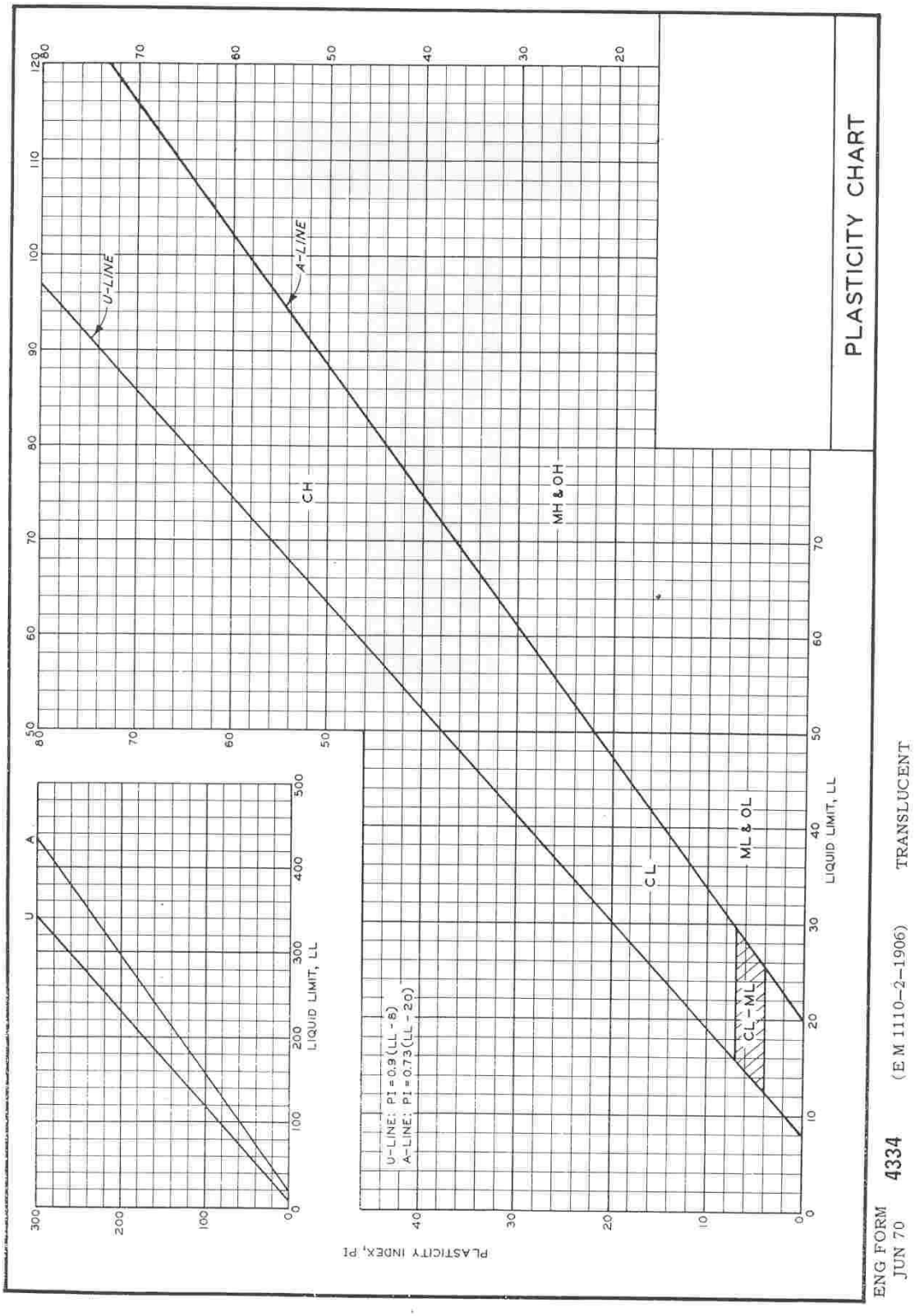
PLASTICITY CHART
A-LINE
U-LINE
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CL - ML
U-LINE: PI = 0.9(LL - 8)
A-LINE: PI = 0.73(LL - 20)
LIQUID LIMIT, LL
PLASTICITY INDEX, PI
ENG FORM 4334 (EM 1110-2-1906) TRANSLUCENT
JUN 70

## LIQUID AND PLASTIC LIMIT TESTS

For use of this form, see EM 1110-2-1906.

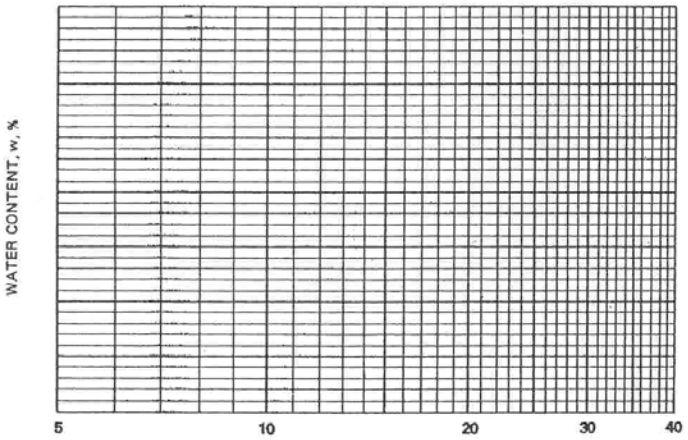
DATE _____

PROJECT _____

BORING NO. _____ SAMPLE NO. _____

### LIQUID LIMIT

| | RUN NO. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| | TARE NO. | | | | | | |
| WEIGHT IN GRAMS | TARE PLUS WET SOIL | | | | | | |
| | TARE PLUS DRY SOIL | | | | | | |
| | WATER $W_w$ | | | | | | |
| | TARE | | | | | | |
| | DRY SOIL $W_s$ | | | | | | |
| | WATER CONTENT, % w | | | | | | |
| | NUMBER OF BLOWS | | | | | | |




LL _____

PL _____

PI _____

Symbol from plasticity chart _____

### PLASTIC LIMIT

| | RUN NO. | 1 | 2 | 3 | 4 | 5 | NATURAL WATER CONTENT |
|---|---|---|---|---|---|---|---|
| | TARE NO. | | | | | | |
| WEIGHT IN GRAMS | TARE PLUS WET SOIL | | | | | | |
| | TARE PLUS DRY SOIL | | | | | | |
| | WATER $W_w$ | | | | | | |
| | TARE | | | | | | |
| | DRY SOIL $W_s$ | | | | | | |
| | WATER CONTENT, % w | | | | | | |
| | PLASTIC LIMIT | | | | | | |

REMARKS _____

TECHNICIAN _____ COMPUTED BY _____ CHECKED BY _____

ENG FORM 3838 1 JUN 65

☆U.S.GPO:1984-0-452-954/18650

PLATE III-1

## VISUAL CLASSIFICATION

PROJECT

| JOB NO. | DATE | CLASSIFIED BY |
|---|---|---|
| | | |

| LOCATION OR BORING | SAMPLE NO. | ELEV OR DEPTH | TYPE & NO. OF UNITS | SAMPLE DESCRIPTION | NAT. W. C. % |
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REMARKS:

WES FORM NO. 400
REV MAY 1951

Appendix D: Column Settling Test Laboratory Sheets

Forms for reporting settling column test data are posted on the web at http://el.erdc.usace.army.mil/elmodels/zipd/setform.xls.

**Settling Column Data Sheet**

**Project ID:** _____ **Date:** _____

**Initial Conc:**

**Analyst:** _____ _____

**Specific**

**Salinity:** _____ **ppt** **Gravity:** _____

| Date | Time | Elapsed Time | Surface Water Height | Solids Interface Height | Coarse Material Height | Ports Sampled/ Type of Analysis |
|---|---|---|---|---|---|---|
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Appendix E: Aquatic Bioassay Bench Sheets

Environmental chamber monitoring sheet.

| ENVIRONMENTAL CHAMBER DAILY TEMPERATURE MONITORING SHEET | | | | |
|---|---|---|---|---|
| Project: | | Test Initiation Date: Time: | | |
| Laboratory: | | Test Date(s): Time: | | |
| Exposure duration: | | Page of | | |
| Exposure duration: | | Environmental chamber temperature: | | |
| **Day** | **Temperature (°C)** | **Min (°C)/Max (°C)** | **Comments** | **Initials** |
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Appendix F. Daily test observations sheet.

**Daily Observations**

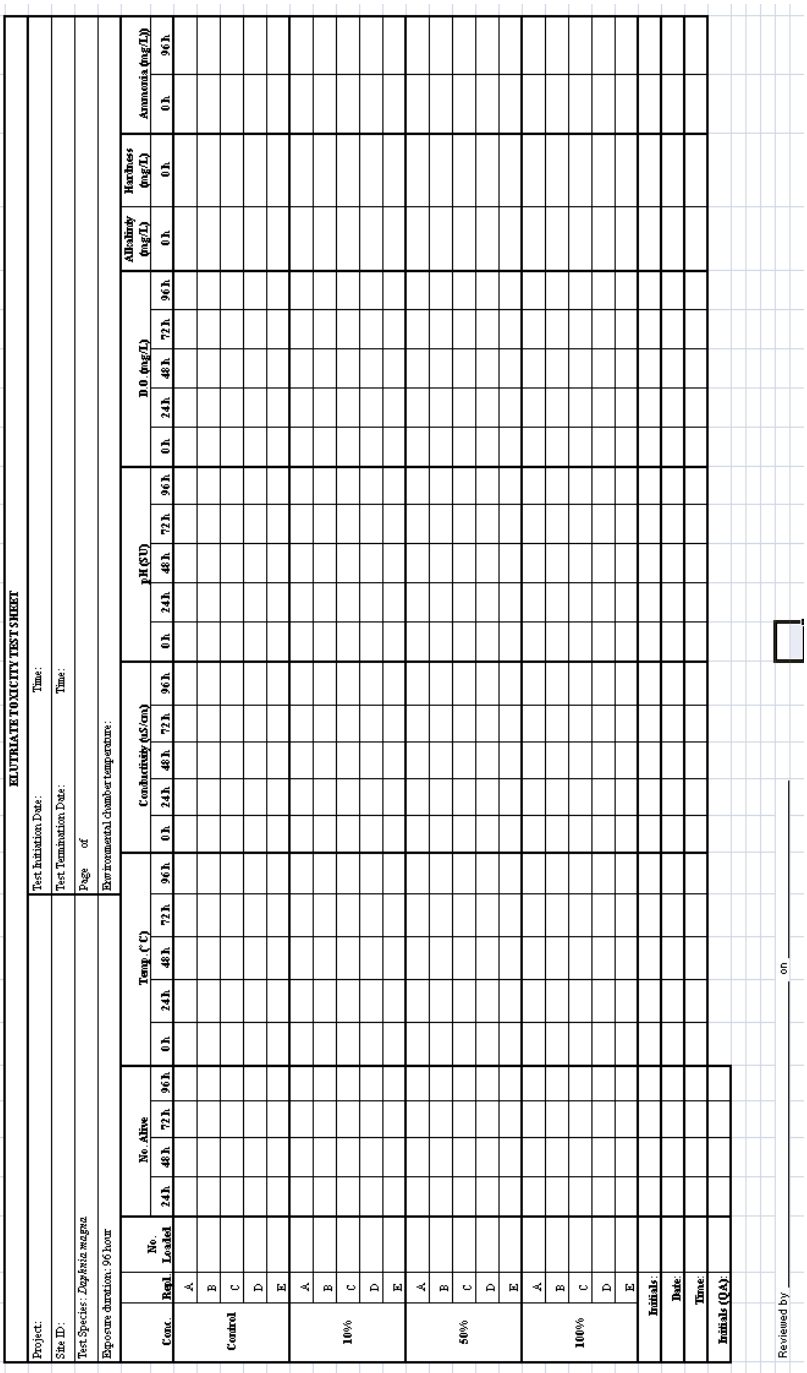
**Day:**

**Date:_____ Technician Initials:_____**
**Time:_____**

**Dilutor counter:_____**

**Comments**_____

Appendix G. Typical sediment elutriate toxicity test bench sheet.



ELUTRIATE TOXICITY TEST SHEET

Project: | Test Initiation Date: | Time:

Site ID: | Test Termination Date: | Time:

Test Species: *Daphnia magna* | Page of

Exposure duration: 96 hour | Environmental chamber temperature:

| Conc. | Rep. | No. Loaded | No. Alive 24 h. | 48 h. | 72 h. | 96 h. | Temp. (°C) 0 h. | 24 h. | 48 h. | 72 h. | 96 h. | Conductivity (uS/cm) 0 h. | 24 h. | 48 h. | 72 h. | 96 h. | pH (SU) 0 h. | 24 h. | 48 h. | 72 h. | 96 h. | D.O. (mg/L) 0 h. | 24 h. | 48 h. | 72 h. | 96 h. | Alkalinity (mg/L) 0 h. | Hardness (mg/L) 0 h. | Ammonia (mg/L) 0 h. | 96 h. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Date: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Time: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Initials (QA): | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Reviewed by _____ on _____

Appendix H. Bench sheet for reference toxicity tests.

| REFERENCE TOXICITY TEST SHEET | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project: | | | | | | | | | | Test Initiation Date: | | | | | | Time: | |
| Laboratory: | | | | | | | | | | Test Termination Date: | | | | | | Time: | |
| Test Species: | | | | | | | | | | Page of | | | | | | | |
| Exposure duration: 96 hour | | | | | | | | | | Environmental chamber temperature: | | | | | | | |
| | | No. | Number Alive | | | | | Temp. (°C) | | Salinity (ppt) | | pH (SU) | | D.O. (mg/L) | | | |
| Conc. | Reply. | Loaded | 0 h | 24 h | 48 h | 72 h | 96 h | 0 h | 96 h | 0 h | 96 h | 0 h | 96 h | 0 h | 96 h | Comments | |
| Control | A | | | | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | | | | |
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| TRT 1 | A | | | | | | | | | | | | | | | | |
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| TRT 2 | A | | | | | | | | | | | | | | | | |
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| TRT 3 | A | | | | | | | | | | | | | | | | |
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| Initials: | | | | | | | | | | | | | | | | | |

# Appendix C: Field Notes

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** BRATENAHL REFERENCE AREA

**Sampling Site ID:** BS-1

**Sample Matrix:** [X] Soil [ ] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/10/10 **Site Water Depth:** NA

**Time:** 1210 **Site Water Temperature:** NA

**Sampling Crew:** MILLER, RUBY, E. HANNES

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** NA **Sampling Equipment Used:** SHOVEL

**Substrate Color/Characteristics:** DARK SILTY CLAY - SOME GLEYED CLAY WITH REDOX FEATURES

**Additional Comments:** GPS NOT FUNCTIONING DUE TO HEAVY OVERSTORY - SAMPLE TAKEN BY MAP LOCATION

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** BRATENAHL REFERENCE AREA

**Sampling Site ID:** BS-2

**Sample Matrix:** [X] **Soil** [ ] **Sediment** [ ] **Water**

**Weather:** SUNNY - 50'S

**Date:** 11/10/10 **Site Water Depth:** NA

**Time:** 1220 **Site Water Temperature:** NA

**Sampling Crew:** MILLER, RUBY, E. HANNES

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** NA **Sampling Equipment Used:** SHOVEL

**Substrate Color/Characteristics:** LIGHT BROWN SILTY LOAM, LOTS OF FINE SURFACE ROOTS IN UPPER PROFILE

**Additional Comments:** GPS NOT FUNCTIONING - TAKE VIA MAP LOCATION

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** BRATENAHL REFERENCE AREA

**Sampling Site ID:** BS-3

**Sample Matrix:** [X] Soil [ ] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/10/10 **Site Water Depth:** NA

**Time:** 1230 **Site Water Temperature:** NA

**Sampling Crew:** MILLER, RUBY, E. HANNES

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** NA **Sampling Equipment Used:** SHOVEL

**Substrate Color/Characteristics:** BROWN SILTY LOAM - MANY SURFACE ROOTS

**Additional Comments:** GPS NOT WORKING - BASED ON MAP LOCATION

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** BRATENAHL REFERENCE AREA

**Sampling Site ID:** BS-4

**Sample Matrix:** [X] Soil [ ] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/10/10 **Site Water Depth:** NA

**Time:** 1240 **Site Water Temperature:** NA

**Sampling Crew:** MILLER, ROBY, E. HANNES

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** NA **Sampling Equipment Used:** SHOVEL

**Substrate Color/Characteristics:** DARK SILTY LOAM - SOIL VERY MOIST AND HAS LESS SURFACE ROOTS THAN OTHER LOCATIONS. ALSO APPEARS TO BE MORE SAND + FINE GRAVEL THAN OTHERS

**Additional Comments:** GPS NOT WORKING - BASE OFF OF MAP

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** REFERENCE WATER

**Sampling Site ID:** PB-WATER

**Sample Matrix:** [ ] Soil [ ] Sediment [X] Water

**Weather:** SUNNY - COLD - LOW 30'S

**Date:** 11/9/10 **Site Water Depth:** 9'

**Time:** 0840 **Site Water Temperature:** 49°

**Sampling Crew:** MILLER, RUBY, E. HANNES

## Site Coordinates

**Waypoint:** C14

**Latitude:** 41° 29.574' N **Longitude:** 081° 44.136' W

## Sediment/Soil Sample Description:

**Number of Grabs:** NA **Sampling Equipment Used:** WATER PUMP

**Substrate Color/Characteristics:** NA

**Additional Comments:** TAKEN NEAR FISHING PLATFORM AT EDGEWATER STATE PARK (JUST EAST OF FISHING PIER)

**Sample Photo ID #(s):**

US Army Corps of Engineers
Buffalo District

# SAMPLE LOG

**Project Area:** PERKINS BEACH

**Sampling Site ID:** PB-1

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY + COOL - 30'S

**Date:** 11/9 **Site Water Depth:** 3'

**Time:** 0900 **Site Water Temperature:** 49°

**Sampling Crew:** MILLER, RUBY, HANNUS

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 5 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** SAND WITH CRUSHED SHELLS

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** PERKINS BEACH

**Sampling Site ID:** PB-2

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY + COOL - 30's

**Date:** 11/9 **Site Water Depth:** 3'

**Time:** 0915 **Site Water Temperature:** 49°

**Sampling Crew:** MILLER, RUBY, E. HANNES

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 5 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** SAND w/ BROKEN SHELLS

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers
Buffalo District

# SAMPLE LOG

**Project Area:** PERKINS BEACH

**Sampling Site ID:** PB-3

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - COOL 30'S

**Date:** 11/9/10 **Site Water Depth:** 2.8'

**Time:** 0930 **Site Water Temperature:** 49°

**Sampling Crew:** MILLER, RUBY, HANNOS

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 5 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** SAND + BROKEN SHELLS

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers
Buffalo District

# SAMPLE LOG

**Project Area:** PERKINS BEACH

**Sampling Site ID:** PB-4

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY · COOL 30's

**Date:** 11/9 **Site Water Depth:** 3'

**Time:** 0945 **Site Water Temperature:** 49°

**Sampling Crew:** MILLER, HANNOS, RUBY

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 5 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** FINE SAND, LOSS SHELLS

**Additional Comments:**

**Sample Photo ID #(s):**

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-1

**Sampling Site ID:** CH-1

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 50's

**Date:** 11/9/10 **Site Water Depth:** 24'

**Time:** 1400 **Site Water Temperature:** 50°

**Sampling Crew:** MILLER, RUBY, E. HANNES

---

## Site Coordinates

**Waypoint:** 018

**Latitude:** 41° 27.894' N **Longitude:** 081° 40. 583' W

## Sediment/Soil Sample Description:

**Number of Grabs:** 10 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH-GRAY SILTY CLAY - EXTENSIVE ORGANIC MATTER (LEAVES + STICKS)

**Additional Comments:** SITE MOVED SLIGHTLY DUE TO LACK OF RETRIEVAL (ALL LEAVES, NO SEDIMENT) MANY GRABS NECESSARY TO OBTAIN REQUIRED QUANTITY. ALSO, OFF-LOADING SHIP WAS PRESENT THAT REQUIRED MOVING.

**Sample Photo ID #(s):**

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-1

**Sampling Site ID:** CH-2

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/9/10 **Site Water Depth:** 26'

**Time:** 1345 **Site Water Temperature:** 50°

**Sampling Crew:** RUBY, HANNES, MILLER

## Site Coordinates

**Waypoint:** 617

**Latitude:** 41° 27.996' N **Longitude:** 081° 40.529' W

## Sediment/Soil Sample Description:

**Number of Grabs:** 9 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH-GRAY SILTY CLAY - EXTENSIVE AMOUNT OF ORGANICS (LEAVES)

**Additional Comments:** SITE MOVED OUT INTO CHANNEL DUE TO OFF-LOADING SHIP AT ORIGINAL LOCATION. MANY GRABS NECESSARY DUE TO AMOUNT OF ORGANICS IN SAMPLES

**Sample Photo ID #(s):**

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-1

**Sampling Site ID:** CH-3

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/9/10 **Site Water Depth:** 24'

**Time:** 1325 **Site Water Temperature:** 50°

**Sampling Crew:** MILLER, RUBY, E. HANNES

## Site Coordinates

**Waypoint:** 616

**Latitude:** 41° 27.904'N **Longitude:** 081° 40.459'W

## Sediment/Soil Sample Description:

**Number of Grabs:** 6 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH-GRAY SILTY CLAY - LOTS OF LEAF LITTER

**Additional Comments:** MOVED OUT INTO CHANNEL DUE TO OFF-LOADING SHIP AT PROPOSED LOCATION.

**Sample Photo ID #(s):**

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-1

**Sampling Site ID:** CH-4

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/9/10 **Site Water Depth:** 25'

**Time:** 1255 **Site Water Temperature:** 49°

**Sampling Crew:** MILLER, RUBY, E. HINNES

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 5 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH-GRAY SILTY CLAY - SOME LEAF LITTER

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU 1

**Sampling Site ID:** CH-5

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/9/10 **Site Water Depth:** 25'

**Time:** 1240 **Site Water Temperature:** 52°

**Sampling Crew:** MILLER, RUBY, E. HANNES

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 7 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH GRAY SILTY CLAY - SOME LEAF LITTER

**Additional Comments:** DUPLICATE SAMPLE TAKEN AT THIS LOCATION

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-2

**Sampling Site ID:** CH-6A

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 50'S

**Date:** 11/9/10 **Site Water Depth:** 25'

**Time:** 1225 **Site Water Temperature:** 52°

**Sampling Crew:** MILLER, RUBY, HANNOS

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 3 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH GRAY SILTY CLAY - SOME LEAF LITTER

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-2

**Sampling Site ID:** CH-6B

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 50's

**Date:** 11/9/10 **Site Water Depth:** 26'

**Time:** 1215 **Site Water Temperature:** 52°

**Sampling Crew:** MILLER, RUBY, HANNES

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 3 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH-GRAY SILTY CLAY WITH SOME LOAF CITER

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMV-2

**Sampling Site ID:** CH-7A

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 40'S

**Date:** 11/9 **Site Water Depth:** 27'

**Time:** 1200 **Site Water Temperature:** 52°

**Sampling Crew:** MILLER, RUDY, HANNES

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 3 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH GRAY SILTY CLAY
SOME LEAF LITTER

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-2

**Sampling Site ID:** CH-7B

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 40'S

**Date:** 11/9/10 **Site Water Depth:** 25'

**Time:** 1145 **Site Water Temperature:** 52°

**Sampling Crew:** MILLER, RUBY, E. HANNES

---

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 3 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH-GREY SILTY CLAY - MINOR AMOUNT OF ORGANIC MATTER

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** CUYAHOGA RIVER - DMU-2

**Sampling Site ID:** CH-8

**Sample Matrix:** [ ] Soil [X] Sediment [ ] Water

**Weather:** SUNNY - 40'S

**Date:** 11/9/10 **Site Water Depth:** 26'

**Time:** 1130 **Site Water Temperature:** 52°

**Sampling Crew:** MILLER, RUBY, E. HANNES

## Site Coordinates

**Waypoint:** NA

**Latitude:** _____ **Longitude:** _____

## Sediment/Soil Sample Description:

**Number of Grabs:** 4 **Sampling Equipment Used:** PETERSON

**Substrate Color/Characteristics:** BROWNISH-GREY SILTY CLAY - LOTS OF ORGANIC MATTER (LEAVES).

**Additional Comments:** _____

**Sample Photo ID #(s):** _____

US Army Corps of Engineers®
Buffalo District

# SAMPLE LOG

**Project Area:** REFERENCE WATER

**Sampling Site ID:** PB-WATER

**Sample Matrix:** [ ] Soil [ ] Sediment [X] Water

**Weather:** COLD, WINDY - LOW 20'S

**Date:** 12/7/10 **Site Water Depth:** NA

**Time:** 1230 **Site Water Temperature:** NA

**Sampling Crew:** MILLER, RIMER

## Site Coordinates

**Waypoint:**

**Latitude:** 41° 29.676'N **Longitude:** 081° 43.687'W

## Sediment/Soil Sample Description:

**Number of Grabs:** NA **Sampling Equipment Used:** WATER PUMP

**Substrate Color/Characteristics:**

**Additional Comments:** SAMPLE TAKEN AT END OF BOAT LAUNCH IN EDGEWATER STATE PARK. DESIRED LOCATION AT FISHING PLATFORM WAS COVERED IN 3" OF ICE AND WAVES WERE BREAKING OVER PLATFORM.

**Sample Photo ID #(s):**

# Appendix D1: Sediment Analytical Laboratory Testing Data

**Appendix D-1a- Cleveland Harbor 2010 Metals, SEM Metals, Pesticides, PCBs, SVOCs, VOCs, General Chemistry, and Geotechnical Sediment Data**

## Cleveland Harbor 2010 Metals Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6a | CH-6b | CH-7a | CH-7b | CH-8 | DMMU-1 | DMMU-1S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | mg/kg | 8040 | 8090 | 7930 | 9270 | 9290 | 9040 | 9430 | 9270 | 9090 | 8550 | 8300 | 8100 | 6960 |
| Antimony | 7440-36-0 | mg/kg | 0.1 U | 0.113 J | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.119 J | 0.1 U |
| Arsenic | 7440-38-2 | mg/kg | 11.8 | 12.4 | 12.3 | 12.6 | 12.5 | 12.5 | 12.6 | 12.5 | 12.1 | 11.9 | 12.1 | 12.5 | 11.6 |
| Barium | 7440-39-3 | mg/kg | 75.8 | 77.1 | 75.4 | 78.2 | 79.8 | 79.4 | 84.4 | 77.5 | 73.8 | 75.3 | 71.7 | 77.4 | 75.3 |
| Beryllium | 7440-41-7 | mg/kg | 0.605 | 0.571 | 0.528 | 0.653 | 0.623 | 0.697 | 0.662 | 0.667 | 0.597 | 0.604 | 0.554 | 0.659 | 0.528 |
| Cadmium | 7440-43-9 | mg/kg | 1.07 | 0.932 | 0.924 | 0.781 | 0.985 | 1.06 | 1.15 | 0.857 | 0.793 | 0.902 | 0.938 | 1.08 | 0.952 |
| Calcium | 7440-70-2 | mg/kg | 14300 B | 14400 B | 14700 B | 12600 B | 14800 B | 15400 B | 18300 B | 15000 B | 16100 B | 15000 B | 14300 B | 14900 B | 14700 B |
| Chromium | 7440-47-3 | mg/kg | 26 | 26.1 | 25.8 | 24.7 | 26.1 | 28 | 30.3 | 26.1 | 27.1 | 25.3 | 31 | 26.2 | 23.6 |
| Chromium (III) | 16065-83- | mg/kg | 26 | 26.1 | 25.8 | 24.7 | 26.1 | 28 | 30.3 | 26.1 | 27.1 | 25.3 | 31 | 26.2 | 23.6 |
| Chromium (VI) | 18540-29- | mg/kg | | | | | | | | | | | | 0.2 U | |
| Cobalt | 7440-48-4 | mg/kg | 11.1 | 11 | 11 | 12.7 | 12.1 | 12.2 | 12.3 | 12.2 | 11.9 | 11.6 | 11 | 11 | 10 |
| Copper | 7440-50-8 | mg/kg | 57.3 | 53.4 | 54 | 45.2 | 52.3 | 54.8 | 60.5 | 47.4 | 47.1 | 47 | 46.5 | 55.7 | 53.9 |
| Iron | 7439-89-6 | mg/kg | 24700 | 25500 | 24900 | 27400 | 27900 | 27300 | 28100 | 27700 | 27200 | 26200 | 26500 | 25400 | 23800 |
| Lead | 7439-92-1 | mg/kg | 52.9 | 49.1 | 46.2 | 40.6 | 44.9 | 46.5 | 52.1 | 42.4 | 41.2 | 44.7 | 42.6 | 46.4 | 45.3 |
| Magnesium | 7439-95-4 | mg/kg | 5450 | 5430 | 5430 | 5490 | 5970 | 5930 | 6300 | 5880 | 5860 | 5790 | 5590 | 5450 | 5240 |
| Manganese | 7439-96-5 | mg/kg | 625 | 648 | 645 | 728 | 706 | 681 | 666 | 668 | 647 | 592 | 564 | 635 | 597 |
| Mercury | 7439-97-6 | mg/kg | 0.106 | 0.114 | 0.104 | 0.0887 | 0.0979 | 0.107 | 0.135 | 0.0974 | 0.0876 | 0.0961 | 0.0839 | 0.0967 | 0.0912 |
| Nickel | 7440-02-0 | mg/kg | 36.8 | 33.6 | 34.9 | 36 | 37.4 | 37.5 | 39.3 | 34.4 | 33.6 | 33.4 | 32.4 | 36.4 | 32.9 |
| Phosphorus | 7723-14-0 | mg/kg | 434 | 470 | 497 | 359 | 430 | 452 | 456 | 420 | 386 | 408 | 410 | 489 | 458 |
| Potassium | 7440-09-7 | mg/kg | 1700 | 1650 | 1670 | 1840 | 1810 | 1800 | 1920 | 1860 | 1810 | 1630 | 1560 | 1650 | 1410 |
| Selenium | 7782-49-2 | mg/kg | 0.73 | 0.716 | 0.786 | 0.74 | 0.667 | 0.721 | 0.857 | 0.709 | 0.769 | 0.755 | 0.652 | 0.753 | 0.716 |
| Silver | 7440-22-4 | mg/kg | 0.369 J | 0.379 J | 0.407 J | 0.29 J | 0.363 J | 0.364 J | 0.467 J | 0.332 J | 0.303 J | 0.325 J | 0.317 J | 0.398 J | 0.411 J |
| Sodium | 7440-23-5 | mg/kg | 265 B | 266 B | 277 B | 219 B | 216 B | 247 B | 272 B | 241 B | 225 B | 217 B | 208 B | 255 B | 82.8 B |
| Thallium | 7440-28-0 | mg/kg | 0.354 J | 0.354 J | 0.33 J | 0.363 J | 0.372 J | 0.371 J | 0.397 J | 0.359 J | 0.351 J | 0.364 J | 0.341 J | 0.351 J | 0.332 J |
| Vanadium | 7440-62-2 | mg/kg | 19.7 | 19.4 | 19.4 | 21 | 20.6 | 20.7 | 22 | 20.9 | 20.8 | 19.7 | 18.4 | 19.7 | 17.6 |
| Zinc | 7440-66-6 | mg/kg | 211 | 204 | 212 | 184 | 206 | 218 | 235 | 195 | 182 | 188 | 269 | 221 | 200 |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Metals Sediment Data

| ANALYTE | CARSN | UNIT | DMMU-2 | PB Composite | PB-1 | PB-2 | PB-3 | PB-4 | BS Composite | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | mg/kg | 8990 | 2280 | 2380 | 2140 | 2130 | 2460 | 8850 | 9960 | 10100 | 8460 | 11600 |
| Antimony | 7440-36-0 | mg/kg | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.182 J | 0.12 J | 0.1 U | 0.408 J | 0.183 J |
| Arsenic | 7440-38-2 | mg/kg | 12.6 | 7.93 | 8.21 | 7.89 | 7.15 | 8.45 | 16.7 | 7.96 | 12.6 | 16 | 14.8 |
| Barium | 7440-39-3 | mg/kg | 76.8 | 22.9 | 31.8 | 25.1 | 29.3 | 20.4 | 66.1 | 90.8 | 62.5 | 70.5 | 146 |
| Beryllium | 7440-41-7 | mg/kg | 0.671 | 0.23 J | 0.25 J | 0.184 J | 0.216 J | 0.274 J | 0.617 | 0.698 | 0.582 | 0.61 | 1.19 |
| Cadmium | 7440-43-9 | mg/kg | 1 | 0.132 J | 0.172 J | 0.181 J | 0.105 J | 0.238 J | 0.619 | 0.524 | 0.277 J | 0.701 | 0.779 |
| Calcium | 7440-70-2 | mg/kg | 15500 B | 34100 B | 66600 B | 54800 B | 49900 B | 20000 B | 1420 B | 2620 B | 427 B | 573 B | 6550 B |
| Chromium | 7440-47-3 | mg/kg | 27.1 | 4.89 | 5.21 | 5.55 | 4.91 | 6.02 | 16.6 | 16.1 | 17.5 | 16.6 | 18.7 |
| Chromium (III) | 16065-83- | mg/kg | 27.1 | 4.89 | 5.21 | 5.55 | 4.91 | 6.02 | 16.6 | 16.1 | 17.5 | 16.6 | 18.7 |
| Chromium (VI) | 18540-29- | mg/kg | 0.2 U | | | | | | | | | | |
| Cobalt | 7440-48-4 | mg/kg | 12.4 | 5.19 | 4.64 | 4.55 | 4.56 | 5.95 | 8.78 | 7.5 | 10.4 | 6.96 | 5.99 |
| Copper | 7440-50-8 | mg/kg | 50.6 | 8.89 | 16.5 | 11.5 | 9.61 | 8.74 | 31 | 18.9 | 18.6 | 33.1 | 48.8 |
| Iron | 7439-89-6 | mg/kg | 27300 | 11000 | 10700 | 10400 | 10300 | 12500 | 25100 | 16500 | 25900 | 20000 | 34200 |
| Lead | 7439-92-1 | mg/kg | 44.7 | 14 | 12 | 14.1 | 10.1 | 13.6 | 184 | 138 | 78.9 | 325 | 176 |
| Magnesium | 7439-95-4 | mg/kg | 5840 | 3350 | 4030 | 2690 | 3050 | 3410 | 1780 | 1970 | 2030 | 1410 | 1380 |
| Manganese | 7439-96-5 | mg/kg | 683 | 216 | 229 | 190 | 220 | 238 | 281 | 473 | 228 | 183 | 233 |
| Mercury | 7439-97-6 | mg/kg | 0.083 | 0.094 | 0.0463 | 0.0429 | 0.0487 | 0.0794 | 0.107 | 0.105 | 0.043 | 0.168 | 0.054 |
| Nickel | 7440-02-0 | mg/kg | 35.3 | 12.3 | 12.4 | 12.2 | 11.7 | 14.2 | 17.2 | 17.2 | 17.3 | 14.2 | 17.8 |
| Phosphorus | 7723-14-0 | mg/kg | 416 | 132 | 108 | 104 | 135 | 163 | 264 | 290 | 138 | 216 | 396 |
| Potassium | 7440-09-7 | mg/kg | 1720 | 411 | 381 | 364 | 381 | 457 | 1390 | 1660 | 1480 | 1210 | 1550 |
| Selenium | 7782-49-2 | mg/kg | 0.719 | 0.172 J | 0.26 J | 0.139 J | 0.114 J | 0.223 J | 1.12 | 0.93 | 0.69 | 1.57 | 1.67 |
| Silver | 7440-22-4 | mg/kg | 0.362 J | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.119 J | 0.111 J | 0.182 J | 0.15 J | 0.168 J |
| Sodium | 7440-23-5 | mg/kg | 226 B | 155 B | 264 B | 226 B | 203 B | 87.8 B | 27.9 B | 27.8 B | 30.1 B | 25.6 B | 220 B |
| Thallium | 7440-28-0 | mg/kg | 0.362 J | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.102 J | 0.385 J | 0.382 J | 0.304 J | 0.478 J | 0.463 J |
| Vanadium | 7440-62-2 | mg/kg | 20.9 | 6.58 | 6.54 | 5.63 | 6.1 | 8.01 | 22.1 | 17.9 | 23.7 | 21.4 | 27.5 |
| Zinc | 7440-66-6 | mg/kg | 208 | 73.6 | 53.1 | 55.2 | 53.9 | 91.6 | 96.2 | 90.4 | 74.7 | 72.6 | 108 |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 SEM Metals Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6A | CH-6B | CH-7A | CH-7B | CH-8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 7440-36-0 | mg/kg | 0.0017 J | 0.0043 J | 0.0016 J | 0.0027 J | 0.0015 J | 0.0029 J | 0.0021 J | 0.0022 J | 0.001 J | 0.0022 J | 0.0014 J |
| Arsenic | 7440-38-2 | mg/kg | 0.0143 | 0.0479 | 0.0206 | 0.0622 | 0.029 | 0.0554 | 0.0302 | 0.0315 | 0.0172 | 0.0303 | 0.0245 |
| Barium | 7440-39-3 | mg/kg | 0.377 | 1.28 | 0.542 | 1.36 | 0.708 | 1.38 | 0.743 | 0.773 | 0.402 | 0.888 | 0.515 |
| Beryllium | 7440-41-7 | mg/kg | 0.0015 J | 0.0037 J | 0.0022 J | 0.0052 | 0.0027 J | 0.0052 | 0.0028 J | 0.0035 J | 0.0018 J | 0.0031 J | 0.0021 J |
| Cadmium | 7440-43-9 | mg/kg | 0.0064 | 0.0219 | 0.0095 | 0.0199 | 0.0116 | 0.0269 | 0.016 | 0.0129 | 0.0062 | 0.0152 | 0.0108 |
| Chromium | 7440-47-3 | mg/kg | 0.0522 | 0.167 | 0.079 | 0.143 | 0.086 | 0.185 | 0.123 | 0.106 | 0.0563 | 0.132 | 0.132 |
| Cobalt | 7440-48-4 | mg/kg | 0.0264 | 0.0934 | 0.0411 | 0.117 | 0.054 | 0.106 | 0.0603 | 0.0671 | 0.0354 | 0.0699 | 0.0396 |
| Copper | 7440-50-8 | mg/kg | 0.184 | 0.681 | 0.304 | 0.699 | 0.385 | 0.814 | 0.491 | 0.392 | 0.196 | 0.4 | 0.287 |
| Lead | 7439-92-1 | mg/kg | 0.286 | 1.05 | 0.437 | 0.981 | 0.554 | 1.14 | 0.659 | 0.597 | 0.316 | 0.786 | 0.439 |
| Manganese | 7439-96-5 | mg/kg | 3.79 | 12.9 | 5.7 | 16.2 | 7.58 | 13.8 | 7.35 | 8.42 | 4.48 | 8.76 | 4.99 |
| Mercury | 7439-97-6 | mg/kg | 2.5E-05 | 0.00239 | 0.000018 U | 4.6E-05 | 0.000018 U | 0.000036 U | 3.2E-05 | 0.00005 | 1.9E-05 | 0.000036 U | 0.000018 U |
| Molybdenum | 7439-98-7 | mg/kg | 0.0019 J | 0.0045 J | 0.002 J | 0.0046 J | 0.0024 J | 0.0044 J | 0.0024 J | 0.003 J | 0.0016 J | 0.0039 J | 0.0023 J |
| Nickel | 7440-02-0 | mg/kg | 0.0786 | 0.258 | 0.107 | 0.258 | 0.131 | 0.267 | 0.17 | 0.15 | 0.0775 | 0.17 | 0.0981 |
| Selenium | 7782-49-2 | mg/kg | 0.014 | 0.0155 | 0.0073 | 0.0157 | 0.0072 | 0.012 | 0.0063 | 0.0098 | 0.005 | 0.0096 | 0.0044 J |
| Silver | 7440-22-4 | mg/kg | 0.001 U | 0.0016 J | 0.001 U | 0.0012 J | 0.001 U | 0.0013 J | 0.001 J | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Thallium | 7440-28-0 | mg/kg | 0.001 U | 0.0029 J | 0.0012 J | 0.0029 J | 0.0016 J | 0.0033 J | 0.0018 J | 0.0017 J | 0.001 U | 0.0022 J | 0.0013 J |
| Vanadium | 7440-62-2 | mg/kg | 0.0141 | 0.0834 | 0.0384 | 0.0977 | 0.0467 | 0.0827 | 0.051 | 0.042 | 0.0234 | 0.0585 | 0.0385 |
| Zinc | 7440-66-6 | mg/kg | 1.15 | 4.14 | 1.76 | 3.49 | 2.08 | 4.38 | 2.67 | 2.43 | 1.21 | 2.82 | 2.73 |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 SEM Metals Sediment Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | PB-1 | PB-2 | PB-3 | PB-4 | BS Composit | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 7440-36-0 | mg/kg | 0.0028 J | 0.0014 J | 0.0014 J | 0.0012 J | 0.001 U | 0.001 J | 0.002 J | 0.0169 | 0.0108 | 0.0054 | 0.0165 | 0.0139 |
| Arsenic | 7440-38-2 | mg/kg | 0.0332 | 0.0304 | 0.0239 | 0.0414 | 0.0176 | 0.0353 | 0.0797 | 0.0575 | 0.0491 | 0.0077 | 0.0232 | 0.0718 |
| Barium | 7440-39-3 | mg/kg | 0.978 | 0.674 | 0.724 | 1.09 | 0.359 | 0.656 | 0.559 | 0.626 | 0.91 | 0.595 | 0.322 | 1.13 |
| Beryllium | 7440-41-7 | mg/kg | 0.0035 J | 0.0025 J | 0.0028 J | 0.0024 J | 0.0013 J | 0.0017 J | 0.0036 J | 0.0023 J | 0.0038 J | 0.002 J | 0.0015 J | 0.0038 J |
| Cadmium | 7440-43-9 | mg/kg | 0.0195 | 0.0143 | 0.0124 | 0.0034 J | 0.0019 J | 0.0035 J | 0.0073 | 0.0073 | 0.0079 | 0.0047 J | 0.0056 | 0.0137 |
| Chromium | 7440-47-3 | mg/kg | 0.14 | 0.0965 | 0.108 | 0.0768 | 0.0186 | 0.0388 | 0.0649 | 0.0146 | 0.0138 | 0.0173 | 0.015 | 0.0204 |
| Cobalt | 7440-48-4 | mg/kg | 0.0717 | 0.0491 | 0.0565 | 0.0889 | 0.0412 | 0.0807 | 0.137 | 0.0139 | 0.0128 | 0.0276 | 0.0113 | 0.0148 |
| Copper | 7440-50-8 | mg/kg | 0.508 | 0.447 | 0.341 | 0.146 | 0.059 | 0.129 | 0.169 | 0.249 | 0.165 | 0.144 | 0.157 | 0.549 |
| Lead | 7439-92-1 | mg/kg | 0.836 | 0.615 | 0.592 | 0.394 | 0.169 | 0.313 | 0.573 | 1.86 | 1.58 | 0.982 | 2.18 | 2.59 |
| Manganese | 7439-96-5 | mg/kg | 10.1 | 6.68 | 7.22 | 7.77 | 2.86 | 5.79 | 8.01 | 1.03 | 1.69 | 0.647 | 0.467 | 1.99 |
| Mercury | 7439-97-6 | mg/kg | 0.000037 U | 0.000064 | 0.000017 U | 0.000034 U | 0.000017 U | 5.7E-05 | 3.1E-05 | 0.000241 | 7.9E-05 | 0.000035 U | 0.00012 | 0.00011 |
| Molybdenum | 7439-98-7 | mg/kg | 0.0038 J | 0.0021 J | 0.0021 J | 0.0015 J | 0.001 U | 0.0016 J | 0.002 J | 0.0019 J | 0.0021 J | 0.001 U | 0.0012 J | 0.002 J |
| Nickel | 7440-02-0 | mg/kg | 0.212 | 0.152 | 0.142 | 0.269 | 0.0975 | 0.183 | 0.24 | 0.0289 | 0.0387 | 0.0217 | 0.028 | 0.0547 |
| Selenium | 7782-49-2 | mg/kg | 0.0095 | 0.0462 | 0.0055 | 0.0117 | 0.0051 | 0.0112 | 0.009 | 0.0041 J | 0.0039 J | 0.005 | 0.0042 J | 0.0073 |
| Silver | 7440-22-4 | mg/kg | 0.001 J | 0.001 U | 0.0022 J | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Thallium | 7440-28-0 | mg/kg | 0.0023 J | 0.0018 J | 0.0016 J | 0.001 U | 0.001 U | 0.001 U | 0.0012 J | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.0011 J |
| Vanadium | 7440-62-2 | mg/kg | 0.0611 | 0.0509 | 0.051 | 0.0462 | 0.001 U | 0.0034 J | 0.0361 | 0.0336 | 0.06 | 0.001 U | 0.0113 | 0.0569 |
| Zinc | 7440-66-6 | mg/kg | 3.41 | 2.25 | 2.3 | 1.53 | 0.628 | 1.8 | 1.85 | 0.369 | 0.327 | 0.298 | 0.238 | 0.767 |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Organochlorine Pesticides Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6a | CH-6b | CH-7a | CH-7b | CH-8 | DMMU-1 | DMMU-1S | DMMU-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aldrin | 309-00-2 | ug/kg | 0.05 U | 0.06 U | 0.05 U | 0.05 U | 0.04 U | 0.05 U | 0.05 U | 0.05 U | 0.04 U | 0.04 U | 0.05 U | 0.06 U | 0.05 U | 0.04 U |
| alpha-BHC | 319-84-6 | ug/kg | 0.07 U | 0.08 U | 0.08 U | 0.07 U | 0.06 U | 0.07 U | 0.08 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.09 U | 0.07 U | 0.07 U |
| beta-BHC | 319-85-7 | ug/kg | 0.08 U | 0.09 U | 0.09 U | 0.08 U | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.08 U | 0.10 U | 0.08 U | 0.07 U |
| delta-BHC | 319-86-8 | ug/kg | 0.07 U | 0.08 U | 2.76 | 2.43 | 2.4 | 3.12 | 2.57 | 2.15 | 1.68 | 1.88 | 4.58 | 2.95 | 2.99 | 2.11 |
| gamma-BHC (Lindane) | 58-89-9 | ug/kg | 0.08 U | 0.10 U | 0.09 U | 0.08 U | 0.07 U | 0.08 U | 0.09 U | 0.08 U | 0.07 U | 0.07 U | 0.08 U | 0.10 U | 0.08 U | 0.08 U |
| alpha-Chlordane | 5103-71-9 | ug/kg | 4.62 | 11.6 | 1.94 | 0.07 U | 0.07 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.07 U | 0.09 U | 0.08 U | 0.07 U |
| gamma-Chlordane | 5566-34-7 | ug/kg | 4.18 | 9.97 | 3.74 | 1.83 | 2.62 | 3.66 | 3 | 1.47 | 1.26 | 1.59 | 4.41 | 4.88 | 4.24 | 3.84 |
| Chlordane- isomer mixture | 12789-03-6 | ug/kg | 8.8 | 21.57 | 5.68 | 1.83 | 2.62 | 3.66 | 3 | 1.47 | 1.26 | 1.59 | 4.41 | 4.88 | 4.24 | 3.84 |
| 4,4´-DDD | 72-54-8 | ug/kg | 0.06 U | 0.07 U | 0.06 U | 0.05 U | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.05 U | 0.05 U | 5.36 | 0.07 U | 5.33 | 0.05 U |
| 4,4´-DDE | 72-55-9 | ug/kg | 2.91 | 3.95 | 3.18 | 2.35 | 2.36 | 3.29 | 2.83 | 1.49 | 1.53 | 1.62 | 8.29 | 5.31 | 5.04 | 3.81 |
| 4,4´-DDT | 50-29-3 | ug/kg | 7.39 | 7.54 | 7.68 | 4.43 | 4.39 | 6.71 | 5.18 | 2.58 | 4.05 | 1.72 | 7.98 | 8.62 | 7.61 | 6.25 |
| DDT, Total | DDT, Total | ug/kg | 10.3 | 11.49 | 10.86 | 6.78 | 6.75 | 10 | 8.01 | 4.07 | 5.58 | 3.34 | 21.63 | 13.93 | 17.98 | 10.06 |
| Dieldrin | 60-57-1 | ug/kg | 0.06 U | 12 | 1.86 | 1.32 | 1.37 | 1.81 | 1.62 | 0.87 | 0.66 | 0.88 | 1.27 | 2.04 | 1.69 | 1.44 |
| Endosulfan I | 959-98-8 | ug/kg | 0.17 U | 0.19 U | 0.17 U | 0.16 U | 0.14 U | 0.17 U | 0.17 U | 0.16 U | 0.15 U | 0.15 U | 0.16 U | 0.20 U | 0.17 U | 0.15 U |
| Endosulfan II | 33213-65-9 | ug/kg | 0.19 U | 0.22 U | 0.20 U | 0.18 U | 0.17 U | 0.19 U | 0.20 U | 0.19 U | 0.17 U | 0.17 U | 0.18 U | 0.23 U | 0.19 U | 0.17 U |
| Endosulfan sulfate | 1031-07-8 | ug/kg | 0.08 U | 0.09 U | 0.08 U | 0.07 U | 0.07 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.07 U | 0.09 U | 0.08 U | 0.07 U |
| Endrin | 72-20-8 | ug/kg | 0.07 U | 0.08 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U | 0.08 U | 0.07 U | 0.06 U |
| Endrin aldehyde | 7421-93-4 | ug/kg | 0.13 U | 0.15 U | 0.14 U | 0.12 U | 0.12 U | 0.13 U | 0.14 U | 0.13 U | 0.12 U | 0.12 U | 0.13 U | 0.16 U | 0.13 U | 0.12 U |
| Endrin ketone | 53494-70-5 | ug/kg | 0.03 U | 0.04 U | 0.03 U | 0.03 U | 0.03 U | 0.03 U | 0.03 U | 0.03 U | 0.03 U | 0.03 U | 0.03 U | 0.04 U | 0.03 U | 0.03 U |
| Heptachlor | 76-44-8 | ug/kg | 0.09 U | 0.10 U | 0.09 U | 0.08 U | 0.07 U | 0.09 U | 0.09 U | 0.08 U | 0.08 U | 0.07 U | 0.08 U | 0.10 U | 0.09 U | 0.08 U |
| Heptachlor epoxide | 1024-57-3 | ug/kg | 0.09 U | 0.11 U | 0.10 U | 0.09 U | 0.08 U | 0.09 U | 0.10 U | 0.09 U | 0.08 U | 0.08 U | 0.09 U | 0.11 U | 0.09 U | 0.08 U |
| Methoxychlor | 72-43-5 | ug/kg | 0.13 U | 0.15 U | 0.14 U | 0.12 U | 0.11 U | 0.13 U | 0.13 U | 0.13 U | 0.11 U | 0.11 U | 0.12 U | 0.16 U | 0.13 U | 0.12 U |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Organochlorine Pesticides Sediment Data

| ANALYTE | CARSN | UNIT | PB Composite | PB-1 | PB-2 | PB-3 | PB-4 | BS Composite | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aldrin | 309-00-2 | ug/kg | 0.04 U | 0.04 U | 0.04 U | 0.03 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U | 0.04 U |
| alpha-BHC | 319-84-6 | ug/kg | 0.06 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U |
| beta-BHC | 319-85-7 | ug/kg | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| delta-BHC | 319-86-8 | ug/kg | 1.07 | 0.78 | 0.87 | 0.9 | 1.68 | 0.06 U | 0.19 J | 0.05 U | 0.06 U | 0.06 U |
| gamma-BHC (Lindane) | 58-89-9 | ug/kg | 0.07 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| alpha-Chlordane | 5103-71-9 | ug/kg | 0.06 U | 0.06 U | 0.06 U | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U |
| gamma-Chlordane | 5566-34-7 | ug/kg | 0.06 U | 0.92 | 0.27 | 0.06 U | 0.58 | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Chlordane- isomer mixture | 12789-03-6 | ug/kg | 0 | 0.92 | 0.27 | 0 | 0.58 | 0 | 0 | 0 | 0 | 0 |
| 4,4´-DDD | 72-54-8 | ug/kg | 1.14 | 0.04 U | 1 | 1.37 | 2.3 | 2.39 | 1.28 | 0.37 | 0.05 U | 5.55 |
| 4,4´-DDE | 72-55-9 | ug/kg | 0.4 | 0.89 | 0.33 | 0.44 | 0.99 | 23.1 | 11.4 | 13.2 | 32.3 | 33 |
| 4,4´-DDT | 50-29-3 | ug/kg | 0.77 | 2.46 | 0.95 | 0.77 | 1.49 | 13.8 | 3.6 | 14.9 | 33.4 | 6.84 |
| DDT, Total | DDT, Total | ug/kg | 2.31 | 3.35 | 2.28 | 2.58 | 4.78 | 39.29 | 16.28 | 28.47 | 65.7 | 45.39 |
| Dieldrin | 60-57-1 | ug/kg | 0.4 | 0.5 | 0.05 U | 0.04 U | 0.04 U | 1.02 | 0.05 U | 0.46 | 1.09 | 0.05 U |
| Endosulfan I | 959-98-8 | ug/kg | 0.13 U | 0.12 U | 0.12 U | 0.12 U | 0.12 U | 0.13 U | 0.13 U | 0.12 U | 0.13 U | 0.14 U |
| Endosulfan II | 33213-65-9 | ug/kg | 0.15 U | 0.14 U | 0.14 U | 0.13 U | 0.14 U | 0.15 U | 0.15 U | 0.14 U | 0.16 U | 0.16 U |
| Endosulfan sulfate | 1031-07-8 | ug/kg | 0.06 U | 0.06 U | 0.06 U | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U |
| Endrin | 72-20-8 | ug/kg | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.06 U | 0.06 U |
| Endrin aldehyde | 7421-93-4 | ug/kg | 0.10 U | 0.10 U | 0.10 U | 0.09 U | 0.10 U | 0.11 U | 0.11 U | 0.10 U | 0.11 U | 0.11 U |
| Endrin ketone | 53494-70-5 | ug/kg | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.03 U | 0.02 U | 0.03 U | 0.03 U |
| Heptachlor | 76-44-8 | ug/kg | 0.07 U | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Heptachlor epoxide | 1024-57-3 | ug/kg | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.07 U | 0.07 U | 0.08 U |
| Methoxychlor | 72-43-5 | ug/kg | 0.10 U | 0.10 U | 0.10 U | 0.09 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.11 U |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Polychlorinated Biphenyls (PCBs) Sediment Dat

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5DUP | CH-6a | CH-6b | CH-7a | CH-7b | CH-8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | 12674-11- | ug/kg | 1.62 U | 1.69 U | 1.55 U | 1.64 U | 1.58 U | 1.63 U | 1.67 U | 1.67 U | 1.66 U | 1.63 U | 1.74 U |
| PCB-1221 | 11104-28- | ug/kg | 1.69 U | 1.76 U | 1.62 U | 1.72 U | 1.65 U | 1.70 U | 1.75 U | 1.75 U | 1.73 U | 1.70 U | 1.82 U |
| PCB-1232 | 11141-16- | ug/kg | 1.69 U | 1.76 U | 1.62 U | 1.72 U | 1.65 U | 1.70 U | 1.75 U | 1.75 U | 1.73 U | 1.70 U | 1.82 U |
| PCB-1242 | 53469-21- | ug/kg | 1.69 U | 1.76 U | 1.62 U | 1.72 U | 1.65 U | 1.70 U | 1.75 U | 1.75 U | 1.73 U | 1.70 U | 1.82 U |
| PCB-1248 | 12672-29- | ug/kg | 1.69 U | 1.76 U | 1.62 U | 1.72 U | 1.65 U | 1.70 U | 1.75 U | 1.75 U | 1.73 U | 1.70 U | 1.82 U |
| PCB-1254 | 11097-69- | ug/kg | 1.69 U | 1.76 U | 1.62 U | 1.72 U | 1.65 U | 1.70 U | 1.75 U | 1.75 U | 1.73 U | 1.70 U | 1.82 U |
| PCB-1260 | 11096-82- | ug/kg | 1.68 U | 1.74 U | 1.60 U | 1.70 U | 1.64 U | 1.69 U | 1.73 U | 1.73 U | 1.71 U | 1.69 U | 1.80 U |

**CH- Cleveland Harbor river samples**

**DMMU-1- Composite of CH1 - CH3**

**DMMU-1S- Course Material from composite of CH1 -**

**DMMU-2- Composite of CH4- CH8**

**PB- Lake Reference samples**

**BS- Soil Reference samples**

## Cleveland Harbor 2010 Polychlorinated Biphenyls (PCBs) Sediment Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU1S | DMMU-2 | PB Composite | PB-1 | PB-2 | PB-3 | PB-4 | BS Composite | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | 12674-11- | ug/kg | 1.67 U | 1.69 U | 1.65 U | 2.00 U | 2.05 U | 2.06 U | 1.98 U | 2.07 U | 2.00 U | 1.99 U | 2.00 U | 1.99 U | 2.01 U |
| PCB-1221 | 11104-28- | ug/kg | 1.74 U | 1.76 U | 1.72 U | 2.09 U | 2.14 U | 2.15 U | 2.06 U | 2.16 U | 2.08 U | 2.08 U | 2.08 U | 2.08 U | 2.10 U |
| PCB-1232 | 11141-16- | ug/kg | 1.74 U | 1.76 U | 1.72 U | 2.09 U | 2.14 U | 2.15 U | 2.06 U | 2.16 U | 2.08 U | 2.08 U | 2.08 U | 2.08 U | 2.10 U |
| PCB-1242 | 53469-21- | ug/kg | 1.74 U | 1.76 U | 1.72 U | 2.09 U | 2.14 U | 2.15 U | 2.06 U | 2.16 U | 2.08 U | 2.08 U | 2.08 U | 2.08 U | 2.10 U |
| PCB-1248 | 12672-29- | ug/kg | 1.74 U | 1.76 U | 1.72 U | 2.09 U | 2.14 U | 2.15 U | 2.06 U | 2.16 U | 2.08 U | 2.08 U | 2.08 U | 2.08 U | 2.10 U |
| PCB-1254 | 11097-69- | ug/kg | 1.74 U | 1.76 U | 1.72 U | 15.0 | 22.8 | 10.7 | 9.00 | 26.7 | 2.08 U | 2.08 U | 2.08 U | 2.08 U | 2.10 U |
| PCB-1260 | 11096-82- | ug/kg | 1.73 U | 1.75 U | 1.71 U | 2.07 U | 2.12 U | 2.13 U | 2.04 U | 2.14 U | 2.06 U | 2.06 U | 2.06 U | 2.06 U | 2.08 U |

**CH- Cleveland Harbor river samples**

**DMMU-1- Composite of CH1 - CH3**

**DMMU-1S- Course Material from composite of CH1 - CH3**

**DMMU-2- Composite of CH4- CH8**

**PB- Lake Reference samples**

**BS- Soil Reference samples**

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6a | CH-6b | CH-7a | CH-7b | CH-8 | DMMU-1 | DMMU-1S | DMMU-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 1,2-Dichlorobenzene | 95-50-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 1,3-Dichlorobenzene | 541-73-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 46.0 J | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 1,4-Dichlorobenzene | 106-46-7 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 31.4 J | 12.6 U | 46.0 J | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2,4,5-Trichlorophenol | 95-95-4 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2,4,6-Trichlorophenol | 88-06-2 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2,4-Dichlorophenol | 120-83-2 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2,4-Dimethylphenol | 105-67-9 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2,4-Dinitrophenol | 51-28-5 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2,4-Dinitrotoluene | 121-14-2 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2,6-Dinitrotoluene | 606-20-2 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2-Chloronaphthalene | 91-58-7 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2-Chlorophenol | 95-57-8 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2-Methylnaphthalene | 91-57-6 | ug/kg | 151 | 69.8 | 88.6 | 90.9 | 126 | 71.4 | 128 | 92.4 | 194 | 93 | 79.7 | 172 | 110 | 106 |
| 2-Methylphenol | 95-48-7 | ug/kg | 87.6 | 34.9 J | 75 | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 96.2 | 32.5 J | 11.7 U |
| 2-Nitroaniline | 88-74-4 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 2-Nitrophenol | 88-75-5 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 3,3´-Dichlorobenzidine | 91-94-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 3-Nitroaniline | 99-09-2 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 4-Bromophenyl phenyl ether | 101-55-3 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 4-Chloro-3-methylphenol | 59-50-7 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 4-Chloroaniline | 106-47-8 | ug/kg | 269 | 312 | 298 | 295 | 284 | 303 | 323 | 298 | 247 | 245 | 288 | 421 | 389 | 364 |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 4-Methylphenol | 106-44-5 | ug/kg | 558 | 932 | 1800 | 154 | 251 | 459 | 600 | 554 | 140 | 2350 | 468 | 3510 | 420 | 983 |
| 4-Nitroaniline | 100-01-6 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| 4-Nitrophenol | 100-02-7 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Acenaphthene | 83-32-9 | ug/kg | 296 | 32.4 J | 90.9 | 50.5 | 75.4 | 26.0 J | 78.6 | 63 | 215 | 96.8 | 26.6 J | 307 | 69.2 | 82.2 |
| Acenaphthylene | 208-96-8 | ug/kg | 70 | 32.4 J | 34.1 J | 30.3 J | 26.4 J | 13.0 U | 13.5 U | 12.6 U | 23.0 J | 24.7 J | 28.6 J | 57.2 J | 47.6 J | 47.0 J |
| Aniline | 62-53-3 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Anthracene | 120-12-7 | ug/kg | 440 | 229 | 311 | 168 | 224 | 162 | 218 | 166 | 328 | 228 | 131 | 507 | 1090 | 227 |
| Benzidine | 92-87-5 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Benzo (a) anthracene | 56-55-3 | ug/kg | 1170 | 1240 | 1210 | 891 | 908 | 963 | 887 | 491 | 827 | 592 | 920 | 1300 | 1100 | 930 |
| Benzo (a) pyrene | 50-32-8 | ug/kg | 891 | 1040 | 1070 | 774 | 767 | 790 | 721 | 372 | 527 | 397 | 695 | 1040 | 865 | 809 |
| Benzo (b) fluoranthene | 205-99-2 | ug/kg | 1080 | 1520 | 1470 | 1130 | 1100 | 1170 | 1030 | 523 | 641 | 531 | 948 | 1380 | 1270 | 1240 |

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6a | CH-6b | CH-7a | CH-7b | CH-8 | DMMU-1 | DMMU-1S | DMMU-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo (g,h,i) perylene | 191-24-2 | ug/kg | 519 | 743 | 770 | 562 | 650 | 539 | 600 | 260 | 315 | 230 | 464 | 587 | 441 | 491 |
| Benzo (k) fluoranthene | 207-08-9 | ug/kg | 908 | 1010 | 1020 | 877 | 840 | 846 | 800 | 390 | 554 | 450 | 766 | 1170 | 956 | 834 |
| Benzoic acid | 65-85-0 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Benzyl alcohol | 100-51-6 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Bis(2-chloroethoxy)methane | 111-91-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Bis(2-chloroethyl)ether | 111-44-4 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Bis(2-chloroisopropyl)ether | 39638-32-9 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | ug/kg | 930 | 1280 | 1550 | 656 | 853 | 1050 | 1120 | 336 | 453 | 668 | 793 | 1070 | 865 | 765 |
| Butyl benzyl phthalate | 85-68-7 | ug/kg | 46.0 J | 69.8 | 114 | 64.6 | 11.3 U | 13.0 U | 13.5 U | 29.4 J | 34.5 J | 41.8 J | 38.8 J | 15.6 U | 75.7 | 56.8 |
| Chrysene | 218-01-9 | ug/kg | 1670 | 1840 | 1890 | 1450 | 1550 | 1570 | 1480 | 856 | 1170 | 920 | 1260 | 1970 | 1660 | 1490 |
| Dibenz (a,h) anthracene | 53-70-3 | ug/kg | 76.6 | 115 | 127 | 88.9 | 102 | 90.9 | 94.3 | 44.1 J | 61.4 | 43.7 J | 67.4 | 101 | 77.9 | 88.1 |
| Dibenzofuran | 132-64-9 | ug/kg | 287 | 29.9 J | 105 | 70.7 | 81 | 13.0 U | 13.5 U | 60.9 | 230 | 112 | 32.7 J | 231 | 54.1 | 99.8 |
| Diethyl phthalate | 84-66-2 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 39.0 J | 13.0 U | 29.4 J |
| Dimethyl phthalate | 131-11-3 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Di-n-butyl phthalate | 84-74-2 | ug/kg | 39.4 J | 57.3 J | 84.1 | 34.3 J | 45.2 J | 45.4 J | 53.9 J | 56.7 | 47.9 | 43.7 J | 30.7 J | 62.4 J | 13.0 U | 33.3 J |
| Di-n-octyl phthalate | 117-84-0 | ug/kg | 326 | 404 | 373 | 299 | 279 | 329 | 364 | 290 | 270 | 285 | 296 | 387 | 335 | 294 |
| Fluoranthene | 206-44-0 | ug/kg | 4650 | 4140 | 3940 | 2940 | 4440 | 4330 | 4350 | 2680 | 3260 | 2510 | 2780 | 7980 | 6450 | 3740 |
| Fluorene | 86-73-7 | ug/kg | 466 | 62.3 | 191 | 119 | 124 | 41.1 J | 121 | 92.4 | 305 | 159 | 63.4 | 343 | 160 | 153 |
| Hexachlorobenzene | 118-74-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Hexachlorobutadiene | 87-68-3 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Hexachlorocyclopentadiene | 77-47-4 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Hexachloroethane | 67-72-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/kg | 626 | 888 | 931 | 667 | 759 | 664 | 710 | 323 | 412 | 298 | 566 | 733 | 554 | 617 |
| Isophorone | 78-59-1 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Naphthalene | 91-20-3 | ug/kg | 495 | 145 | 97.7 | 66.7 | 90.4 | 95.2 | 98.8 | 90.3 | 326 | 135 | 129 | 322 | 294 | 119 |
| Nitrobenzene | 98-95-3 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| N-Nitrosodimethylamine | 62-75-9 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| N-Nitrosodi-n-propylamine | 621-64-7 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| N-Nitrosodiphenylamine | 86-30-6 | ug/kg | 13.1 U | 15.0 U | 13.6 U | 12.1 U | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 11.4 U | 12.3 U | 15.6 U | 13.0 U | 11.7 U |
| Pentachlorophenol | 87-86-5 | ug/kg | 442 | 15.0 U | 443 | 390 | 11.3 U | 13.0 U | 13.5 U | 12.6 U | 11.5 U | 368 | 401 | 15.6 U | 420 | 380 |
| Phenanthrene | 85-01-8 | ug/kg | 1570 | 1650 | 1430 | 955 | 1260 | 1530 | 1180 | 844 | 2010 | 1210 | 1240 | 2280 | 2200 | 1160 |
| Phenol | 108-95-2 | ug/kg | 32.8 J | 49.9 J | 52.3 J | 28.3 J | 30.1 J | 56.3 | 58.4 | 172 | 167 | 228 | 106 | 44.2 J | 36.8 J | 52.9 |
| Pyrene | 129-00-0 | ug/kg | 2310 | 1800 | 3270 | 2770 | 3080 | 1680 | 2900 | 1010 | 1630 | 1260 | 1240 | 2410 | 1970 | 1840 |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Sediment Data

| ANALYTE | CARSN | UNIT | PB Composite | PB-1 | PB-2 | PB-3 | PB-4 | BS Composite | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 1,2-Dichlorobenzene | 95-50-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 1,3-Dichlorobenzene | 541-73-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 1,4-Dichlorobenzene | 106-46-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2,4,5-Trichlorophenol | 95-95-4 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2,4,6-Trichlorophenol | 88-06-2 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2,4-Dichlorophenol | 120-83-2 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2,4-Dimethylphenol | 105-67-9 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2,4-Dinitrophenol | 51-28-5 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2,4-Dinitrotoluene | 121-14-2 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2,6-Dinitrotoluene | 606-20-2 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2-Chloronaphthalene | 91-58-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2-Chlorophenol | 95-57-8 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2-Methylnaphthalene | 91-57-6 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 103 | 22.7 J | 9.7 U | 45.4 | 200 |
| 2-Methylphenol | 95-48-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2-Nitroaniline | 88-74-4 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 2-Nitrophenol | 88-75-5 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 3,3´-Dichlorobenzidine | 91-94-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 3-Nitroaniline | 99-09-2 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 4-Bromophenyl phenyl ether | 101-55-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 4-Chloro-3-methylphenol | 59-50-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 4-Chloroaniline | 106-47-8 | ug/kg | 214 | 195 | 197 | 185 | 214 | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 244 |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 4-Methylphenol | 106-44-5 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 4-Nitroaniline | 100-01-6 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| 4-Nitrophenol | 100-02-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Acenaphthene | 83-32-9 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 24.2 J | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Acenaphthylene | 208-96-8 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 25.9 J |
| Aniline | 62-53-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Anthracene | 120-12-7 | ug/kg | 23.5 J | 28.8 J | 34.0 J | 22.5 J | 49.9 | 36.2 J | 22.7 J | 9.7 U | 24.5 J | 100 |
| Benzidine | 92-87-5 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Benzo (a) anthracene | 56-55-3 | ug/kg | 40.4 J | 62.4 | 74.4 | 27.0 J | 90.2 | 158 | 78.5 | 69.8 | 238 | 341 |
| Benzo (a) pyrene | 50-32-8 | ug/kg | 10.1 U | 40 | 43.7 | 9.0 U | 53.1 | 102 | 50.6 | 48.7 | 169 | 187 |
| Benzo (b) fluoranthene | 205-99-2 | ug/kg | 25.2 J | 46.4 | 59.8 | 22.5 J | 69.3 | 167 | 90.8 | 76.3 | 271 | 233 |

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Sediment Data

| ANALYTE | CARSN | UNIT | PB Composite | PB-1 | PB-2 | PB-3 | PB-4 | BS Composite | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo (g,h,i) perylene | 191-24-2 | ug/kg | 10.1 U | 20.8 J | 24.3 J | 9.0 U | 30.6 J | 49.9 | 26.2 J | 27.6 J | 96.1 | 70.3 |
| Benzo (k) fluoranthene | 207-08-9 | ug/kg | 25.2 J | 44.8 | 50.1 | 9.0 U | 66 | 112 | 61.1 | 60.1 | 199 | 228 |
| Benzoic acid | 65-85-0 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Benzyl alcohol | 100-51-6 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Bis(2-chloroethoxy)methane | 111-91-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Bis(2-chloroethyl)ether | 111-44-4 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Bis(2-chloroisopropyl)ether | 39638-32- | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | ug/kg | 40.4 J | 89.7 | 72.8 | 78.1 | 95 | 29.3 J | 22.7 J | 34.1 J | 76.9 | 31.5 J |
| Butyl benzyl phthalate | 85-68-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 24.5 J | 11.1 U |
| Chrysene | 218-01-9 | ug/kg | 63.9 | 86.5 | 103 | 43.6 | 139 | 234 | 148 | 117 | 400 | 444 |
| Dibenz (a,h) anthracene | 53-70-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Dibenzofuran | 132-64-9 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 22.5 J | 39.6 J | 10.5 U | 9.7 U | 10.5 U | 70.3 |
| Diethyl phthalate | 84-66-2 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Dimethyl phthalate | 131-11-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Di-n-butyl phthalate | 84-74-2 | ug/kg | 10.1 U | 22.4 J | 9.7 U | 9.0 U | 9.7 U | 55.1 | 45.4 | 34.1 J | 155 | 44.4 J |
| Di-n-octyl phthalate | 117-84-0 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 216 | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Fluoranthene | 206-44-0 | ug/kg | 242 | 333 | 398 | 189 | 554 | 608 | 436 | 362 | 1230 | 1290 |
| Fluorene | 86-73-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 33.3 J |
| Hexachlorobenzene | 118-74-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Hexachlorobutadiene | 87-68-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Hexachlorocyclopentadiene | 77-47-4 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Hexachloroethane | 67-72-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/kg | 10.1 U | 25.6 J | 27.5 J | 9.0 U | 33.8 J | 63.7 | 31.4 J | 32.5 J | 126 | 90.7 |
| Isophorone | 78-59-1 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Naphthalene | 91-20-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 89.5 | 29.7 J | 29.2 J | 89.1 | 148 |
| Nitrobenzene | 98-95-3 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| N-Nitrosodimethylamine | 62-75-9 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| N-Nitrosodi-n-propylamine | 621-64-7 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| N-Nitrosodiphenylamine | 86-30-6 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Pentachlorophenol | 87-86-5 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Phenanthrene | 85-01-8 | ug/kg | 72.3 | 106 | 152 | 66.1 | 156 | 219 | 129 | 133 | 417 | 439 |
| Phenol | 108-95-2 | ug/kg | 10.1 U | 9.6 U | 9.7 U | 9.0 U | 9.7 U | 10.3 U | 10.5 U | 9.7 U | 10.5 U | 11.1 U |
| Pyrene | 129-00-0 | ug/kg | 95.9 | 115 | 125 | 78.1 | 222 | 298 | 141 | 125 | 344 | 676 |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6A | CH-6B | CH-7A | CH-7B | CH-8 | DMMU-1 | DMMU-1S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 630-20-6 | ug/Kg | 79 U H | 77 U H | 80 U H | 0.93 U H | 68 U H | 70 U H | 73 U H | 68 U H | 66 U H | 62 U H | 0.86 U H | 95 U H | 79 U H |
| 1,1,1-Trichloroethane | 71-55-6 | ug/Kg | 79 U H | 77 U H | 80 U H | 0.93 U H | 68 U H | 70 U H | 73 U H | 68 U H | 66 U H | 62 U H | 0.86 U H | 95 U H | 79 U H |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | ug/Kg | 81 U H | 79 U H | 82 U H | 1.9 U H | 70 U H | 72 U H | 75 U H | 70 U H | 68 U H | 64 U H | 1.7 U H | 98 U H | 81 U H |
| 1,1,2-Trichloroethane | 79-00-5 | ug/Kg | 92 U H | 90 U H | 93 U H | 0.15 U H | 80 U H | 81 U H | 85 U H | 80 U H | 77 U H | 72 U H | 0.14 U H | 110 U H | 92 U H |
| 1,1-Dichloroethane | 75-34-3 | ug/Kg | 79 U H | 77 U H | 80 U H | 1.9 U H | 68 U H | 70 U H | 73 U H | 68 U H | 66 U H | 62 U H | 1.7 U H | 95 U H | 79 U H |
| 1,1-Dichloroethene | 75-35-4 | ug/Kg | 46 U H | 45 U H | 47 U H | 0.12 U H | 40 U H | 41 U H | 42 U H | 40 U H | 39 U H | 36 U H | 0.11 U H | 55 U H | 46 U H |
| 1,1-Dichloropropene | 563-58-6 | ug/Kg | 48 U H | 47 U H | 49 U H | 0.93 U H | 42 U H | 43 U H | 44 U H | 42 U H | 40 U H | 38 U H | 0.86 U H | 58 U H | 48 U H |
| 1,2,3-Trichlorobenzene | 87-61-6 | ug/Kg | 55 U H | 53 U H | 56 U H | 1.4 J H B | 47 U H | 48 U H | 51 U H | 47 U H | 46 U H | 43 U H | 4 J H B | 66 U H | 55 U H |
| 1,2,3-Trichloropropane | 96-18-4 | ug/Kg | 120 U H | 120 U H | 120 U H | 0.39 U H | 100 U H | 100 U H | 110 U H | 100 U H | 99 U H | 93 U H | 0.36 U H | 140 U H | 120 U H |
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/Kg | 37 J H B | 34 U H | 36 U H | 0.99 J H B | 30 U H | 31 U H | 32 U H | 30 U H | 29 U H | 28 U H | 3.8 J H B | 42 U H | 35 U H |
| 1,2,4-Trimethylbenzene | 95-63-6 | ug/Kg | 75 U H | 73 U H | 76 U H | 0.72 J H B | 64 U H | 66 U H | 69 U H | 65 U H | 62 U H | 58 U H | 2.1 J H B | 90 U H | 74 U H |
| 1,2-Dibromo-3-Chloropropane | 96-12-8 | ug/Kg | 100 U H | 98 U H | 100 U H | 1.9 U H | 87 U H | 89 U H | 93 U H | 87 U H | 84 U H | 79 U H | 1.7 U H | 120 U H | 100 U H |
| 1,2-Dibromoethane | 106-93-4 | ug/Kg | 110 U H | 110 U H | 110 U H | 3.7 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 3.5 U H | 130 U H | 110 U H |
| 1,2-Dichlorobenzene | 95-50-1 | ug/Kg | 61 U H | 60 U H | 62 U H | 0.4 J H B | 53 U H | 54 U H | 57 U H | 53 U H | 51 U H | 48 U H | 1.6 J H B | 74 U H | 61 U H |
| 1,2-Dichloroethane | 107-06-2 | ug/Kg | 72 U H | 70 U H | 73 U H | 3.7 U H | 62 U H | 64 U H | 67 U H | 63 U H | 61 U H | 57 U H | 3.5 U H | 87 U H | 72 U H |
| 1,2-Dichloroethene, Total | 540-59-0 | ug/Kg | 75 U H | 73 U H | 76 U H | 0.74 U H | 64 U H | 66 U H | 69 U H | 65 U H | 62 U H | 58 U H | 0.69 U H | 90 U H | 74 U H |
| 1,2-Dichloropropane | 78-87-5 | ug/Kg | 83 U H | 81 U H | 84 U H | 3.7 U H | 72 U H | 74 U H | 77 U H | 72 U H | 70 U H | 65 U H | 3.5 U H | 100 U H | 83 U H |
| 1,3,5-Trimethylbenzene | 108-67-8 | ug/Kg | 70 U H | 68 U H | 71 U H | 0.2 U H | 61 U H | 62 U H | 65 U H | 61 U H | 59 U H | 55 U H | 1 J H | 85 U H | 70 U H |
| 1,3-Dichlorobenzene | 541-73-1 | ug/Kg | 55 U H | 53 U H | 56 U H | 0.33 J H B | 47 U H | 48 U H | 51 U H | 47 U H | 46 U H | 43 U H | 1.4 J H B | 66 U H | 55 U H |
| 1,3-Dichloropropane | 142-28-9 | ug/Kg | 72 U H | 70 U H | 73 U H | 0.12 U H | 62 U H | 64 U H | 67 U H | 63 U H | 61 U H | 57 U H | 0.11 U H | 87 U H | 72 U H |
| 1,4-Dichlorobenzene | 106-46-7 | ug/Kg | 50 U H | 49 U H | 51 U H | 0.58 J H B | 44 U H | 45 U H | 47 U H | 44 U H | 73 J H | 40 U H | 2.7 J H B | 61 U H | 50 U H |
| 1,4-Dioxane | 123-91-1 | ug/Kg | 5900 U H | 5800 U H | 6000 U H | 19 U H | 5100 U H | 5200 U H | 5500 U H | 5100 U H | 5000 U H | 4600 U H | 17 U H | 7100 U H | 5900 U H |
| 2,2-Dichloropropane | 594-20-7 | ug/Kg | 100 U H | 98 U H | 100 U H | 1.9 U H | 87 U H | 89 U H | 93 U H | 87 U H | 84 U H | 79 U H | 1.7 U H | 120 U H | 100 U H |
| 2-Butanone | 78-93-3 | ug/Kg | 240 U H | 230 U H | 240 U H | 29 H | 210 U H | 210 U H | 220 U H | 210 U H | 200 U H | 190 U H | 22 H | 290 U H | 240 U H |
| 2-Chloroethyl vinyl ether | 110-75-8 | ug/Kg | 29 U H | 28 U H | 29 U H | 0.22 U H | 25 U H | 25 U H | 26 U H | 25 U H | 24 U H | 22 U H | 0.21 U H | 34 U H | 28 U H |
| 2-Chlorotoluene | 95-49-8 | ug/Kg | 72 U H | 70 U H | 73 U H | 0.24 U H | 62 U H | 64 U H | 67 U H | 63 U H | 61 U H | 57 U H | 0.22 U H | 87 U H | 72 U H |
| 2-Hexanone | 591-78-6 | ug/Kg | 220 U H | 210 U H | 220 U H | 1.9 U H | 190 U H | 190 U H | 200 U H | 190 U H | 180 U H | 170 U H | 1.7 U H | 260 U H | 220 U H |
| 4-Chlorotoluene | 106-43-4 | ug/Kg | 75 U H | 73 U H | 76 U H | 0.3 U H | 64 U H | 66 U H | 69 U H | 65 U H | 62 U H | 58 U H | 0.28 U H | 90 U H | 74 U H |
| 4-Isopropyltoluene | 99-87-6 | ug/Kg | 39 U H | 38 U H | 40 U H | 0.72 J H B | 34 U H | 35 U H | 36 U H | 34 U H | 33 U H | 31 U H | 1.3 J H B | 48 U H | 39 U H |
| 4-Methyl-2-pentanone | 108-10-1 | ug/Kg | 46 U H | 45 U H | 47 U H | 0.089 U H | 40 U H | 41 U H | 42 U H | 40 U H | 39 U H | 36 U H | 0.083 U H | 55 U H | 46 U H |
| Acetone | 67-64-1 | ug/Kg | 220 U H | 210 U H | 220 U H | 120 H | 190 U H | 190 U H | 200 U H | 190 U H | 180 U H | 170 U H | 92 H | 260 U H | 220 U H |
| Benzene | 71-43-2 | ug/Kg | 68 U H | 66 U H | 69 U H | 0.37 U H | 59 U H | 60 U H | 63 U H | 59 U H | 57 U H | 53 U H | 0.36 J H | 82 U H | 68 U H |
| Bromobenzene | 108-86-1 | ug/Kg | 81 U H | 79 U H | 82 U H | 0.15 U H | 70 U H | 72 U H | 75 U H | 70 U H | 68 U H | 64 U H | 0.49 J H | 98 U H | 81 U H |
| Bromochloromethane | 74-97-5 | ug/Kg | 120 U H | 110 U H | 120 U H | 0.84 U H | 100 U H | 100 U H | 110 U H | 100 U H | 97 U H | 91 U H | 0.78 U H | 140 U H | 120 U H |
| Bromodichloromethane | 75-27-4 | ug/Kg | 81 U H | 79 U H | 82 U H | 3.7 U H | 70 U H | 72 U H | 75 U H | 70 U H | 68 U H | 64 U H | 3.5 U H | 98 U H | 81 U H |
| Bromoform | 75-25-2 | ug/Kg | 86 U H | 83 U H | 87 U H | 3.7 U H | 74 U H | 76 U H | 79 U H | 74 U H | 72 U H | 67 U H | 3.5 U H | 100 U H | 85 U H |
| Bromomethane | 74-83-9 | ug/Kg | 85 J H B | 75 U H | 78 U H | 0.32 U H | 66 U H | 68 U H | 71 U H | 66 U H | 64 U H | 60 U H | 0.29 U H | 92 U H | 76 U H |
| Carbon disulfide | 75-15-0 | ug/Kg | 48 J H | 41 U H | 42 U H | 0.89 J H B | 36 U H | 37 U H | 38 U H | 36 U H | 35 U H | 33 U H | 0.95 J H B | 50 U H | 41 U H |
| Carbon tetrachloride | 56-23-5 | ug/Kg | 70 U H | 68 U H | 71 U H | 0.13 U H | 61 U H | 62 U H | 65 U H | 61 U H | 59 U H | 55 U H | 0.12 U H | 85 U H | 70 U H |
| Chlorobenzene | 108-90-7 | ug/Kg | 50 U H | 49 U H | 51 U H | 0.093 U H | 44 U H | 45 U H | 47 U H | 44 U H | 58 J H | 40 U H | 0.086 U H | 61 U H | 50 U H |
| Chloroethane | 75-00-3 | ug/Kg | 130 U H | 130 U H | 130 U H | 0.54 U H | 110 U H | 120 U H | 120 U H | 110 U H | 110 U H | 100 U H | 0.5 U H | 160 U H | 130 U H |
| Chloroform | 67-66-3 | ug/Kg | 72 U H | 70 U H | 73 U H | 0.12 U H | 62 U H | 64 U H | 67 U H | 63 U H | 61 U H | 57 U H | 0.11 U H | 87 U H | 72 U H |

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6A | CH-6B | CH-7A | CH-7B | CH-8 | DMMU-1 | DMMU-1S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | ug/Kg | 81 U H | 79 U H | 82 U H | 0.93 U H | 70 U H | 72 U H | 75 U H | 70 U H | 68 U H | 64 U H | 0.86 U H | 98 U H | 81 U H |
| cis-1,2-Dichloroethene | 156-59-2 | ug/Kg | 46 U H | 45 U H | 47 U H | 0.93 U H | 40 U H | 41 U H | 42 U H | 40 U H | 39 U H | 36 U H | 0.86 U H | 55 U H | 46 U H |
| cis-1,3-Dichloropropene | 10061-01-5 | ug/Kg | 70 U H | 68 U H | 71 U H | 0.24 U H | 61 U H | 62 U H | 65 U H | 61 U H | 59 U H | 55 U H | 0.22 U H | 85 U H | 70 U H |
| Cyclohexane | 110-82-7 | ug/Kg | 77 U H | 75 U H | 78 U H | 1.9 U H | 66 U H | 68 U H | 71 U H | 66 U H | 64 U H | 60 U H | 1.7 U H | 92 U H | 76 U H |
| Dibromochloromethane | 124-48-1 | ug/Kg | 81 U H | 79 U H | 82 U H | 0.73 U H | 70 U H | 72 U H | 75 U H | 70 U H | 68 U H | 64 U H | 0.67 U H | 98 U H | 81 U H |
| Dibromomethane | 74-95-3 | ug/Kg | 55 U H | 53 U H | 56 U H | 0.26 U H | 47 U H | 48 U H | 51 U H | 47 U H | 46 U H | 43 U H | 0.24 U H | 66 U H | 55 U H |
| Dichlorodifluoromethane | 75-71-8 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.14 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.13 U H | 130 U H | 110 U H |
| Ethylbenzene | 100-41-4 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.1 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.79 J H | 130 U H | 110 U H |
| Freon TF | 76-13-1 | ug/Kg | 61 U H | 60 U H | 62 U H | 0.13 U H | 53 U H | 54 U H | 57 U H | 53 U H | 51 U H | 48 U H | 0.12 U H | 74 U H | 61 U H |
| Hexachlorobutadiene | 87-68-3 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.37 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 1.6 J H B | 130 U H | 110 U H |
| Isobutyl alcohol | 78-83-1 | ug/Kg | 5500 U H | 5300 U H | 5600 U H | 12 U H | 4700 U H | 4800 U H | 5100 U H | 4700 U H | 4600 U H | 4300 U H | 11 U H | 6600 U H | 5500 U H |
| Isopropylbenzene | 98-82-8 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.2 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.19 U H | 130 U H | 110 U H |
| m&p-Xylene | 179601-23- | ug/Kg | 110 U H | 110 U H | 110 U H | 0.74 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.71 J H | 130 U H | 110 U H |
| Methyl acetate | 79-20-9 | ug/Kg | 910 H | 920 H | 1100 H | 0.58 U H | 550 H | 680 H | 770 H | 550 H | 490 H | 480 H | 0.53 U H | 1300 H | 630 H |
| Methyl iodide | 74-88-4 | ug/Kg | 110 U H * | 110 U H * | 110 U H * | 1.9 U H | 95 U H * | 97 U H * | 100 U H * | 95 U H * | 92 U H * | 86 U H * | 1.7 U H | 130 U H * | 110 U H * |
| Methyl t-butyl ether | 1634-04-4 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.14 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.13 U H | 130 U H | 110 U H |
| Methylcyclohexane | 108-87-2 | ug/Kg | 110 U H | 110 U H | 110 U H | 2.7 J H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 3.3 J H | 130 U H | 110 U H |
| Methylene Chloride | 75-09-2 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.26 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.24 U H | 130 U H | 110 U H |
| Naphthalene | 91-20-3 | ug/Kg | 490 H | 120 J H | 110 U H | 2.5 J H B | 95 U H | 97 U H | 100 U H | 95 U H | 400 H | 200 H | 8.4 J H B | 280 H | 240 H |
| n-Butylbenzene | 104-51-8 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.16 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 1.6 J H B | 130 U H | 110 U H |
| n-Propylbenzene | 103-65-1 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.22 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.21 U H | 130 U H | 110 U H |
| o-Xylene | 95-47-6 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.16 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.14 U H | 130 U H | 110 U H |
| sec-Butylbenzene | 135-98-8 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.24 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.99 J H B | 130 U H | 110 U H |
| Styrene | 100-42-5 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.37 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.35 U H | 130 U H | 110 U H |
| tert-Butylbenzene | 98-06-6 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.26 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.24 U H | 130 U H | 110 U H |
| Tetrachloroethene | 127-18-4 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.61 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.57 U H | 130 U H | 110 U H |
| Tetrahydrofuran | 109-99-9 | ug/Kg | 1100 U H | 1100 U H | 1100 U H | 1.9 U H | 950 U H | 970 U H | 1000 U H | 950 U H | 920 U H | 860 U H | 1.7 U H | 1300 U H | 1100 U H |
| Toluene | 108-88-3 | ug/Kg | 4300 H | 3900 H | 11000 H | 1.7 J H | 920 H | 9000 H | 5000 H | 1300 H | 1200 H | 5000 H | 150 H | 9600 H | 4300 H |
| trans-1,2-Dichloroethene | 156-60-5 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.15 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.14 U H | 130 U H | 110 U H |
| trans-1,3-Dichloropropene | 10061-02-6 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.93 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.86 U H | 130 U H | 110 U H |
| Trichloroethene | 79-01-6 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.12 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.11 U H | 130 U H | 110 U H |
| Trichlorofluoromethane | 75-69-4 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.13 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.12 U H | 130 U H | 110 U H |
| Vinyl acetate | 108-05-4 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.71 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.66 U H | 130 U H | 110 U H |
| Vinyl chloride | 75-01-4 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.93 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.86 U H | 130 U H | 110 U H |
| Xylenes, Total | 1330-20-7 | ug/Kg | 110 U H | 110 U H | 110 U H | 0.28 U H | 95 U H | 97 U H | 100 U H | 95 U H | 92 U H | 86 U H | 0.71 J H | 130 U H | 110 U H |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Sediment Data

| ANALYTE | CARSN | UNIT | DMMU-2 | PB COMPOSITE | PB-1 | PB-2 | PB-3 | PB-4 | BS COMPOSITE | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 630-20-6 | ug/Kg | 65 U H | 0.58 U H | 0.58 U H | 0.59 U H | 0.58 U H | 0.6 U H | 0.67 U H | 0.64 U H | 0.6 U H | 0.65 U H | 0.66 U H |
| 1,1,1-Trichloroethane | 71-55-6 | ug/Kg | 65 U H | 0.58 U H | 0.58 U H | 0.59 U H | 0.58 U H | 0.6 U H | 0.67 U H | 0.64 U H | 0.6 U H | 0.65 U H | 0.66 U H |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | ug/Kg | 66 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.3 U H | 1.3 U H | 1.2 U H | 1.3 U H | 1.3 U H |
| 1,1,2-Trichloroethane | 79-00-5 | ug/Kg | 75 U H | 0.092 U H | 0.093 U H | 0.095 U H | 0.093 U H | 0.096 U H | 0.11 U H | 0.1 U H | 0.096 U H | 0.1 U H | 0.11 U H |
| 1,1-Dichloroethane | 75-34-3 | ug/Kg | 65 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.3 U H | 1.3 U H | 1.2 U H | 1.3 U H | 1.3 U H |
| 1,1-Dichloroethene | 75-35-4 | ug/Kg | 38 U H | 0.074 U H | 0.075 U H | 0.076 U H | 0.074 U H | 0.076 U H | 0.086 U H | 0.082 U H | 0.077 U H | 0.083 U H | 0.084 U H |
| 1,1-Dichloropropene | 563-58-6 | ug/Kg | 39 U H | 0.58 U H | 0.58 U H | 0.59 U H | 0.58 U H | 0.6 U H | 0.67 U H | 0.64 U H | 0.6 U H | 0.65 U H | 0.66 U H |
| 1,2,3-Trichlorobenzene | 87-61-6 | ug/Kg | 45 U H | 0.24 J H B | 0.25 J H B | 0.25 J H B | 0.22 J H B | 0.26 J H B | 0.41 J H B | 0.49 J H B | 0.4 J H B | 0.51 J H B | 0.53 J H B |
| 1,2,3-Trichloropropane | 96-18-4 | ug/Kg | 97 U H | 0.24 U H | 0.25 U H | 0.25 U H | 0.24 U H | 0.25 U H | 0.28 U H | 0.27 U H | 0.25 U H | 0.27 U H | 0.28 U H |
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/Kg | 29 U H | 0.18 J H B | 0.19 J H B | 0.22 J H B | 0.18 J H B | 0.21 J H B | 0.29 J H B | 0.44 J H B | 0.35 J H B | 0.35 J H B | 0.49 J H B |
| 1,2,4-Trimethylbenzene | 95-63-6 | ug/Kg | 61 U H | 0.099 U H | 0.1 U H | 0.1 U H | 0.1 U H | 0.1 U H | 0.11 U H | 0.11 U H | 0.1 U H | 0.11 U H | 0.11 U H |
| 1,2-Dibromo-3-Chloropropane | 96-12-8 | ug/Kg | 82 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.3 U H | 1.3 U H | 1.2 U H | 1.3 U H | 1.3 U H |
| 1,2-Dibromoethane | 106-93-4 | ug/Kg | 90 U H | 2.3 U H | 2.3 U H | 2.4 U H | 2.3 U H | 2.4 U H | 2.7 U H | 2.6 U H | 2.4 U H | 2.6 U H | 2.6 U H |
| 1,2-Dichlorobenzene | 95-50-1 | ug/Kg | 50 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.61 J H B | 0.18 J H B | 0.14 U H | 0.16 U H | 0.19 J H B |
| 1,2-Dichloroethane | 107-06-2 | ug/Kg | 59 U H | 2.3 U H | 2.3 U H | 2.4 U H | 2.3 U H | 2.4 U H | 2.7 U H | 2.6 U H | 2.4 U H | 2.6 U H | 2.6 U H |
| 1,2-Dichloroethene, Total | 540-59-0 | ug/Kg | 61 U H | 0.46 U H | 0.47 U H | 0.48 U H | 0.47 U H | 0.48 U H | 0.53 U H | 0.51 U H | 0.48 U H | 0.52 U H | 0.53 U H |
| 1,2-Dichloropropane | 78-87-5 | ug/Kg | 68 U H | 2.3 U H | 2.3 U H | 2.4 U H | 2.3 U H | 2.4 U H | 2.7 U H | 2.6 U H | 2.4 U H | 2.6 U H | 2.6 U H |
| 1,3,5-Trimethylbenzene | 108-67-8 | ug/Kg | 57 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.15 U H | 0.14 U H | 0.13 U H | 0.14 U H | 0.14 U H |
| 1,3-Dichlorobenzene | 541-73-1 | ug/Kg | 45 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.15 U H | 0.14 U H | 0.13 U H | 0.14 U H | 0.14 U H |
| 1,3-Dichloropropane | 142-28-9 | ug/Kg | 59 U H | 0.074 U H | 0.075 U H | 0.076 U H | 0.074 U H | 0.076 U H | 0.086 U H | 0.082 U H | 0.077 U H | 0.083 U H | 0.084 U H |
| 1,4-Dichlorobenzene | 106-46-7 | ug/Kg | 41 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.16 U H | 0.33 J H B | 0.24 J H B | 0.22 J H B | 0.25 J H B | 0.23 J H B |
| 1,4-Dioxane | 123-91-1 | ug/Kg | 4800 U H | 12 U H | 12 U H | 12 U H | 12 U H | 12 U H | 13 U H | 13 U H | 12 U H | 13 U H | 13 U H |
| 2,2-Dichloropropane | 594-20-7 | ug/Kg | 82 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.3 U H | 1.3 U H | 1.2 U H | 1.3 U H | 1.3 U H |
| 2-Butanone | 78-93-3 | ug/Kg | 200 U H | 0.9 U H | 0.91 U H | 0.93 U H | 0.91 U H | 0.93 U H | 2.5 J H | 1 U H | 2.5 J H | 4 J H | 1 U H |
| 2-Chloroethyl vinyl ether | 110-75-8 | ug/Kg | 23 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.16 U H | 0.15 U H | 0.14 U H | 0.16 U H | 0.16 U H |
| 2-Chlorotoluene | 95-49-8 | ug/Kg | 59 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.16 U H | 0.17 U H | 0.17 U H | 0.16 U H | 0.17 U H | 0.17 U H |
| 2-Hexanone | 591-78-6 | ug/Kg | 180 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.3 U H | 1.3 U H | 1.2 U H | 1.3 U H | 1.3 U H |
| 4-Chlorotoluene | 106-43-4 | ug/Kg | 61 U H | 0.18 U H | 0.19 U H | 0.19 U H | 0.19 U H | 0.19 U H | 0.21 U H | 0.2 U H | 0.19 U H | 0.21 U H | 0.21 U H |
| 4-Isopropyltoluene | 99-87-6 | ug/Kg | 32 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.52 J H B | 0.14 U H | 0.13 U H | 0.32 J H B | 0.14 U H |
| 4-Methyl-2-pentanone | 108-10-1 | ug/Kg | 38 U H | 0.055 U H | 0.056 U H | 0.057 U H | 0.056 U H | 0.057 U H | 0.064 U H | 0.061 U H | 0.058 U H | 0.062 U H | 0.063 U H |
| Acetone | 67-64-1 | ug/Kg | 180 U H | 2.3 U H | 2.3 U H | 2.4 U H | 2.3 U H | 2.4 U H | 76 H | 11 H | 86 H | 160 H | 2.6 U H |
| Benzene | 71-43-2 | ug/Kg | 56 U H | 0.23 U H | 0.23 U H | 0.24 U H | 0.23 U H | 0.24 U H | 0.27 U H | 0.26 U H | 0.24 U H | 0.26 U H | 0.26 U H |
| Bromobenzene | 108-86-1 | ug/Kg | 66 U H | 0.093 U H | 0.095 U H | 0.096 U H | 0.094 U H | 0.097 U H | 0.11 U H | 0.1 U H | 0.097 U H | 0.1 U H | 0.11 U H |
| Bromochloromethane | 74-97-5 | ug/Kg | 95 U H | 0.52 U H | 0.53 U H | 0.54 U H | 0.52 U H | 0.54 U H | 0.6 U H | 0.58 U H | 0.54 U H | 0.58 U H | 0.59 U H |
| Bromodichloromethane | 75-27-4 | ug/Kg | 66 U H | 2.3 U H | 2.3 U H | 2.4 U H | 2.3 U H | 2.4 U H | 2.7 U H | 2.6 U H | 2.4 U H | 2.6 U H | 2.6 U H |
| Bromoform | 75-25-2 | ug/Kg | 70 U H | 2.3 U H | 2.3 U H | 2.4 U H | 2.3 U H | 2.4 U H | 2.7 U H | 2.6 U H | 2.4 U H | 2.6 U H | 2.6 U H |
| Bromomethane | 74-83-9 | ug/Kg | 63 U H | 0.2 U H | 0.2 U H | 0.2 U H | 0.2 U H | 0.2 U H | 0.23 U H | 0.22 U H | 0.2 U H | 0.22 U H | 0.22 U H |
| Carbon disulfide | 75-15-0 | ug/Kg | 34 U H | 0.18 J H B | 0.097 J H B | 0.12 J H B | 0.091 J H B | 0.19 J H B | 0.11 J H B | 0.13 J H B | 0.11 J H B | 0.091 J H B | 0.78 J H B |
| Carbon tetrachloride | 56-23-5 | ug/Kg | 57 U H | 0.08 U H | 0.081 U H | 0.082 U H | 0.08 U H | 0.082 U H | 0.092 U H | 0.088 U H | 0.083 U H | 0.089 U H | 0.091 U H |
| Chlorobenzene | 108-90-7 | ug/Kg | 41 U H | 0.058 U H | 0.058 U H | 0.059 U H | 0.058 U H | 0.06 U H | 0.22 J H | 0.064 U H | 0.06 U H | 0.065 U H | 0.066 U H |
| Chloroethane | 75-00-3 | ug/Kg | 110 U H | 0.33 U H | 0.34 U H | 0.34 U H | 0.34 U H | 0.35 U H | 0.39 U H | 0.37 U H | 0.35 U H | 0.38 U H | 0.38 U H |
| Chloroform | 67-66-3 | ug/Kg | 59 U H | 0.076 U H | 0.077 U H | 0.079 U H | 0.077 U H | 0.079 U H | 0.088 U H | 0.084 U H | 0.29 J H | 0.085 U H | 0.087 U H |

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Sediment Data

| ANALYTE | CARSN | UNIT | DMMU-2 | PB COMPOSITE | PB-1 | PB-2 | PB-3 | PB-4 | BS COMPOSITE | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloromethane | 74-87-3 | ug/Kg | 66 U H | 0.58 U H | 0.58 U H | 0.59 U H | 0.58 U H | 0.6 U H | 0.67 U H | 0.64 U H | 0.6 U H | 0.65 U H | 0.66 U H |
| cis-1,2-Dichloroethene | 156-59-2 | ug/Kg | 38 U H | 0.58 U H | 0.58 U H | 0.59 U H | 0.58 U H | 0.6 U H | 0.67 U H | 0.64 U H | 0.6 U H | 0.65 U H | 0.66 U H |
| cis-1,3-Dichloropropene | 10061-01-5 | ug/Kg | 57 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.16 U H | 0.17 U H | 0.17 U H | 0.16 U H | 0.17 U H | 0.17 U H |
| Cyclohexane | 110-82-7 | ug/Kg | 63 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.3 U H | 1.3 U H | 1.2 U H | 1.3 U H | 1.3 U H |
| Dibromochloromethane | 124-48-1 | ug/Kg | 66 U H | 0.45 U H | 0.46 U H | 0.46 U H | 0.45 U H | 0.47 U H | 0.52 U H | 0.5 U H | 0.47 U H | 0.5 U H | 0.51 U H |
| Dibromomethane | 74-95-3 | ug/Kg | 45 U H | 0.16 U H | 0.16 U H | 0.17 U H | 0.16 U H | 0.17 U H | 0.19 U H | 0.18 U H | 0.17 U H | 0.18 U H | 0.18 U H |
| Dichlorodifluoromethane | 75-71-8 | ug/Kg | 90 U H | 0.086 U H | 0.088 U H | 0.089 U H | 0.087 U H | 0.09 U H | 0.1 U H | 0.096 U H | 0.09 U H | 0.097 U H | 0.099 U H |
| Ethylbenzene | 100-41-4 | ug/Kg | 90 U H | 0.063 U H | 0.064 U H | 0.065 U H | 0.064 U H | 0.066 U H | 0.074 U H | 0.07 U H | 0.066 U H | 0.071 U H | 0.072 U H |
| Freon TF | 76-13-1 | ug/Kg | 50 U H | 0.083 U H | 0.084 U H | 0.086 U H | 0.084 U H | 0.086 U H | 0.096 U H | 0.092 U H | 0.086 U H | 0.093 U H | 0.095 U H |
| Hexachlorobutadiene | 87-68-3 | ug/Kg | 90 U H | 0.23 U H | 0.23 U H | 0.24 U H | 0.23 U H | 0.24 U H | 0.27 U H | 0.26 U H | 0.24 U H | 0.26 U H | 0.26 U H |
| Isobutyl alcohol | 78-83-1 | ug/Kg | 4500 U H | 7.6 U H | 7.7 U H | 7.9 U H | 7.7 U H | 7.9 U H | 8.8 U H | 8.4 U H | 7.9 U H | 8.5 U H | 8.7 U H |
| Isopropylbenzene | 98-82-8 | ug/Kg | 90 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.13 U H | 0.15 U H | 0.14 U H | 0.13 U H | 0.14 U H | 0.14 U H |
| m&p-Xylene | 179601-23-1 | ug/Kg | 90 U H | 0.46 U H | 0.47 U H | 0.48 U H | 0.47 U H | 0.48 U H | 0.53 U H | 0.51 U H | 0.48 U H | 0.52 U H | 0.53 U H |
| Methyl acetate | 79-20-9 | ug/Kg | 480 H | 0.36 U H | 0.36 U H | 0.37 U H | 0.36 U H | 0.37 U H | 8.5 H | 2.8 J H | 4.6 J H | 6.1 J H | 2.2 J H |
| Methyl iodide | 74-88-4 | ug/Kg | 90 U H * | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.2 U H | 1.3 U H | 1.3 U H | 1.2 U H | 1.3 U H | 1.3 U H |
| Methyl t-butyl ether | 1634-04-4 | ug/Kg | 90 U H | 0.088 U H | 0.089 U H | 0.09 U H | 0.088 U H | 0.091 U H | 0.1 U H | 0.097 U H | 0.091 U H | 0.098 U H | 0.1 U H |
| Methylcyclohexane | 108-87-2 | ug/Kg | 90 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.16 U H | 0.15 U H | 0.14 U H | 0.16 U H | 0.16 U H |
| Methylene Chloride | 75-09-2 | ug/Kg | 90 U H | 0.76 J H B | 0.2 J H B | 0.36 J H B | 0.31 J H B | 0.99 J H B | 0.19 U H | 0.18 U H | 0.17 U H | 0.18 U H | 0.22 J H B |
| Naphthalene | 91-20-3 | ug/Kg | 120 J H | 0.37 J H B | 0.42 J H B | 0.43 J H B | 0.34 J H B | 0.48 J H B | 0.77 J H B | 0.93 J H B | 0.68 J H B | 0.74 J H B | 0.99 J H B |
| n-Butylbenzene | 104-51-8 | ug/Kg | 90 U H | 0.1 U H | 0.1 U H | 0.1 U H | 0.1 U H | 0.11 U H | 0.12 U H | 0.11 U H | 0.11 U H | 0.11 U H | 0.12 U H |
| n-Propylbenzene | 103-65-1 | ug/Kg | 90 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.14 U H | 0.16 U H | 0.15 U H | 0.14 U H | 0.16 U H | 0.16 U H |
| o-Xylene | 95-47-6 | ug/Kg | 90 U H | 0.097 U H | 0.098 U H | 0.1 U H | 0.098 U H | 0.1 U H | 0.11 U H | 0.11 U H | 0.1 U H | 0.11 U H | 0.11 U H |
| sec-Butylbenzene | 135-98-8 | ug/Kg | 90 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.15 U H | 0.16 U H | 0.17 U H | 0.17 U H | 0.16 U H | 0.17 U H | 0.17 U H |
| Styrene | 100-42-5 | ug/Kg | 90 U H | 0.23 U H | 0.23 U H | 0.24 U H | 0.23 U H | 0.24 U H | 0.27 U H | 0.26 U H | 0.24 U H | 0.26 U H | 0.26 U H |
| tert-Butylbenzene | 98-06-6 | ug/Kg | 90 U H | 0.16 U H | 0.16 U H | 0.17 U H | 0.16 U H | 0.17 U H | 0.19 U H | 0.18 U H | 0.17 U H | 0.18 U H | 0.18 U H |
| Tetrachloroethene | 127-18-4 | ug/Kg | 90 U H | 0.38 U H | 0.39 U H | 0.39 U H | 0.38 U H | 0.39 U H | 0.44 U H | 0.42 U H | 0.4 U H | 0.43 U H | 0.43 U H |
| Tetrahydrofuran | 109-99-9 | ug/Kg | 900 U H | 4.3 J H B | 2.3 J H B | 1.7 J H B | 2 J H B | 2.5 J H B | 2.3 J H B | 2.4 J H B | 3.5 J H B | 1.3 U H | 3.5 J H B |
| Toluene | 108-88-3 | ug/Kg | 4400 H | 0.092 U H | 0.093 U H | 0.095 U H | 0.093 U H | 0.096 U H | 0.11 U H | 0.1 U H | 0.096 U H | 0.1 U H | 0.11 U H |
| trans-1,2-Dichloroethene | 156-60-5 | ug/Kg | 90 U H | 0.095 U H | 0.096 U H | 0.098 U H | 0.095 U H | 0.098 U H | 0.11 U H | 0.1 U H | 0.098 U H | 0.11 U H | 0.11 U H |
| trans-1,3-Dichloropropene | 10061-02-6 | ug/Kg | 90 U H | 0.58 U H | 0.58 U H | 0.59 U H | 0.58 U H | 0.6 U H | 0.67 U H | 0.64 U H | 0.6 U H | 0.65 U H | 0.66 U H |
| Trichloroethene | 79-01-6 | ug/Kg | 90 U H | 0.074 U H | 0.075 U H | 0.076 U H | 0.074 U H | 0.076 U H | 0.086 U H | 0.082 U H | 0.077 U H | 0.083 U H | 0.084 U H |
| Trichlorofluoromethane | 75-69-4 | ug/Kg | 90 U H | 0.08 U H | 0.081 U H | 0.082 U H | 0.08 U H | 0.082 U H | 0.092 U H | 0.088 U H | 0.083 U H | 0.089 U H | 0.091 U H |
| Vinyl acetate | 108-05-4 | ug/Kg | 90 U H | 0.44 U H | 0.44 U H | 0.45 U H | 0.44 U H | 0.45 U H | 0.51 U H | 0.49 U H | 0.46 U H | 0.49 U H | 0.5 U H |
| Vinyl chloride | 75-01-4 | ug/Kg | 90 U H | 0.58 U H | 0.58 U H | 0.59 U H | 0.58 U H | 0.6 U H | 0.67 U H | 0.64 U H | 0.6 U H | 0.65 U H | 0.66 U H |
| Xylenes, Total | 1330-20-7 | ug/Kg | 90 U H | 0.17 U H | 0.18 U H | 0.18 U H | 0.17 U H | 0.18 U H | 0.2 U H | 0.19 U H | 0.18 U H | 0.19 U H | 0.2 U H |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 General Chemistry Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6A | CH-6B | CH-7A | CH-7B | CH-8 | DMMU-1 | DMMU-1S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 18496-25-8 | mg/Kg | 56 H | 55.4 H | 70.6 H | 61.7 H | 60.8 H | 62 H | 58.9 H | 58.3 H | 47.1 H | 50.7 H | 47.3 H | 80.4 H | 66.9 H |
| Ammonia | 7664-41-7 | mg/Kg | 12.3 H B | 3.9 H B | 6.5 H B | 3.8 H B | 6.5 H B | 5.9 H B | 8.2 H B | 7.1 H B | 4.9 H B | 4.1 H B | 3.4 H B | 6.1 H B | 6.8 H |
| Cyanide, Total | 57-12-5 | mg/Kg | 0.46 J H | 0.63 J H | 0.47 J H | 0.26 J H | 0.37 J H | 0.44 J H | 0.56 J H | 0.42 J H | 0.39 J H | 0.38 J H | 0.45 J H | 0.54 J H | 0.4 J H |
| Nitrogen, Kjeldahl | Nitrogen, Kjeldahl | mg/Kg | 2350 H | 2110 H | 2530 H | 1790 H | 2080 H | 1070 H | 2310 H | 1130 H | 1840 H | 1610 H | 1450 H | 2790 H | 395 H |
| Total Organic Carbon | 7440-44-0 | mg/Kg | 37400 H | 37200 H | 35200 H | 26500 H | 27200 H | 30300 H | 33200 H | 28100 H | 27100 H | 24000 H | 29000 H | 39000 H | 39700 H |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 General Chemistry Sediment Data

| ANALYTE | CARSN | UNIT | DMMU-2 | PB COMPOSITE | PB-1 | PB-2 | PB-3 | PB-4 | BS COMPOSITE | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 18496-25-8 | mg/Kg | 58 H | 31.6 H | 37 H | 35.7 H | 36.9 H | 28.2 H | 36.2 H | 41.6 H | 36.6 H | 35 H | 38.4 H |
| Ammonia | 7664-41-7 | mg/Kg | 5.2 H B | 0.098 J H | 0.084 J H | 0.095 J H | 0.072 J H | 0.11 J H | 3.9 H | 2 H | 2.2 H | 4.3 H | 4.2 H |
| Cyanide, Total | 57-12-5 | mg/Kg | 0.42 J H | 0.61 U H | 0.22 J H | 0.61 U H | 0.079 J H | 0.6 U H | 0.15 J H | 0.081 J H | 0.61 U H | 0.21 J H | 0.19 J H |
| Nitrogen, Kjeldahl | Nitrogen, Kjeldahl | mg/Kg | 1200 H | 72 H | 94.1 H | 107 H | 93.1 H | 102 H | 1130 H | 1550 H | 1070 H | 2640 H | 1810 H |
| Total Organic Carbon | 7440-44-0 | mg/Kg | 25900 H | 5430 H | 9710 H | 6780 H | 7340 H | 9500 H | 65800 H | 33200 H | 18200 H | 96200 H | 103000 H |

**CH- Cleveland Harbor river samples**
**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**
**PB- Lake Reference samples**
**BS- Soil Reference samples**

## Cleveland Harbor 2010 Geotech Sediment Data

| ANALYTE | CARSN | UNIT | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 | CH-5 DUP | CH-6A | CH-6B | CH-7A | CH-7B | CH-8 | DMMU-1 | DMMU-1S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ash Content | Ash Content | % | | | | | | | | | | | | 91.4 | |
| Hydrometer Reading 1 - Percent Finer | Hydrometer Reading 1 - Percent Finer | % Passing | 48.4 | 59.8 | 56.7 | 74.2 | 76.4 | 76 | 78.5 | 73.9 | 70 | 70.9 | 70 | 59.2 | 57.8 |
| Hydrometer Reading 2 - Percent Finer | Hydrometer Reading 2 - Percent Finer | % Passing | 41.4 | 49 | 45.7 | 61.3 | 63 | 62.1 | 64.4 | 61.5 | 57.8 | 59 | 57.2 | 46.6 | 44.5 |
| Hydrometer Reading 3 - Percent Finer | Hydrometer Reading 3 - Percent Finer | % Passing | 29.1 | 38.3 | 32.5 | 43.4 | 43 | 41.3 | 44.2 | 43 | 42.5 | 41.2 | 38 | 32.2 | 28.5 |
| Hydrometer Reading 4 - Percent Finer | Hydrometer Reading 4 - Percent Finer | % Passing | 22.2 | 25.4 | 23.8 | 35.3 | 33 | 30.9 | 33.9 | 30.5 | 31.7 | 32.3 | 28.5 | 25 | 21.8 |
| Hydrometer Reading 5 - Percent Finer | Hydrometer Reading 5 - Percent Finer | % Passing | 16.9 | 19 | 21.6 | 28.9 | 26.4 | 25.7 | 25.8 | 24.5 | 24 | 22 | 22 | 21.2 | 17.6 |
| Hydrometer Reading 6 - Percent Finer | Hydrometer Reading 6 - Percent Finer | % Passing | 9.7 | 12.2 | 12.4 | 18.9 | 16.1 | 16.8 | 17.4 | 16.3 | 16.2 | 15.8 | 15.4 | 15.5 | 12.2 |
| Hydrometer Reading 7 - Percent Finer | Hydrometer Reading 7 - Percent Finer | % Passing | 6.2 | 7.7 | 7.9 | 12.3 | 11.1 | 11.6 | 11.3 | 11.7 | 10.1 | 9.8 | 8.9 | 8.3 | 9.3 |
| Liquid Limit | Liquid Limit | NONE | | | | | | | | | | | | 75 | |
| Moisture Content | Moisture Content | % | | | | | | | | | | | | 136.5 H | |
| Percent Moisture | Percent Moisture | % | 54.5 H | 54.4 H | 54.9 H | 49.4 H | 50.5 H | 49.4 H | 52.3 H | 47.6 H | 45.1 H | 41.6 H | 44.5 H | 60.7 H | 54.2 H |
| Percent Solids | Percent Solids | % | 45.5 H | 45.6 H | 45.1 H | 50.6 H | 49.5 H | 50.6 H | 47.7 H | 52.4 H | 54.9 H | 58.4 H | 55.5 H | 39.3 H | 45.8 H |
| Plastic Limit | Plastic Limit | NONE | | | | | | | | | | | | 40 | |
| Plasticity Index | Plasticity Index | NONE | | | | | | | | | | | | 35 | |
| Sieve Size #10 - Percent Finer | Sieve Size #10 - Percent Finer | % Passing | 95.8 | 96 | 97.1 | 99.9 | 99.7 | 100 | 99.7 | 100 | 99 | 99.9 | 99.3 | 98.4 | 100 |
| Sieve Size #100 - Percent Finer | Sieve Size #100 - Percent Finer | % Passing | 87.8 | 91.6 | 90.7 | 97.9 | 98.1 | 98.2 | 98.3 | 98.3 | 95.1 | 98.9 | 97.8 | 92.2 | 92.7 |
| Sieve Size #20 - Percent Finer | Sieve Size #20 - Percent Finer | % Passing | 95.3 | 95.4 | 96.6 | 99.7 | 99.7 | 99.9 | 99.6 | 99.9 | 98.6 | 99.8 | 99.1 | 97.9 | 99.6 |
| Sieve Size #200 - Percent Finer | Sieve Size #200 - Percent Finer | % Passing | 77.7 | 82.5 | 81.8 | 93.1 | 94.1 | 94.2 | 94.8 | 91.5 | 88.8 | 92.2 | 88.9 | 82.3 | 82.2 |
| Sieve Size #4 - Percent Finer | Sieve Size #4 - Percent Finer | % Passing | 96.8 | 97.7 | 98 | 100 | 99.8 | 100 | 99.9 | 100 | 99.3 | 100 | 99.6 | 99.8 | 100 |
| Sieve Size #40 - Percent Finer | Sieve Size #40 - Percent Finer | % Passing | 94.5 | 94.8 | 95.9 | 99.5 | 99.6 | 99.7 | 99.4 | 99.8 | 97.9 | 99.8 | 98.9 | 97.2 | 98.8 |
| Sieve Size #60 - Percent Finer | Sieve Size #60 - Percent Finer | % Passing | 92.5 | 93.9 | 94.4 | 99.1 | 99.1 | 99.2 | 99 | 99.6 | 96.8 | 99.6 | 98.6 | 95.8 | 97 |
| Sieve Size #80 - Percent Finer | Sieve Size #80 - Percent Finer | % Passing | 89.3 | 92.5 | 92.1 | 98.4 | 98.5 | 98.5 | 98.5 | 98.9 | 95.8 | 99.3 | 98.2 | 93.5 | 94.2 |
| Sieve Size 0.375 inch - Percent Finer | Sieve Size 0.375 inch - Percent Finer | % Passing | 97.3 | 98.9 | 98.6 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 0.75 inch - Percent Finer | Sieve Size 0.75 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 1 inch - Percent Finer | Sieve Size 1 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 1.5 inch - Percent Finer | Sieve Size 1.5 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 2 inch - Percent Finer | Sieve Size 2 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 3 inch - Percent Finer | Sieve Size 3 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Total Organic Matter | Total Organic Matter | % | | | | | | | | | | | | 8.6 | |

**CH- Cleveland Harbor river samples**

**DMMU-1- Composite of CH1 - CH3**

**DMMU-1S- Course Material from composite of CH1 - CH3**

**DMMU-2- Composite of CH4- CH8**

**PB- Lake Reference samples**

**BS- Soil Reference samples**

## Cleveland Harbor 2010 Geotech Sediment Data

| ANALYTE | CARSN | UNIT | DMMU-2 | PB COMPOSITE | PB-1 | PB-2 | PB-3 | PB-4 | BS COMPOSITE | BS-1 | BS-2 | BS-3 | BS-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ash Content | Ash Content | % | 94.6 | | | | | | | | | | |
| Hydrometer Reading 1 - Percent Finer | Hydrometer Reading 1 - Percent Finer | % Passing | 78.5 | 1.2 | 1.3 | 1.3 | 1.2 | 3.1 | 52.4 | 72.5 | 66.2 | 42.7 | 36.2 |
| Hydrometer Reading 2 - Percent Finer | Hydrometer Reading 2 - Percent Finer | % Passing | 64.9 | 1.2 | 1.3 | 1.3 | 1.2 | 3.1 | 47.2 | 66.1 | 60.3 | 40.1 | 34.2 |
| Hydrometer Reading 3 - Percent Finer | Hydrometer Reading 3 - Percent Finer | % Passing | 46.3 | 1.2 | 1.3 | 1.3 | 1.2 | 2.1 | 40.3 | 53.3 | 51.6 | 34.9 | 30 |
| Hydrometer Reading 4 - Percent Finer | Hydrometer Reading 4 - Percent Finer | % Passing | 39.5 | 1.2 | 1.3 | 1.3 | 1.2 | 1.2 | 33.4 | 46.9 | 44.3 | 27 | 25.8 |
| Hydrometer Reading 5 - Percent Finer | Hydrometer Reading 5 - Percent Finer | % Passing | 32.8 | 1.1 | 1.1 | 1.2 | 1 | 1.1 | 28.2 | 38.7 | 37 | 21.8 | 23.7 |
| Hydrometer Reading 6 - Percent Finer | Hydrometer Reading 6 - Percent Finer | % Passing | 22.3 | 0.9 | 1.1 | 1 | 1 | 0.9 | 19 | 27.5 | 28 | 13.5 | 17.1 |
| Hydrometer Reading 7 - Percent Finer | Hydrometer Reading 7 - Percent Finer | % Passing | 16.9 | 0.9 | 1.1 | 1 | 1 | 0.9 | 12.1 | 17.9 | 19 | 10.5 | 10.5 |
| Liquid Limit | Liquid Limit | NONE | 60 | | | | | | | | | | |
| Moisture Content | Moisture Content | % | 83.1 H | | | | | | | | | | |
| Percent Moisture | Percent Moisture | % | 46.3 H | 19.2 H | 16.8 H | 19.6 H | 19.1 H | 18.5 H | 25.9 H | 24.3 H | 19.5 H | 25 H | 29.2 H |
| Percent Solids | Percent Solids | % | 53.7 H | 80.8 H | 83.2 H | 80.4 H | 80.9 H | 81.5 H | 74.1 H | 75.7 H | 80.5 H | 75 H | 70.8 H |
| Plastic Limit | Plastic Limit | NONE | 33 | | | | | | | | | | |
| Plasticity Index | Plasticity Index | NONE | 27 | | | | | | | | | | |
| Sieve Size #10 - Percent Finer | Sieve Size #10 - Percent Finer | % Passing | 99.9 | 96.9 | 94.9 | 98.4 | 96.3 | 99.6 | 91.9 | 99.7 | 100 | 98.3 | 72.5 |
| Sieve Size #100 - Percent Finer | Sieve Size #100 - Percent Finer | % Passing | 98 | 38.3 | 14.5 | 21.2 | 29.5 | 57.6 | 75.2 | 91.1 | 89.3 | 75.5 | 53.7 |
| Sieve Size #20 - Percent Finer | Sieve Size #20 - Percent Finer | % Passing | 99.6 | 93.1 | 88.6 | 95.4 | 91.7 | 99 | 88 | 97.2 | 97.4 | 94.1 | 64.3 |
| Sieve Size #200 - Percent Finer | Sieve Size #200 - Percent Finer | % Passing | 92.5 | 1.4 | 2.3 | 1.6 | 2.4 | 5.3 | 70.7 | 87.2 | 83.6 | 69.2 | 48.9 |
| Sieve Size #4 - Percent Finer | Sieve Size #4 - Percent Finer | % Passing | 100 | 99.7 | 99.7 | 99.4 | 99.1 | 100 | 94.2 | 100 | 100 | 99 | 89.2 |
| Sieve Size #40 - Percent Finer | Sieve Size #40 - Percent Finer | % Passing | 99.4 | 86.2 | 73.4 | 86.5 | 83.4 | 97.5 | 81.5 | 94.8 | 94 | 86.3 | 60 |
| Sieve Size #60 - Percent Finer | Sieve Size #60 - Percent Finer | % Passing | 99 | 70.5 | 44.5 | 62 | 64.4 | 90.6 | 78.1 | 93.4 | 91.9 | 80.3 | 56.8 |
| Sieve Size #80 - Percent Finer | Sieve Size #80 - Percent Finer | % Passing | 98.4 | 50 | 22.2 | 32.7 | 41.1 | 72.4 | 76.1 | 92 | 90.2 | 76.8 | 54.6 |
| Sieve Size 0.375 inch - Percent Finer | Sieve Size 0.375 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 94.8 | 100 | 100 | 100 | 100 |
| Sieve Size 0.75 inch - Percent Finer | Sieve Size 0.75 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 1 inch - Percent Finer | Sieve Size 1 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 1.5 inch - Percent Finer | Sieve Size 1.5 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 2 inch - Percent Finer | Sieve Size 2 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve Size 3 inch - Percent Finer | Sieve Size 3 inch - Percent Finer | % Passing | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Total Organic Matter | Total Organic Matter | % | 5.4 | | | | | | | | | | |

**CH- Cleveland Harbor river samples**

**DMMU-1- Composite of CH1 - CH3**

**DMMU-1S- Course Material from composite of CH1 - CH3**

**DMMU-2- Composite of CH4- CH8**

**PB- Lake Reference samples**

**BS- Soil Reference samples**

**Cleveland Harbor 2010 Dissolved Polycyclic Aromatic Hydroacrbons (PAHs) in Sediment Porewater (ASTM D7363)**

| ANALYTE | CH-1 Replicate 1 | CH-1 Replicate 2 | CH-2 Replicate 1 | CH-2 Replicate 2 | CH-3 Replicate 1 | CH-3 Replicate 2 | CH-4 Replicate 1 | CH-4 Replicate 2 | CH-5 DUP Replicate 1 | CH-5 DUP Replicate 2 | CH-5 Replicate 1 | CH-5 Replicate 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-methylnaphthalene | 0.241 J | 0.234 J | 0.049 J | 0.049 J | 0.042 J | 0.041 J | 0.035 J | 0.032 J | 0.033 J | 0.032 J | 0.023 J | 0.028 J |
| 2-methylnaphthalene | 0.163 J | 0.165 J | 0.044 J | 0.041 J | 0.044 J | 0.040 J | 0.030 J | 0.026 J | 0.034 J | 0.033 J | 0.024 J | 0.026 J |
| acenaphthene | 0.361 J | 0.369 J | 0.066 J | 0.069 J | 0.055 J | 0.055 J | 0.014 J | 0.017 J | 0.026 J | 0.025 J | 0.015 J | 0.017 J |
| acenaphthylene | 0.051 J | 0.049 J | 0.018 J | 0.017 J | 0.200 U | 0.200 U | 0.017 J | 0.011 J | 0.013 J | 0.013 J | 0.200 U | 0.200 U |
| anthracene | 0.020 J | 0.020 J | 0.010 J | 0.009 J | 0.009 J | 0.010 J | 0.005 J | 0.004 J | 0.006 J | 0.007 J | 0.004 J | 0.005 J |
| benz[a]anthracene | 0.003 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J | 0.002 J |
| benzo[a]pyrene | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U |
| benzo[b+k]fluoranthene | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| benzo[e]pyrene | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| benzo[ghi]perylene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| C1 chrysenes | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| C1 fluoranthenes/pyrenes | 0.020 J | 0.013 J | 0.007 J | 0.007 J | 0.014 J | 0.011 J | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U |
| C1 fluorenes | 0.056 J | 0.037 J | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U |
| C1 phenanthrenes/anthracenes | 0.047 J | 0.040 J | 0.045 J | 0.041 J | 0.035 J | 0.027 J | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U |
| C2 chrysenes | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U |
| C2 fluorenes | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U |
| C2 naphthalenes | 0.312 J | 0.289 J | 0.130 J | 0.134 J | 0.149 J | 0.131 J | 0.090 J | 0.113 J | 0.146 J | 0.113 J | 0.103 J | 0.096 J |
| C2 phenanthrenes/anthracenes | 0.144 J | 0.127 J | 0.050 U | 0.050 U | 0.136 J | 0.150 J | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U |
| C3 chrysenes | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U |
| C3 fluorenes | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U |
| C3 naphthalenes | 0.228 J | 0.217 J | 0.131 J | 0.120 J | 0.116 J | 0.119 J | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U |
| C3 phenanthrenes/anthracenes | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U |
| C4 chrysenes | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U |
| C4 naphthalenes | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U |
| C4 phenanthrenes/anthracenes | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U |
| chrysene | 0.006 J | 0.007 J | 0.005 J | 0.006 J | 0.006 J | 0.007 J | 0.004 J | 0.004 J | 0.005 J | 0.005 J | 0.005 J | 0.006 J |
| dibenz[ah]anthracene | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| fluoranthene | 0.053 J | 0.051 J | 0.038 J | 0.037 J | 0.046 J | 0.048 J | 0.023 J | 0.024 J | 0.036 J | 0.033 J | 0.030 J | 0.030 J |
| fluorene | 0.202 J | 0.208 J | 0.045 J | 0.043 J | 0.040 J | 0.040 J | 0.015 J | 0.015 J | 0.024 J | 0.024 J | 0.016 J | 0.015 J |
| indeno[1,2,3-cd]pyrene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| naphthalene | 2.57 J | 2.51 J | 0.445 J | 0.422 J | 0.393 J | 0.366 J | 0.197 J | 0.156 J | 0.224 J | 0.205 J | 0.117 J | 0.149 J |
| perylene | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U |
| phenanthrene | 0.193 J | 0.191 J | 0.083 J | 0.086 J | 0.091 J | 0.092 J | 0.053 J | 0.052 J | 0.061 J | 0.062 J | 0.044 J | 0.047 J |
| pyrene | 0.043 J | 0.040 J | 0.033 J | 0.033 J | 0.037 J | 0.038 J | 0.022 J | 0.022 J | 0.027 J | 0.028 J | 0.027 J | 0.026 J |

**Cleveland Harbor 2010 Dissolved Polycyclic Aromatic Hydroacrbons (PAHs) in Sediment Porewater (ASTM D7363)**

| ANALYTE | CH-6a Replicate 1 | CH-6a Replicate 2 | CH-6b Replicate 1 | CH-6b Replicate 2 | CH-7a Replicate 1 | CH-7a Replicate 2 | CH-7b Replicate 1 | CH-7b Replicate 2 | CH-8 Replicate 1 | CH-8 Replicate 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1-methylnaphthalene | 0.045 J | 0.037 J | 0.026 J | 0.028 J | 0.162 J | 0.164 J | 0.069 J | 0.063 J | 0.030 J | 0.031 J |
| 2-methylnaphthalene | 0.042 J | 0.037 J | 0.027 J | 0.023 J | 0.197 J | 0.201 J | 0.070 J | 0.063 J | 0.028 J | 0.028 J |
| acenaphthene | 0.032 J | 0.021 J | 0.021 J | 0.020 J | 0.441 J | 0.454 J | 0.065 J | 0.061 J | 0.031 J | 0.028 J |
| acenaphthylene | 0.015 J | 0.012 J | 0.013 J | 0.014 J | 0.039 J | 0.049 J | 0.026 J | 0.025 J | 0.019 J | 0.015 J |
| anthracene | 0.006 J | 0.007 J | 0.005 J | 0.005 J | 0.032 J | 0.033 J | 0.011 J | 0.013 J | 0.007 J | 0.005 J |
| benz[a]anthracene | 0.003 J | 0.003 J | 0.003 J | 0.004 J | 0.002 J | 0.003 J | 0.001 U | 0.001 U | 0.001 J | 0.002 J |
| benzo[a]pyrene | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U | 0.008 U |
| benzo[b+k]fluoranthene | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| benzo[e]pyrene | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| benzo[ghi]perylene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| C1 chrysenes | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| C1 fluoranthenes/pyrenes | 0.006 J | 0.004 J | 0.006 J | 0.006 J | 0.017 J | 0.015 J | 0.024 J | 0.019 J | 0.009 J | 0.009 J |
| C1 fluorenes | 0.020 J | 0.016 J | 0.020 U | 0.020 U | 0.067 J | 0.074 J | 0.043 J | 0.039 J | 0.020 U | 0.020 U |
| C1 phenanthrenes/anthracenes | 0.024 J | 0.032 J | 0.029 J | 0.024 J | 0.089 J | 0.083 J | 0.062 J | 0.048 J | 0.031 J | 0.032 J |
| C2 chrysenes | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U |
| C2 fluorenes | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U |
| C2 naphthalenes | 0.144 J | 0.123 J | 0.108 J | 0.088 J | 0.297 J | 0.306 J | 0.160 J | 0.153 J | 0.113 J | 0.119 J |
| C2 phenanthrenes/anthracenes | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.178 J | 0.159 J | 0.050 U | 0.050 U |
| C3 chrysenes | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U |
| C3 fluorenes | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U |
| C3 naphthalenes | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.248 J | 0.235 J | 0.184 J | 0.151 J | 0.135 J | 0.133 J |
| C3 phenanthrenes/anthracenes | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U |
| C4 chrysenes | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U | 0.010 U |
| C4 naphthalenes | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U | 0.150 U |
| C4 phenanthrenes/anthracenes | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U | 0.020 U |
| chrysene | 0.005 J | 0.004 J | 0.006 J | 0.006 J | 0.006 J | 0.006 J | 0.001 U | 0.001 U | 0.005 J | 0.006 J |
| dibenz[ah]anthracene | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| fluoranthene | 0.034 J | 0.032 J | 0.034 J | 0.033 J | 0.107 J | 0.114 J | 0.075 J | 0.061 J | 0.040 J | 0.045 J |
| fluorene | 0.024 J | 0.020 J | 0.018 J | 0.018 J | 0.229 J | 0.232 J | 0.046 J | 0.044 J | 0.023 J | 0.022 J |
| indeno[1,2,3-cd]pyrene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| naphthalene | 0.273 J | 0.224 J | 0.195 J | 0.202 J | 1.27 J | 1.22 J | 0.497 J | 0.454 J | 0.189 J | 0.173 J |
| perylene | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U |
| phenanthrene | 0.066 J | 0.059 J | 0.055 J | 0.049 J | 0.500 J | 0.530 J | 0.136 J | 0.123 J | 0.072 J | 0.069 J |
| pyrene | 0.026 J | 0.028 J | 0.031 J | 0.029 J | 0.094 J | 0.096 J | 0.074 J | 0.053 J | 0.035 J | 0.035 J |

**Cleveland Harbor 2010 Polycyclic Aromatic Hydroacrbons (PAHs) in Bulk Sediment (ASTM D7363 mod-Soxhlet extracts)**

| ANALYTE | CH-1 | CH-2 | CH-3 | CH-4 | CH-5 DUP | CH-5 | CH-6a | CH-6b | CH-7a | CH-7b | CH-8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-methylnaphthalene | 0.176 | 0.093 | 0.146 | 0.085 | 0.088 | 0.084 | 0.090 | 0.071 | 0.144 | 0.090 | 0.076 |
| 2-methylnaphthalene | 0.205 | 0.115 | 0.175 | 0.097 | 0.105 | 0.102 | 0.115 | 0.097 | 0.227 | 0.122 | 0.102 |
| acenaphthene | 0.233 | 0.092 | 0.131 | 0.046 J | 0.051 J | 0.054 J | 0.064 J | 0.060 J | 0.272 | 0.092 | 0.060 J |
| acenaphthylene | 0.149 | 0.137 | 0.281 | 0.128 | 0.131 | 0.124 | 0.154 | 0.123 | 0.118 | 0.144 | 0.113 |
| anthracene | 0.469 | 0.375 | 0.653 | 0.282 | 0.292 | 0.277 | 0.321 | 0.265 | 0.500 | 0.355 | 0.248 |
| benz[a]anthracene | 1.14 | 1.35 | 1.43 | 0.740 | 0.842 | 0.853 | 0.923 | 0.822 | 1.23 | 0.935 | 0.695 |
| benzo[a]pyrene | 1.32 | 1.21 | 1.57 | 0.917 | 1.08 | 1.10 | 1.14 | 1.02 | 1.28 | 1.11 | 0.820 |
| benzo[b+k]fluoranthene | 3.21 | 2.81 | 3.71 | 2.38 | 2.71 | 2.76 | 2.87 | 2.50 | 2.95 | 2.76 | 2.05 |
| benzo[e]pyrene | 1.03 | 0.842 | 1.08 | 0.722 | 0.817 | 0.831 | 0.860 | 0.751 | 0.850 | 0.813 | 0.605 |
| benzo[ghi]perylene | 0.940 | 0.899 | 1.14 | 0.752 | 0.860 | 0.863 | 0.922 | 0.750 | 0.775 | 0.818 | 0.595 |
| C1 chrysenes | 1.81 | 1.66 | 2.02 | 1.32 | 1.23 | 1.49 | 1.54 | 1.17 | 1.48 | 1.40 | 1.04 |
| C1 fluoranthenes/pyrenes | 0.939 | 0.872 | 1.32 | 0.711 | 0.734 | 0.780 | 0.816 | 0.750 | 1.01 | 0.915 | 0.675 |
| C1 fluorenes | 0.453 | 0.445 | 0.454 | 0.261 | 0.281 | 0.329 | 0.282 | 0.295 | 0.549 | 0.412 | 0.272 |
| C1 phenanthrenes/anthracenes | 0.685 | 0.549 | 0.938 | 0.474 | 0.479 | 0.478 | 0.561 | 0.515 | 0.942 | 0.651 | 0.459 |
| C2 chrysenes | 1.44 | 0.100 U | 1.78 | 1.06 | 0.100 U | 0.100 U | 0.100 U | 0.100 U | 0.100 U | 0.100 U | 0.100 U |
| C2 fluorenes | 0.431 | 0.040 U | 0.584 | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U |
| C2 naphthalenes | 0.532 | 0.543 | 0.651 | 0.443 | 0.366 | 0.411 | 0.444 | 0.355 | 0.428 | 0.382 | 0.372 |
| C2 phenanthrenes/anthracenes | 2.52 | 2.26 | 3.10 | 1.97 | 2.11 | 2.09 | 2.34 | 2.00 | 2.40 | 2.73 | 2.05 |
| C3 chrysenes | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U |
| C3 fluorenes | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U | 0.040 U |
| C3 naphthalenes | 0.375 | 0.421 | 0.525 | 0.406 | 0.329 | 0.365 | 0.439 | 0.325 | 0.284 | 0.388 | 0.324 |
| C3 phenanthrenes/anthracenes | 1.45 | 1.62 | 1.54 | 1.35 | 1.31 | 1.09 | 1.32 | 1.05 | 1.13 | 1.61 | 1.26 |
| C4 chrysenes | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U | 0.200 U |
| C4 naphthalenes | 0.516 | 0.572 | 0.040 U | 0.566 | 0.519 | 0.494 | 0.536 | 0.454 | 0.325 J | 0.496 | 0.479 |
| C4 phenanthrenes/anthracenes | 0.050 U | 0.583 | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U |
| chrysene | 1.39 | 1.27 | 1.62 | 1.01 | 1.13 | 1.16 | 1.25 | 1.07 | 1.32 | 1.20 | 0.828 |
| dibenz[ah]anthracene | 0.145 | 0.169 | 0.211 | 0.093 | 0.128 | 0.132 | 0.114 | 0.123 | 0.117 | 0.119 | 0.098 |
| fluoranthene | 2.53 | 2.18 | 3.09 | 1.70 | 1.90 | 1.95 | 2.06 | 1.85 | 3.20 | 2.19 | 1.59 |
| fluorene | 0.270 | 0.120 | 0.212 | 0.073 J | 0.079 J | 0.081 J | 0.083 J | 0.077 J | 0.291 | 0.125 | 0.089 J |
| indeno[1,2,3-cd]pyrene | 0.900 | 0.938 | 1.25 | 0.744 | 0.813 | 0.872 | 0.925 | 0.736 | 0.709 | 0.785 | 0.586 |
| naphthalene | 0.562 | 0.167 | 0.209 | 0.088 J | 0.112 | 0.113 | 0.129 | 0.119 | 0.512 | 0.178 | 0.130 |
| perylene | 0.392 | 0.360 | 0.454 | 0.280 | 0.360 | 0.325 | 0.369 | 0.310 | 0.370 | 0.323 | 0.251 |
| phenanthrene | 1.13 | 0.858 | 1.39 | 0.602 | 0.701 | 0.699 | 0.748 | 0.727 | 2.29 | 1.03 | 0.657 |
| pyrene | 1.97 | 1.75 | 2.39 | 1.35 | 1.50 | 1.53 | 1.65 | 1.47 | 2.44 | 1.71 | 1.24 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

12 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| CH - 1 | 0111202-01 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 2 | 0111202-02 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 3 | 0111202-03 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 4 | 0111202-04 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 | 0111202-05 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 DUP | 0111202-06 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6a | 0111202-07 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6b | 0111202-08 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7a | 0111202-09 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7b | 0111202-10 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 8 | 0111202-11 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 1 (composite) | 0111202-12 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 2 (composite) | 0111202-13 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 1 | 0111202-14 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 2 | 0111202-15 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 3 | 0111202-16 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 4 | 0111202-17 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB Composite | 0111202-18 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 1 | 0111202-19 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 2 | 0111202-20 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 3 | 0111202-21 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS 4 | 0111202-22 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS Composite | 0111202-23 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU Sieved Composite | 0111202-24 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 1

**0111202-01 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.106** | 0.00399 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8040** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **14300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **24700** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5450** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1700** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **265** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **211** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **434** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **11.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **75.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.605** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **1.07** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **26.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **11.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **57.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **52.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **625** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **36.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.730** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.369** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.354** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **19.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 2

**0111202-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.114** | 0.00398 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8090** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **14400** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **25500** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5430** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1650** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **266** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **204** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **470** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.113** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **12.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **77.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.571** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.932** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **26.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **11.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **53.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **49.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **648** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **33.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.716** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.379** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.354** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **19.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## CH - 3

**0111202-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.104** | 0.00401 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **7930** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **14700** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **24900** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5430** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1670** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **277** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **212** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **497** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **75.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.528** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.924** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **25.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **11.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **54.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **46.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **645** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **34.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.786** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.407** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.330** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **19.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## CH - 4

**0111202-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0887** | 0.00397 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **9270** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **12600** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **27400** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5490** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1840** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **219** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **184** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **359** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **78.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.653** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.781** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **24.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **12.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **45.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **40.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **728** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **36.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.740** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.290** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.363** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **21.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## CH - 5

**0111202-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0979** | 0.00400 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **9290** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **14800** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **27900** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5970** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1810** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **216** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **206** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **430** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **79.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.623** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.985** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **26.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **12.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **52.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **44.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **706** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **37.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.667** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.363** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.372** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **20.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.107** | 0.00401 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **9040** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **15400** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **27300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5930** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1800** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **247** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **218** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **452** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **79.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.697** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **1.06** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **28.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **12.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **54.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **46.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **681** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **37.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.721** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.364** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.371** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **20.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## CH - 6a

**0111202-07 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.135** | 0.00400 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **9430** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **18300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **28100** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **6300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1920** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **272** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **235** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **456** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **84.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.662** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **1.15** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **30.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **12.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **60.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **52.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **666** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **39.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.857** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.467** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.397** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **22.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0974** | 0.00398 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **9270** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **15000** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **27700** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5880** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1860** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **241** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **195** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **420** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **77.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.667** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.857** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **26.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **12.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **47.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **42.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **668** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **34.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.709** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.332** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.359** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **20.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0876** | 0.00397 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **9090** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **16100** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **27200** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5860** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1810** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **225** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **182** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **386** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **73.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.597** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.793** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **27.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **11.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **47.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **41.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **647** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **33.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.769** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.303** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.351** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **20.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## CH - 7b

**0111202-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0961** | 0.00401 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8550** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **15000** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **26200** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5790** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1630** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **217** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **188** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **408** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **11.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **75.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.604** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.902** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **25.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **11.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **47.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **44.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **592** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **33.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.755** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.325** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.364** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **19.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## CH - 8

**0111202-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0839** | 0.00398 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **14300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **26500** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5590** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1560** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **208** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **269** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **410** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **71.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.554** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.938** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **31.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **11.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **46.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **42.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **564** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **32.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.652** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.317** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.341** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **18.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0967** | 0.00399 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8100** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **14900** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **25400** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5450** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1650** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **255** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **221** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **489** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.119** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **12.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **77.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.659** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **1.08** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **26.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **11.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **55.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **46.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **635** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **36.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.753** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.398** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.351** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **19.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0830** | 0.00396 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8990** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **15500** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **27300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5840** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1720** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **226** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **208** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **416** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **76.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.671** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **1.00** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **27.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **12.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **50.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **44.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **683** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **35.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.719** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.362** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.362** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **20.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0463** | 0.00394 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **2380** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **66600** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **10700** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **4030** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **381** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **264** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **53.1** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **108** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **8.21** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **31.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.250** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.172** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **5.21** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **4.64** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **16.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **12.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **229** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **12.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.260** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **6.54** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0429** | 0.00394 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **2140** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **54800** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **10400** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **2690** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **364** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **226** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **55.2** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **104** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **7.89** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **25.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.184** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.181** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **5.55** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **4.55** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **11.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **14.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **190** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **12.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.139** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **5.63** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## PB - 3

**0111202-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0487** | 0.00397 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **2130** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **49900** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **10300** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **3050** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **381** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **203** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **53.9** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **135** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **7.15** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **29.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.216** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.105** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **4.91** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **4.56** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **9.61** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **10.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **220** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **11.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.114** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **6.10** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## PB - 4

**0111202-17 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0794** | 0.00396 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **2460** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **20000** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **12500** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **3410** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **457** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **87.8** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **91.6** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **163** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **8.45** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **20.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.274** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.238** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **6.02** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **5.95** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **8.74** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **13.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **238** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **14.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.223** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.102** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **8.01** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## PB Composite

**0111202-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0940** | 0.00397 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **2280** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **34100** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **11000** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **3350** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **411** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **155** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **73.6** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **132** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **7.93** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **22.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.230** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.132** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **4.89** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **5.19** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **8.89** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **14.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **216** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **12.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.172** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **6.58** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS - 1

**0111202-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.105** | 0.00396 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **9960** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **2620** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **16500** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **1970** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1660** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **27.8** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **90.4** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **290** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.120** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **7.96** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **90.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.698** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.524** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **16.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **7.50** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **18.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **138** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **473** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **17.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.930** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.111** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.382** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **17.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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## BS - 2

**0111202-20 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0431** | 0.00399 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **10100** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **427** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **25900** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **2030** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1480** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **30.1** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **74.7** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **138** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **12.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **62.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.582** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.277** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **17.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **10.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **18.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **78.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **228** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **17.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.690** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.182** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.304** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **23.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS - 3

**0111202-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.168** | 0.00399 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8460** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **573** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **20000** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **1410** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1210** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **25.6** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **72.6** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **216** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.408** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **16.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **70.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.610** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.701** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **16.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **6.96** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **33.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **325** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **183** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **14.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **1.57** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.150** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.478** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **21.4** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0542** | 0.00398 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **11600** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **6550** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **34200** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **1380** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1550** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **220** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **108** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **396** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.183** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **14.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **146** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **1.19** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.779** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **18.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **5.99** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **48.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **176** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **233** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **17.8** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **1.67** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.168** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.463** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **27.5** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS Composite

**0111202-23 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.107** | 0.00397 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **8850** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **1420** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **25100** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **1780** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1390** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **27.9** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **96.2** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **264** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.182** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **16.7** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **66.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.617** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.619** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **16.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **8.78** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **31.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **184** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **281** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **17.2** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **1.12** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.119** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.385** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **22.1** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.0912** | 0.00395 | mg/kg | 1 | 08-Dec-2010 | 05-Jan-2011 | EPA 7471A | |
| **Aluminum** | **6960** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Calcium** | **14700** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Iron** | **23800** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5240** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Potassium** | **1410** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Sodium** | **82.8** | 10.0 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | B |
| **Zinc** | **200** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **458** | 4.00 | mg/kg | 2 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **11.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Barium** | **75.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.528** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.952** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Chromium** | **23.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **10.0** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Copper** | **53.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Lead** | **45.3** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Manganese** | **597** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Nickel** | **32.9** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.716** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.411** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.332** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **17.6** | 0.500 | mg/kg | 10 | 29-Nov-2010 | 13-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011035 - EPA 3050B** | | | | | | | | | | |
| **Blank (B011035-BLK1)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Aluminum | 0.666 | 10.0 | mg/kg | | | | | | | J |
| Calcium | 23.5 | 10.0 | mg/kg | | | | | | | |
| Iron | ND | 10.0 | mg/kg | | | | | | | U |
| Magnesium | 3.50 | 10.0 | mg/kg | | | | | | | J |
| Potassium | 5.40 | 10.0 | mg/kg | | | | | | | J |
| Sodium | 37.3 | 10.0 | mg/kg | | | | | | | |
| Phosphorus | ND | 4.00 | mg/kg | | | | | | | U |
| **LCS (B011035-BS1)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Aluminum | 800 | 10.0 | mg/kg | 1000 | | 80.0 | 80-120 | | | |
| Calcium | 926 | 10.0 | mg/kg | 1000 | | 92.6 | 80-120 | | | B |
| Iron | 918 | 10.0 | mg/kg | 1000 | | 91.8 | 80-120 | | | |
| Magnesium | 878 | 10.0 | mg/kg | 1000 | | 87.8 | 80-120 | | | |
| Potassium | 868 | 10.0 | mg/kg | 1000 | | 86.8 | 80-120 | | | |
| Sodium | 870 | 10.0 | mg/kg | 1000 | | 87.0 | 80-120 | | | B |
| **LCS (B011035-BS2)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Phosphorus | 233 | 4.00 | mg/kg | 200.0 | | 117 | 80-120 | | | |
| **Duplicate (B011035-DUP1)** | | **Source: 0101502-37** | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Aluminum | 9720 | 10.0 | mg/kg | | 9530 | | | 2.03 | 20 | |
| Calcium | 21700 | 10.0 | mg/kg | | 21400 | | | 0.946 | 20 | B |
| Iron | 30400 | 10.0 | mg/kg | | 30400 | | | 0.215 | 20 | |
| Magnesium | 7510 | 10.0 | mg/kg | | 7310 | | | 2.71 | 20 | |
| Potassium | 1500 | 10.0 | mg/kg | | 1460 | | | 2.57 | 20 | |
| Sodium | 119 | 10.0 | mg/kg | | 113 | | | 5.08 | 20 | B |
| Phosphorus | 294 | 4.00 | mg/kg | | 295 | | | 0.565 | 20 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011035 - EPA 3050B** | | | | | | | | | | |
| **Duplicate (B011035-DUP2)** | **Source: 0111202-01** | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Aluminum | 8020 | 10.0 | mg/kg | | 8040 | | | 0.225 | 20 | |
| Calcium | 14200 | 10.0 | mg/kg | | 14300 | | | 0.792 | 20 | B |
| Iron | 24500 | 10.0 | mg/kg | | 24700 | | | 0.809 | 20 | |
| Magnesium | 5370 | 10.0 | mg/kg | | 5450 | | | 1.46 | 20 | |
| Potassium | 1700 | 10.0 | mg/kg | | 1700 | | | 0.162 | 20 | |
| Sodium | 253 | 10.0 | mg/kg | | 265 | | | 4.69 | 20 | B |
| Phosphorus | 434 | 4.00 | mg/kg | | 434 | | | 0.00415 | 20 | |
| **Matrix Spike (B011035-MS1)** | **Source: 0101502-37** | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Aluminum | 11500 | 10.0 | mg/kg | 1000 | 9530 | 195 | 80-120 | | | |
| Calcium | 22500 | 10.0 | mg/kg | 1000 | 21400 | 109 | 80-120 | | | B |
| Iron | 31200 | 10.0 | mg/kg | 1000 | 30400 | 81.1 | 80-120 | | | |
| Magnesium | 8380 | 10.0 | mg/kg | 1000 | 7310 | 107 | 80-120 | | | |
| Potassium | 2290 | 10.0 | mg/kg | 1000 | 1460 | 83.0 | 80-120 | | | |
| Sodium | 971 | 10.0 | mg/kg | 1000 | 113 | 85.8 | 80-120 | | | B |
| **Matrix Spike (B011035-MS2)** | **Source: 0111202-01** | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Aluminum | 10000 | 10.0 | mg/kg | 1000 | 8040 | 198 | 80-120 | | | |
| Calcium | 15300 | 10.0 | mg/kg | 1000 | 14300 | 103 | 80-120 | | | B |
| Iron | 25900 | 10.0 | mg/kg | 1000 | 24700 | 125 | 80-120 | | | |
| Magnesium | 6370 | 10.0 | mg/kg | 1000 | 5450 | 92.4 | 80-120 | | | |
| Potassium | 2570 | 10.0 | mg/kg | 1000 | 1700 | 87.3 | 80-120 | | | |
| Sodium | 1100 | 10.0 | mg/kg | 1000 | 265 | 83.4 | 80-120 | | | B |
| **Batch B012020 - EPA 3050B** | | | | | | | | | | |
| **Blank (B012020-BLK1)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | ND | 0.500 | mg/kg | | | | | | | U |
| Arsenic | ND | 0.500 | mg/kg | | | | | | | U |
| Barium | ND | 0.500 | mg/kg | | | | | | | U |
| Beryllium | ND | 0.500 | mg/kg | | | | | | | U |
| Cadmium | ND | 0.500 | mg/kg | | | | | | | U |
| Chromium | ND | 0.500 | mg/kg | | | | | | | U |
| Cobalt | ND | 0.500 | mg/kg | | | | | | | U |
| Copper | 0.275 | 0.500 | mg/kg | | | | | | | J |
| Lead | 0.141 | 0.500 | mg/kg | | | | | | | J |
| Manganese | 0.128 | 0.500 | mg/kg | | | | | | | J |
| Molybdenum | ND | 0.500 | mg/kg | | | | | | | U |
| Nickel | ND | 0.500 | mg/kg | | | | | | | U |
| Selenium | ND | 0.500 | mg/kg | | | | | | | U |
| Silver | ND | 0.500 | mg/kg | | | | | | | U |
| Thallium | ND | 0.500 | mg/kg | | | | | | | U |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012020 - EPA 3050B** | | | | | | | | | | |
| **Blank (B012020-BLK1)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Vanadium | ND | 0.500 | mg/kg | | | | | | | U |
| **Blank (B012020-BLK2)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | ND | 0.500 | mg/kg | | | | | | | U |
| Arsenic | ND | 0.500 | mg/kg | | | | | | | U |
| Barium | ND | 0.500 | mg/kg | | | | | | | U |
| Beryllium | ND | 0.500 | mg/kg | | | | | | | U |
| Cadmium | ND | 0.500 | mg/kg | | | | | | | U |
| Chromium | ND | 0.500 | mg/kg | | | | | | | U |
| Cobalt | ND | 0.500 | mg/kg | | | | | | | U |
| Copper | 0.285 | 0.500 | mg/kg | | | | | | | J |
| Lead | 0.130 | 0.500 | mg/kg | | | | | | | J |
| Manganese | 0.379 | 0.500 | mg/kg | | | | | | | J |
| Molybdenum | ND | 0.500 | mg/kg | | | | | | | U |
| Nickel | ND | 0.500 | mg/kg | | | | | | | U |
| Selenium | ND | 0.500 | mg/kg | | | | | | | U |
| Silver | ND | 0.500 | mg/kg | | | | | | | U |
| Thallium | ND | 0.500 | mg/kg | | | | | | | U |
| Vanadium | ND | 0.500 | mg/kg | | | | | | | U |
| **LCS (B012020-BS1)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | 86.5 | 0.500 | mg/kg | 100.0 | | 86.5 | 80-120 | | | |
| Arsenic | 43.9 | 0.500 | mg/kg | 50.00 | | 87.8 | 80-120 | | | |
| Barium | 186 | 0.500 | mg/kg | 200.0 | | 92.9 | 80-120 | | | |
| Beryllium | 44.3 | 0.500 | mg/kg | 50.00 | | 88.6 | 80-120 | | | |
| Cadmium | 44.8 | 0.500 | mg/kg | 50.00 | | 89.5 | 80-120 | | | |
| Chromium | 93.2 | 0.500 | mg/kg | 100.0 | | 93.2 | 80-120 | | | |
| Cobalt | 94.6 | 0.500 | mg/kg | 100.0 | | 94.6 | 80-120 | | | |
| Copper | 91.2 | 0.500 | mg/kg | 100.0 | | 91.2 | 80-120 | | | |
| Lead | 92.4 | 0.500 | mg/kg | 100.0 | | 92.4 | 80-120 | | | |
| Manganese | 236 | 0.500 | mg/kg | 250.0 | | 94.3 | 80-120 | | | |
| Molybdenum | 46.5 | 0.500 | mg/kg | 50.00 | | 93.1 | 80-120 | | | |
| Nickel | 91.6 | 0.500 | mg/kg | 100.0 | | 91.6 | 80-120 | | | |
| Selenium | 40.7 | 0.500 | mg/kg | 50.00 | | 81.5 | 80-120 | | | |
| Silver | 45.7 | 0.500 | mg/kg | 50.00 | | 91.5 | 80-120 | | | |
| Thallium | 45.4 | 0.500 | mg/kg | 50.00 | | 90.8 | 80-120 | | | |
| Vanadium | 95.2 | 0.500 | mg/kg | 100.0 | | 95.2 | 80-120 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012020 - EPA 3050B** | | | | | | | | | | |
| **LCS (B012020-BS2)** | | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | 85.5 | 0.500 | mg/kg | 100.0 | | 85.5 | 80-120 | | | |
| Arsenic | 43.2 | 0.500 | mg/kg | 50.00 | | 86.4 | 80-120 | | | |
| Barium | 182 | 0.500 | mg/kg | 200.0 | | 90.9 | 80-120 | | | |
| Beryllium | 44.0 | 0.500 | mg/kg | 50.00 | | 88.1 | 80-120 | | | |
| Cadmium | 43.9 | 0.500 | mg/kg | 50.00 | | 87.8 | 80-120 | | | |
| Chromium | 92.5 | 0.500 | mg/kg | 100.0 | | 92.5 | 80-120 | | | |
| Cobalt | 93.5 | 0.500 | mg/kg | 100.0 | | 93.5 | 80-120 | | | |
| Copper | 89.1 | 0.500 | mg/kg | 100.0 | | 89.1 | 80-120 | | | |
| Lead | 90.2 | 0.500 | mg/kg | 100.0 | | 90.2 | 80-120 | | | |
| Manganese | 231 | 0.500 | mg/kg | 250.0 | | 92.3 | 80-120 | | | |
| Molybdenum | 45.6 | 0.500 | mg/kg | 50.00 | | 91.3 | 80-120 | | | |
| Nickel | 91.5 | 0.500 | mg/kg | 100.0 | | 91.5 | 80-120 | | | |
| Selenium | 40.7 | 0.500 | mg/kg | 50.00 | | 81.4 | 80-120 | | | |
| Silver | 45.1 | 0.500 | mg/kg | 50.00 | | 90.2 | 80-120 | | | |
| Thallium | 44.4 | 0.500 | mg/kg | 50.00 | | 88.9 | 80-120 | | | |
| Vanadium | 94.2 | 0.500 | mg/kg | 100.0 | | 94.2 | 80-120 | | | |
| **Duplicate (B012020-DUP1)** | | **Source: 0101502-37** | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | ND | 0.500 | mg/kg | | 0.103 | | | | 20 | U |
| Arsenic | 13.9 | 0.500 | mg/kg | | 13.9 | | | 0.0564 | 20 | |
| Barium | 99.6 | 0.500 | mg/kg | | 94.9 | | | 4.82 | 20 | |
| Beryllium | 0.616 | 0.500 | mg/kg | | 0.555 | | | 10.5 | 20 | |
| Cadmium | 1.23 | 0.500 | mg/kg | | 1.39 | | | 12.4 | 20 | |
| Chromium | 66.2 | 0.500 | mg/kg | | 66.6 | | | 0.544 | 20 | |
| Cobalt | 11.7 | 0.500 | mg/kg | | 11.8 | | | 0.489 | 20 | |
| Copper | 65.9 | 0.500 | mg/kg | | 66.1 | | | 0.310 | 20 | |
| Lead | 119 | 0.500 | mg/kg | | 113 | | | 5.33 | 20 | |
| Manganese | 635 | 0.500 | mg/kg | | 654 | | | 2.99 | 20 | |
| Molybdenum | 2.96 | 0.500 | mg/kg | | 2.88 | | | 2.94 | 20 | |
| Nickel | 34.3 | 0.500 | mg/kg | | 34.9 | | | 1.70 | 20 | |
| Selenium | 0.782 | 0.500 | mg/kg | | 0.652 | | | 18.2 | 20 | |
| Silver | 0.342 | 0.500 | mg/kg | | 0.325 | | | 5.09 | 20 | J |
| Thallium | 0.429 | 0.500 | mg/kg | | 0.430 | | | 0.297 | 20 | J |
| Vanadium | 20.0 | 0.500 | mg/kg | | 19.8 | | | 0.999 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012020 - EPA 3050B** | | | | | | | | | | |
| **Duplicate (B012020-DUP2)** | **Source: 0111202-01** | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | ND | 0.500 | mg/kg | | ND | | | | 20 | U |
| Arsenic | 11.7 | 0.500 | mg/kg | | 11.8 | | | 1.34 | 20 | |
| Barium | 76.8 | 0.500 | mg/kg | | 75.8 | | | 1.30 | 20 | |
| Beryllium | 0.603 | 0.500 | mg/kg | | 0.605 | | | 0.380 | 20 | |
| Cadmium | 1.06 | 0.500 | mg/kg | | 1.07 | | | 1.07 | 20 | |
| Chromium | 25.5 | 0.500 | mg/kg | | 26.0 | | | 1.91 | 20 | |
| Cobalt | 11.0 | 0.500 | mg/kg | | 11.1 | | | 1.07 | 20 | |
| Copper | 57.2 | 0.500 | mg/kg | | 57.3 | | | 0.0928 | 20 | |
| Lead | 48.1 | 0.500 | mg/kg | | 52.9 | | | 9.48 | 20 | |
| Manganese | 616 | 0.500 | mg/kg | | 625 | | | 1.34 | 20 | |
| Molybdenum | 2.61 | 0.500 | mg/kg | | 2.72 | | | 4.08 | 20 | |
| Nickel | 38.6 | 0.500 | mg/kg | | 36.8 | | | 4.72 | 20 | |
| Selenium | 0.746 | 0.500 | mg/kg | | 0.730 | | | 2.13 | 20 | |
| Silver | 0.364 | 0.500 | mg/kg | | 0.369 | | | 1.39 | 20 | J |
| Thallium | 0.350 | 0.500 | mg/kg | | 0.354 | | | 0.988 | 20 | J |
| Vanadium | 19.6 | 0.500 | mg/kg | | 19.7 | | | 0.513 | 20 | |
| **Matrix Spike (B012020-MS1)** | **Source: 0101502-37** | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | 2.03 | 0.500 | mg/kg | 100.9 | 0.103 | 1.91 | 80-120 | | | |
| Arsenic | 57.5 | 0.500 | mg/kg | 50.44 | 13.9 | 86.4 | 80-120 | | | |
| Barium | 284 | 0.500 | mg/kg | 201.8 | 94.9 | 93.5 | 80-120 | | | |
| Beryllium | 46.1 | 0.500 | mg/kg | 50.44 | 0.555 | 90.2 | 80-120 | | | |
| Cadmium | 46.1 | 0.500 | mg/kg | 50.44 | 1.39 | 88.7 | 80-120 | | | |
| Chromium | 159 | 0.500 | mg/kg | 100.9 | 66.6 | 91.8 | 80-120 | | | |
| Cobalt | 105 | 0.500 | mg/kg | 100.9 | 11.8 | 92.1 | 80-120 | | | |
| Copper | 149 | 0.500 | mg/kg | 100.9 | 66.1 | 82.0 | 80-120 | | | |
| Lead | 205 | 0.500 | mg/kg | 100.9 | 113 | 90.9 | 80-120 | | | |
| Manganese | 856 | 0.500 | mg/kg | 252.2 | 654 | 80.1 | 80-120 | | | |
| Molybdenum | 45.1 | 0.500 | mg/kg | 50.44 | 2.88 | 83.7 | 80-120 | | | |
| Nickel | 124 | 0.500 | mg/kg | 100.9 | 34.9 | 88.2 | 80-120 | | | |
| Selenium | 40.7 | 0.500 | mg/kg | 50.44 | 0.652 | 79.4 | 80-120 | | | |
| Silver | 43.7 | 0.500 | mg/kg | 50.44 | 0.325 | 85.9 | 80-120 | | | |
| Thallium | 46.4 | 0.500 | mg/kg | 50.44 | 0.430 | 91.1 | 80-120 | | | |
| Vanadium | 114 | 0.500 | mg/kg | 100.9 | 19.8 | 93.0 | 80-120 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012020 - EPA 3050B** | | | | | | | | | | |
| **Matrix Spike (B012020-MS2)** | **Source: 0111202-01** | | | Prepared: 29-Nov-2010 Analyzed: 13-Dec-2010 | | | | | | |
| Antimony | 2.58 | 0.500 | mg/kg | 99.01 | ND | 2.61 | 80-120 | | | |
| Arsenic | 54.5 | 0.500 | mg/kg | 49.50 | 11.8 | 86.2 | 80-120 | | | |
| Barium | 269 | 0.500 | mg/kg | 198.0 | 75.8 | 97.7 | 80-120 | | | |
| Beryllium | 45.6 | 0.500 | mg/kg | 49.50 | 0.605 | 90.8 | 80-120 | | | |
| Cadmium | 45.7 | 0.500 | mg/kg | 49.50 | 1.07 | 90.1 | 80-120 | | | |
| Chromium | 120 | 0.500 | mg/kg | 99.01 | 26.0 | 95.1 | 80-120 | | | |
| Cobalt | 102 | 0.500 | mg/kg | 99.01 | 11.1 | 92.1 | 80-120 | | | |
| Copper | 141 | 0.500 | mg/kg | 99.01 | 57.3 | 84.2 | 80-120 | | | |
| Lead | 144 | 0.500 | mg/kg | 99.01 | 52.9 | 91.9 | 80-120 | | | |
| Manganese | 846 | 0.500 | mg/kg | 247.5 | 625 | 89.5 | 80-120 | | | |
| Molybdenum | 43.9 | 0.500 | mg/kg | 49.50 | 2.72 | 83.3 | 80-120 | | | |
| Nickel | 130 | 0.500 | mg/kg | 99.01 | 36.8 | 93.9 | 80-120 | | | |
| Selenium | 40.0 | 0.500 | mg/kg | 49.50 | 0.730 | 79.2 | 80-120 | | | |
| Silver | 43.4 | 0.500 | mg/kg | 49.50 | 0.369 | 86.9 | 80-120 | | | |
| Thallium | 44.9 | 0.500 | mg/kg | 49.50 | 0.354 | 90.0 | 80-120 | | | |
| Vanadium | 112 | 0.500 | mg/kg | 99.01 | 19.7 | 93.5 | 80-120 | | | |
| **Batch B101009 - EPA 7471A Prep** | | | | | | | | | | |
| **Blank (B101009-BLK1)** | | | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | ND | 0.00400 | mg/kg | | | | | | | |
| **Blank (B101009-BLK2)** | | | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | ND | 0.00400 | mg/kg | | | | | | | |
| **LCS (B101009-BS1)** | | | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | 0.0645 | 0.00400 | mg/kg | 0.06000 | | 107 | 75-125 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101009 - EPA 7471A Prep** | | | | | | | | | | |
| **LCS (B101009-BS2)** | | | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | 0.0593 | 0.00400 | mg/kg | 0.06000 | | 98.8 | 75-125 | | | |
| **Duplicate (B101009-DUP2)** | | **Source: 0122002-06** | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | 0.121 | 0.00397 | mg/kg | | 0.119 | | | 1.18 | 25 | |
| **Matrix Spike (B101009-MS1)** | | **Source: 0111202-01** | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | 0.160 | 0.00399 | mg/kg | 0.05983 | 0.106 | 89.2 | 75-125 | | | |
| **Matrix Spike (B101009-MS2)** | | **Source: 0122002-06** | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | 0.188 | 0.00397 | mg/kg | 0.05948 | 0.119 | 116 | 75-125 | | | |
| **Matrix Spike Dup (B101009-MSD1)** | | **Source: 0111202-01** | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | 0.171 | 0.00401 | mg/kg | 0.06017 | 0.106 | 108 | 75-125 | 18.9 | 25 | |
| **Matrix Spike Dup (B101009-MSD2)** | | **Source: 0122002-06** | | Prepared & Analyzed: 05-Jan-2011 | | | | | | |
| Mercury | 0.188 | 0.00396 | mg/kg | 0.05939 | 0.119 | 116 | 75-125 | 0.0984 | 25 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

12 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 (composite) | 0111202-12 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 2 (composite) | 0111202-13 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| Chromium (VI) | ND | 1.00 | mg/kg | 10 | 20-Dec-2010 | 21-Dec-2010 | EPA 6020 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| Chromium (VI) | ND | 1.00 | mg/kg | 100 | 20-Dec-2010 | 21-Dec-2010 | EPA 6020 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101030 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B101030-BLK1)** | | | | Prepared & Analyzed: 21-Dec-2010 | | | | | | |
| Chromium (VI) | ND | 1.00 | mg/kg | | | | | | | U |
| **LCS (B101030-BS1)** | | | | Prepared & Analyzed: 21-Dec-2010 | | | | | | |
| Chromium (VI) | 430 | 1.00 | mg/kg | 500.0 | | 85.9 | 75-125 | | | |
| **Duplicate (B101030-DUP1)** | | **Source: 0111202-12** | | Prepared & Analyzed: 21-Dec-2010 | | | | | | |
| Chromium (VI) | ND | 1.00 | mg/kg | | ND | | | | 20 | U |
| **Matrix Spike (B101030-MS1)** | | **Source: 0111202-12** | | Prepared & Analyzed: 21-Dec-2010 | | | | | | |
| Chromium (VI) | 39.0 | 1.00 | mg/kg | 50.00 | ND | 78.0 | 75-125 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

03 February 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 02-Feb-2011. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| CH - 1 (SEM Extraction) | 1020201-01 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 2 (SEM Extraction) | 1020201-02 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 3 (SEM Extraction) | 1020201-03 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 4 (SEM Extraction) | 1020201-04 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 5 (SEM Extraction) | 1020201-05 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 5 DUP (SEM Extraction) | 1020201-06 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 6A (SEM Extraction) | 1020201-07 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 6B (SEM Extraction) | 1020201-08 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 7A (SEM Extraction) | 1020201-09 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 7B (SEM Extraction) | 1020201-10 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| CH - 8 (SEM Extraction) | 1020201-11 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| DMU 1 (composite) (SEM Extraction) | 1020201-12 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| DMU 2 (composite) (SEM Extraction) | 1020201-13 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| PB - 1 (SEM Extraction) | 1020201-14 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| PB - 2 (SEM Extraction) | 1020201-15 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| PB - 3 (SEM Extraction) | 1020201-16 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| PB - 4 (SEM Extraction) | 1020201-17 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| PB Composite (SEM Extraction) | 1020201-18 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| BS - 1 (SEM Extraction) | 1020201-19 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| BS - 2 (SEM Extraction) | 1020201-20 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| BS - 3 (SEM Extraction) | 1020201-21 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| BS - 4 (SEM Extraction) | 1020201-22 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| BS Composite (SEM Extraction) | 1020201-23 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |
| DMU 1 Seived (SEM Extraction) | 1020201-24 | Soil/Sediment | 20-Dec-2010 | 02-Feb-2011 |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 1 (SEM Extraction)

**1020201-01 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000025** | 1.80E-5 | mg/kg | 1 | 20-Dec-2010 | 25-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0017** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0143** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.377** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0015** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0064** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0522** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0264** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.184** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.286** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **3.79** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0019** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.0786** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0140** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0141** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **1.15** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 2 (SEM Extraction)

**1020201-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.00239** | 3.50E-5 | mg/kg | 2 | 20-Dec-2010 | 25-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0043** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0479** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **1.28** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0037** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0219** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.167** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0934** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.681** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **1.05** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **12.9** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0045** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.258** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0155** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.0016** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.0029** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0834** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **4.14** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 3 (SEM Extraction)

**1020201-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 1.80E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0016** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0206** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.542** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0022** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0095** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0790** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0411** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.304** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.437** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **5.70** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0020** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.107** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0073** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0012** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0384** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **1.76** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 4 (SEM Extraction)

**1020201-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000046** | 3.60E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0027** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0622** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **1.36** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0052** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.0199** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.143** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.117** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.699** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.981** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **16.2** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0046** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.258** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0157** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.0012** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.0029** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0977** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **3.49** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 5 (SEM Extraction)

**1020201-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 1.80E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0015** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0290** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.708** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0027** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0116** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0860** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0540** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.385** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.554** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **7.58** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0024** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.131** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0072** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0016** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0467** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **2.08** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 5 DUP (SEM Extraction)

**1020201-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 3.60E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0029** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0554** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **1.38** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0052** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cadmium** | **0.0269** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.185** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.106** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.814** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **1.14** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **13.8** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0044** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.267** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0120** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.0013** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.0033** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0827** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **4.38** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 6A (SEM Extraction)

**1020201-07 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.000032** | 1.70E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0021** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0302** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.743** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0028** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0160** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.123** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0603** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.491** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.659** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **7.35** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0024** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.170** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0063** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.0010** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.0018** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0510** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **2.67** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 6B (SEM Extraction)

**1020201-08 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.00005** | 3.60E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0022** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0315** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.773** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0035** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0129** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.106** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0671** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.392** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.597** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **8.42** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0030** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.150** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0098** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0017** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0420** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **2.43** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 7A (SEM Extraction)

**1020201-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000019** | 1.80E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0010** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0172** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.402** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0018** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0062** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0563** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0354** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.196** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.316** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **4.48** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0016** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.0775** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0050** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0234** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **1.21** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 7B (SEM Extraction)

**1020201-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 3.60E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0022** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0303** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.888** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0031** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0152** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.132** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0699** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.400** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.786** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **8.76** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0039** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.170** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0096** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0022** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0585** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **2.82** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## CH - 8 (SEM Extraction)

**1020201-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.000018 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0014** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0245** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.515** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0021** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0108** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.132** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0396** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.287** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.439** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **4.99** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0023** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.0981** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0044** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0013** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0385** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **2.73** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## DMU 1 (composite) (SEM Extraction)

### 1020201-12 (Soil/Sediment)

### ERDC- EL-EP-C (Environmental Chemistry Branch)

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 3.70E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0028** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0332** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.978** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0035** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0195** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.140** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0717** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.508** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.836** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **10.1** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0038** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.212** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0095** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.0010** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.0023** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0611** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **3.41** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## DMU 2 (composite) (SEM Extraction)

**1020201-13 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 1.70E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0014** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0239** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.724** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0028** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0124** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.108** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0565** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.341** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.592** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **7.22** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0021** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.142** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0055** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Silver** | **0.0022** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Thallium** | **0.0016** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0510** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **2.30** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

# PB - 1 (SEM Extraction)

**1020201-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 3.40E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0012** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0414** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **1.09** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0024** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0034** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0768** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0889** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.146** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.394** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **7.77** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0015** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.269** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0117** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0462** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **1.53** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## PB - 2 (SEM Extraction)

**1020201-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 1.70E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| Antimony | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **0.0176** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.359** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0013** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0019** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0186** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0412** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.0590** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.169** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **2.86** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Molybdenum | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Nickel** | **0.0975** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0051** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Vanadium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Zinc** | **0.628** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## PB - 3 (SEM Extraction)

**1020201-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000057** | 3.30E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0010** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0353** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.656** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0017** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0035** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0388** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0807** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.129** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.313** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **5.79** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0016** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.183** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0112** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0034** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Zinc** | **1.80** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## PB - 4 (SEM Extraction)

**1020201-17 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.000031** | 3.10E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0020** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0797** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.559** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0036** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0073** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0649** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.137** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.169** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.573** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **8.01** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0020** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.240** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0090** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0012** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0361** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **1.85** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## PB Composite (SEM Extraction)

**1020201-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000028** | 1.60E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| Antimony | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **0.0225** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.387** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0012** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0018** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0202** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0459** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.0651** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.183** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **2.94** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Molybdenum | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Nickel** | **0.109** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0053** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0045** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Zinc** | **0.700** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## BS - 1 (SEM Extraction)

**1020201-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000079** | 1.80E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0108** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Arsenic** | **0.0491** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.910** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0038** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0079** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0138** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0128** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.165** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **1.58** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **1.69** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0021** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.0387** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0039** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0600** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.327** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## BS - 2 (SEM Extraction)

**1020201-20 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| Mercury | ND | 3.50E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | U |
| **Antimony** | **0.0054** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Arsenic** | **0.0077** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.595** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0020** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0047** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0173** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0276** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.144** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.982** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **0.647** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Molybdenum | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Nickel** | **0.0217** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0050** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Vanadium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Zinc** | **0.298** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## BS - 3 (SEM Extraction)

**1020201-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000117** | 0.000018 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0165** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Arsenic** | **0.0232** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.322** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0015** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0056** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0150** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0113** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.157** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **2.18** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **0.467** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0012** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.0280** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0042** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0113** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.238** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## BS - 4 (SEM Extraction)

**1020201-22 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000113** | 3.70E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0139** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Arsenic** | **0.0718** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **1.13** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0038** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0137** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0204** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0148** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.549** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **2.59** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **1.99** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0020** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.0547** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0073** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0011** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0569** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.767** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## BS Composite (SEM Extraction)

**1020201-23 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000241** | 1.80E-5 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0169** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Arsenic** | **0.0575** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.626** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0023** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0073** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0146** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0139** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.249** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **1.86** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **1.03** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0019** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.0289** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0041** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0336** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.369** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## DMU 1 Seived (SEM Extraction)

**1020201-24 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000064** | 0.000018 | mg/kg | 1 | 20-Dec-2010 | 14-Jan-2011 | EPA 7471A | |
| **Antimony** | **0.0014** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0304** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.674** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Beryllium** | **0.0025** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Cadmium** | **0.0143** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Chromium** | **0.0965** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0491** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.447** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.615** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Manganese** | **6.68** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Molybdenum** | **0.0021** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Nickel** | **0.152** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0462** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| Silver | ND | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | U |
| **Thallium** | **0.0018** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | J |
| **Vanadium** | **0.0509** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |
| **Zinc** | **2.25** | 0.0050 | mg/kg | 10 | 20-Dec-2010 | 30-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102001 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B102001-BLK1)** | | | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | ND | 0.00400 | mg/kg | | | | | | | U |
| **Blank (B102001-BLK2)** | | | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | ND | 0.00400 | mg/kg | | | | | | | U |
| **Blank (B102001-BLK3)** | | | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | ND | 0.00400 | mg/kg | | | | | | | U |
| **LCS (B102001-BS1)** | | | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | 0.000091 | 0.00001 | mg/kg | 1.000E-4 | | 90.5 | 75-125 | | | |
| **LCS (B102001-BS2)** | | | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | 0.000089 | 0.00001 | mg/kg | 1.000E-4 | | 89.4 | 75-125 | | | |
| **LCS (B102001-BS3)** | | | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | 0.000109 | 0.00001 | mg/kg | 1.000E-4 | | 109 | 75-125 | | | |
| **Duplicate (B102001-DUP1)** | | **Source: 1020201-01** | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | ND | 1.80E-5 | mg/kg | | 2.50E-5 | | | | 25 | U |
| **Matrix Spike (B102001-MS1)** | | **Source: 1020201-01** | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | 0.000141 | 1.80E-5 | mg/kg | 1.146E-4 | 2.50E-5 | 101 | 75-125 | | | |
| **Matrix Spike Dup (B102001-MSD1)** | | **Source: 1020201-01** | | Prepared: 20-Dec-2010 Analyzed: 14-Jan-2011 | | | | | | |
| Mercury | 0.00015 | 1.80E-5 | mg/kg | 1.146E-4 | 2.50E-5 | 109 | 75-125 | 7.67 | 25 | |
| **Batch B102002 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B102002-BLK1)** | | | | Prepared: 20-Dec-2010 Analyzed: 30-Dec-2010 | | | | | | |
| Antimony | ND | 0.0050 | mg/kg | | | | | | | U |
| Arsenic | ND | 0.0050 | mg/kg | | | | | | | U |
| Barium | ND | 0.0050 | mg/kg | | | | | | | U |
| Beryllium | ND | 0.0050 | mg/kg | | | | | | | U |
| Cadmium | ND | 0.0050 | mg/kg | | | | | | | U |
| Chromium | ND | 0.0050 | mg/kg | | | | | | | U |
| Cobalt | ND | 0.0050 | mg/kg | | | | | | | U |
| Copper | ND | 0.0050 | mg/kg | | | | | | | U |
| Lead | ND | 0.0050 | mg/kg | | | | | | | U |
| Manganese | ND | 0.0050 | mg/kg | | | | | | | U |
| Molybdenum | ND | 0.0050 | mg/kg | | | | | | | U |
| Nickel | ND | 0.0050 | mg/kg | | | | | | | U |
| Selenium | ND | 0.0050 | mg/kg | | | | | | | U |
| Silver | ND | 0.0050 | mg/kg | | | | | | | U |
| Thallium | ND | 0.0050 | mg/kg | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102002 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B102002-BLK1)** | | | | Prepared: 20-Dec-2010 Analyzed: 30-Dec-2010 | | | | | | |
| Vanadium | ND | 0.0050 | mg/kg | | | | | | | U |
| Zinc | ND | 0.0050 | mg/kg | | | | | | | U |
| **Blank (B102002-BLK2)** | | | | Prepared: 20-Dec-2010 Analyzed: 03-Jan-2011 | | | | | | |
| Antimony | ND | 0.0050 | mg/kg | | | | | | | U |
| Arsenic | ND | 0.0050 | mg/kg | | | | | | | U |
| Barium | ND | 0.0050 | mg/kg | | | | | | | U |
| Beryllium | ND | 0.0050 | mg/kg | | | | | | | U |
| Cadmium | ND | 0.0050 | mg/kg | | | | | | | U |
| Chromium | ND | 0.0050 | mg/kg | | | | | | | U |
| Cobalt | ND | 0.0050 | mg/kg | | | | | | | U |
| Copper | ND | 0.0050 | mg/kg | | | | | | | U |
| Lead | ND | 0.0050 | mg/kg | | | | | | | U |
| Manganese | ND | 0.0050 | mg/kg | | | | | | | U |
| Molybdenum | ND | 0.0050 | mg/kg | | | | | | | U |
| Nickel | ND | 0.0050 | mg/kg | | | | | | | U |
| Selenium | ND | 0.0050 | mg/kg | | | | | | | U |
| Silver | ND | 0.0050 | mg/kg | | | | | | | U |
| Thallium | ND | 0.0050 | mg/kg | | | | | | | U |
| Vanadium | ND | 0.0050 | mg/kg | | | | | | | U |
| Zinc | ND | 0.0050 | mg/kg | | | | | | | U |
| **LCS (B102002-BS1)** | | | | Prepared: 20-Dec-2010 Analyzed: 30-Dec-2010 | | | | | | |
| Antimony | 3.63 | 0.0050 | mg/kg | 4.000 | | 90.9 | 80-120 | | | |
| Arsenic | 3.54 | 0.0050 | mg/kg | 4.000 | | 88.6 | 80-120 | | | |
| Barium | 3.47 | 0.0050 | mg/kg | 4.000 | | 86.7 | 80-120 | | | |
| Beryllium | 3.57 | 0.0050 | mg/kg | 4.000 | | 89.3 | 80-120 | | | |
| Cadmium | 3.61 | 0.0050 | mg/kg | 4.000 | | 90.3 | 80-120 | | | |
| Chromium | 3.69 | 0.0050 | mg/kg | 4.000 | | 92.1 | 80-120 | | | |
| Cobalt | 3.56 | 0.0050 | mg/kg | 4.000 | | 89.0 | 80-120 | | | |
| Copper | 3.52 | 0.0050 | mg/kg | 4.000 | | 87.9 | 80-120 | | | |
| Lead | 3.53 | 0.0050 | mg/kg | 4.000 | | 88.2 | 80-120 | | | |
| Manganese | 4.03 | 0.0050 | mg/kg | 4.000 | | 101 | 80-120 | | | |
| Molybdenum | 3.58 | 0.0050 | mg/kg | 4.000 | | 89.6 | 80-120 | | | |
| Nickel | 3.50 | 0.0050 | mg/kg | 4.000 | | 87.5 | 80-120 | | | |
| Selenium | 3.45 | 0.0050 | mg/kg | 4.000 | | 86.2 | 80-120 | | | |
| Silver | 3.37 | 0.0050 | mg/kg | 4.000 | | 84.2 | 80-120 | | | |
| Thallium | 3.72 | 0.0050 | mg/kg | 4.000 | | 93.1 | 80-120 | | | |
| Vanadium | 3.67 | 0.0050 | mg/kg | 4.000 | | 91.8 | 80-120 | | | |
| Zinc | 3.57 | 0.0050 | mg/kg | 4.000 | | 89.1 | 80-120 | | | |

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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102002 - Default Prep Metals** | | | | | | | | | | |
| **LCS (B102002-BS2)** | | | | Prepared: 20-Dec-2010 Analyzed: 03-Jan-2011 | | | | | | |
| Antimony | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Arsenic | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Barium | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Beryllium | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Cadmium | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Chromium | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Cobalt | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Copper | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Lead | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Manganese | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Molybdenum | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Nickel | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Selenium | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Silver | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Thallium | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Vanadium | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| Zinc | ND | 0.0050 | mg/kg | | | | 80-120 | | | U |
| **Duplicate (B102002-DUP1)** | | **Source: 1020201-01** | | Prepared: 20-Dec-2010 Analyzed: 30-Dec-2010 | | | | | | |
| Antimony | 0.0015 | 0.0050 | mg/kg | | 0.0017 | | | 11.6 | 20 | J |
| Arsenic | 0.0126 | 0.0050 | mg/kg | | 0.0143 | | | 13.1 | 20 | |
| Barium | 0.373 | 0.0050 | mg/kg | | 0.377 | | | 1.07 | 20 | |
| Beryllium | 0.0015 | 0.0050 | mg/kg | | 0.0015 | | | 4.16 | 20 | J |
| Cadmium | 0.0064 | 0.0050 | mg/kg | | 0.0064 | | | 0.719 | 20 | |
| Chromium | 0.0482 | 0.0050 | mg/kg | | 0.0522 | | | 7.97 | 20 | |
| Cobalt | 0.0258 | 0.0050 | mg/kg | | 0.0264 | | | 2.31 | 20 | |
| Copper | 0.179 | 0.0050 | mg/kg | | 0.184 | | | 3.25 | 20 | |
| Lead | 0.294 | 0.0050 | mg/kg | | 0.286 | | | 2.70 | 20 | |
| Manganese | 3.66 | 0.0050 | mg/kg | | 3.79 | | | 3.46 | 20 | |
| Molybdenum | 0.0017 | 0.0050 | mg/kg | | 0.0019 | | | 12.4 | 20 | J |
| Nickel | 0.0735 | 0.0050 | mg/kg | | 0.0786 | | | 6.73 | 20 | |
| Selenium | 0.0114 | 0.0050 | mg/kg | | 0.0140 | | | 20.6 | 20 | |
| Silver | ND | 0.0050 | mg/kg | | ND | | | | 20 | U |
| Thallium | ND | 0.0050 | mg/kg | | ND | | | | 20 | U |
| Vanadium | 0.0190 | 0.0050 | mg/kg | | 0.0141 | | | 30.1 | 20 | |
| Zinc | 1.14 | 0.0050 | mg/kg | | 1.15 | | | 0.787 | 20 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102002 - Default Prep Metals** | | | | | | | | | | |
| **Matrix Spike (B102002-MS1)** | | **Source: 1020201-01** | | Prepared: 20-Dec-2010 Analyzed: 30-Dec-2010 | | | | | | |
| Antimony | 0.190 | 0.0050 | mg/kg | 0.1910 | 0.0017 | 98.7 | 80-120 | | | |
| Arsenic | 0.209 | 0.0050 | mg/kg | 0.1910 | 0.0143 | 102 | 80-120 | | | |
| Barium | 0.523 | 0.0050 | mg/kg | 0.1910 | 0.377 | 76.4 | 80-120 | | | |
| Beryllium | 0.119 | 0.0050 | mg/kg | 0.1910 | 0.0015 | 61.5 | 80-120 | | | |
| Cadmium | 0.187 | 0.0050 | mg/kg | 0.1910 | 0.0064 | 94.7 | 80-120 | | | |
| Chromium | 0.227 | 0.0050 | mg/kg | 0.1910 | 0.0522 | 91.6 | 80-120 | | | |
| Cobalt | 0.203 | 0.0050 | mg/kg | 0.1910 | 0.0264 | 92.4 | 80-120 | | | |
| Copper | 0.349 | 0.0050 | mg/kg | 0.1910 | 0.184 | 86.4 | 80-120 | | | |
| Lead | 0.461 | 0.0050 | mg/kg | 0.1910 | 0.286 | 92.0 | 80-120 | | | |
| Manganese | 3.83 | 0.0050 | mg/kg | 0.1910 | 3.79 | 25.1 | 80-120 | | | |
| Molybdenum | 0.182 | 0.0050 | mg/kg | 0.1910 | 0.0019 | 94.1 | 80-120 | | | |
| Nickel | 0.247 | 0.0050 | mg/kg | 0.1910 | 0.0786 | 88.3 | 80-120 | | | |
| Selenium | 0.199 | 0.0050 | mg/kg | 0.1910 | 0.0140 | 96.9 | 80-120 | | | |
| Silver | 0.178 | 0.0050 | mg/kg | 0.1910 | ND | 93.0 | 80-120 | | | |
| Thallium | 0.206 | 0.0050 | mg/kg | 0.1910 | ND | 108 | 80-120 | | | |
| Vanadium | 0.200 | 0.0050 | mg/kg | 0.1910 | 0.0141 | 97.2 | 80-120 | | | |
| Zinc | 1.33 | 0.0050 | mg/kg | 0.1910 | 1.15 | 93.6 | 80-120 | | | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 03-Feb-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

26 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| CH - 1 | 0111202-01 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 2 | 0111202-02 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 3 | 0111202-03 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 4 | 0111202-04 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 | 0111202-05 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 DUP | 0111202-06 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6a | 0111202-07 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6b | 0111202-08 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7a | 0111202-09 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7b | 0111202-10 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 8 | 0111202-11 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 1 (composite) | 0111202-12 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 2 (composite) | 0111202-13 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 1 | 0111202-14 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 2 | 0111202-15 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 3 | 0111202-16 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 4 | 0111202-17 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB Composite | 0111202-18 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 1 | 0111202-19 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 2 | 0111202-20 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 3 | 0111202-21 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS 4 | 0111202-22 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS Composite | 0111202-23 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU Sieved Composite | 0111202-24 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 1

**0111202-01 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **2.91** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **7.39** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **alpha-Chlordane** | **4.62** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| delta-BHC | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Dieldrin | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlorodane [2C]** | **4.18** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.6 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 1

**0111202-01 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *111 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 2

**0111202-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.95** | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **7.54** | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **alpha-Chlordane** | **11.6** | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| delta-BHC | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **12.0** | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **9.97** | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.31 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *45.4 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 2

**0111202-02 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *82.2 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 3

**0111202-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **3.18** | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **7.68** | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **alpha-Chlordane** | **1.94** | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.76** | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **1.86** | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **3.74** | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.29 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *56.0 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 3

**0111202-03 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *60.5 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 4

**0111202-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **2.35** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **4.43** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.43** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **1.32** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **1.83** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.5 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## CH - 4

**0111202-04 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *67.1 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 5

**0111202-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **2.36** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **4.39** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.40** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **1.37** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlorodane [2C]** | **2.62** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *53.7 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## CH - 5

**0111202-05 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *70.2 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.29** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **6.71** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **3.12** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **1.81** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **3.66** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *55.9 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *84.9 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## CH - 6a

**0111202-07 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **2.83** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **5.18** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.57** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **1.62** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **3.00** | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.28 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *51.8 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## CH - 6a

**0111202-07 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *84.0 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **1.49** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.58** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.15** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **0.87** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **1.47** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *54.4 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *81.5 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **1.53** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **4.05** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **1.68** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **0.66** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **1.26** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *47.0 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | *55.1 %* | *55-130* | | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 7b

**0111202-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **1.62** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **1.72** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **1.88** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **0.88** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **1.59** | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.24 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *44.7 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 7b

**0111202-10 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *65.8 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 8

**0111202-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4'-DDD [2C]** | **5.36** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **8.29** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **7.98** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **4.58** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **1.27** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **4.41** | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.26 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *47.6 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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**Vicksburg, MS 39180-6199**

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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 8

**0111202-11 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *72.4 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

USACE ERDC-EP-C
3909 Halls Ferry Road
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.31** | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **8.62** | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.95** | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin** | **2.04** | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **4.88** | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.33 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *55.7 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *88.7 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **3.81** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **6.25** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.11** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin** | **1.44** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **3.84** | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.25 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *55.1 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *88.8 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **0.89** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **2.46** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **0.78** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin** | **0.50** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlorodane [2C]** | **0.92** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *51.4 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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**3909 Halls Ferry Road**
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *156 %* | | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **1.00** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **0.33** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **0.95** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **0.87** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Dieldrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **0.27** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *44.1 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachorobiphenyl [2C]* | | *161 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## PB - 3

**0111202-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **1.37** | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **0.44** | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **0.77** | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **0.90** | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Dieldrin | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-Chlordane | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.19 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.5 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 3

**0111202-16 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachorobiphenyl [2C]* | | *160 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **2.30** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **0.99** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **1.49** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **1.68** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Dieldrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **0.58** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *46.2 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *128 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

USACE ERDC-EP-C
3909 Halls Ferry Road
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB Composite

**0111202-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4'-DDD [2C]** | **1.14** | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.40** | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **0.77** | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **1.07** | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **0.40** | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-Chlordane | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.21 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *52.0 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## PB Composite

**0111202-18 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *163 %* | | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 1

**0111202-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **1.28** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **11.4** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **3.60** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **0.19** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | J |
| Dieldrin | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-Chlordane | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *45.5 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

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## BS - 1

**0111202-19 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *99.7 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 2

**0111202-20 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4'-DDD [2C]** | **0.37** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **13.2** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **14.9** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| delta-BHC | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **0.46** | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| gamma-Chlordane | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.20 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *40.0 %* | *40-125* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 2

**0111202-20 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *126 %* | *55-130* | | *23-Nov-2010* | *16-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 3

**0111202-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **32.3** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **33.4** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| delta-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **Dieldrin** | **1.09** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| gamma-Chlordane | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *43.4 %* | *40-125* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 3

**0111202-21 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *93.9 %* | *55-130* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

USACE ERDC-EP-C
3909 Halls Ferry Road
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4'-DDD [2C]** | **5.55** | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **33.0** | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **6.84** | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| delta-BHC | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Dieldrin | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| gamma-Chlordane | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.23 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *55.6 %* | *40-125* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

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**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *106 %* | *55-130* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS Composite

**0111202-23 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **2.39** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4´-DDE** | **23.1** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4´-DDT** | **13.8** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| delta-BHC | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **Dieldrin [2C]** | **1.02** | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| gamma-Chlordane | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.22 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *44.4 %* | *40-125* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS Composite

**0111202-23 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *102 %* | *55-130* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4'-DDD [2C]** | **5.33** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.04** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **4,4'-DDT [2C]** | **7.61** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Aldrin | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-BHC | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| alpha-Chlordane | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| beta-BHC | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **delta-BHC** | **2.99** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **Dieldrin** | **1.69** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan I | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan II | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endosulfan sulfate | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin aldehyde | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Endrin ketone | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| gamma-BHC (Lindane) | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| **gamma-Chlordane** | **4.24** | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Heptachlor epoxide | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| Methoxychlor | ND | 0.27 | ug/kg dry | 1 | 23-Nov-2010 | 17-Dec-2010 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.3 %* | *40-125* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | | *73.0 %* | *55-130* | | *23-Nov-2010* | *17-Dec-2010* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012007 - EPA 3545** | | | | | | | | | | |
| **Blank (B012007-BLK1)** | | | | Prepared: 23-Nov-2010 Analyzed: 15-Dec-2010 | | | | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *4.72* | | *ug/kg wet* | *6.667* | | *70.8* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *7.55* | | *ug/kg wet* | *6.667* | | *113* | *55-130* | | | |
| **LCS (B012007-BS2)** | | | | Prepared: 23-Nov-2010 Analyzed: 15-Dec-2010 | | | | | | |
| 4,4´-DDD | 11.3 | 0.17 | ug/kg wet | 13.33 | | 84.8 | 30-135 | | | |
| 4,4'-DDE [2C] | 10.2 | 0.17 | ug/kg wet | 13.33 | | 76.8 | 70-125 | | | |
| 4,4'-DDT [2C] | 10.0 | 0.17 | ug/kg wet | 13.33 | | 75.1 | 45-140 | | | |
| Aldrin [2C] | 5.8 | 0.17 | ug/kg wet | 13.33 | | 43.8 | 45-140 | | | |
| alpha-BHC [2C] | 4.0 | 0.17 | ug/kg wet | 13.33 | | 30.3 | 60-125 | | | |
| alpha-Chlordane | 8.5 | 0.17 | ug/kg wet | 13.33 | | 63.5 | 65-120 | | | |
| beta-BHC | 8.3 | 0.17 | ug/kg wet | 13.33 | | 62.1 | 60-125 | | | |
| delta-BHC | 2.8 | 0.17 | ug/kg wet | 13.33 | | 21.0 | 55-130 | | | |
| Dieldrin | 8.7 | 0.17 | ug/kg wet | 13.33 | | 65.5 | 65-125 | | | |
| Endrin | 10.3 | 0.17 | ug/kg wet | 13.33 | | 77.1 | 60-135 | | | |
| Endrin aldehyde [2C] | 4.9 | 0.17 | ug/kg wet | 13.33 | | 36.7 | 35-145 | | | |
| Endrin ketone [2C] | 11.9 | 0.17 | ug/kg wet | 13.33 | | 89.1 | 65-135 | | | |
| gamma-BHC (Lindane) | 5.8 | 0.17 | ug/kg wet | 13.33 | | 43.5 | 60-125 | | | |
| gamma-Chlordane | 8.4 | 0.17 | ug/kg wet | 13.33 | | 63.2 | 65-125 | | | |
| Heptachlor | 7.9 | 0.17 | ug/kg wet | 13.33 | | 59.0 | 50-140 | | | |
| Heptachlor epoxide [2C] | 8.9 | 0.17 | ug/kg wet | 13.33 | | 67.1 | 65-130 | | | |
| Methoxychlor | 10.9 | 0.17 | ug/kg wet | 13.33 | | 81.6 | 55-145 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *16.6* | | *ug/kg wet* | *33.33* | | *49.9* | *60-120* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *32.0* | | *ug/kg wet* | *33.33* | | *95.9* | *55-130* | | | |
| **LCS Dup (B012007-BSD2)** | | | | Prepared: 23-Nov-2010 Analyzed: 15-Dec-2010 | | | | | | |
| 4,4'-DDD [2C] | 12.0 | 0.17 | ug/kg wet | 13.33 | | 89.8 | 30-135 | 6.87 | 30 | |
| 4,4'-DDE [2C] | 9.4 | 0.17 | ug/kg wet | 13.33 | | 70.3 | 70-125 | 8.77 | 30 | |
| 4,4'-DDT [2C] | 9.6 | 0.17 | ug/kg wet | 13.33 | | 71.8 | 45-140 | 4.61 | 30 | |
| Aldrin [2C] | 5.7 | 0.17 | ug/kg wet | 13.33 | | 42.5 | 45-140 | 2.83 | 30 | |
| alpha-BHC [2C] | 4.6 | 0.17 | ug/kg wet | 13.33 | | 34.3 | 60-125 | 12.5 | 30 | |
| alpha-Chlordane | 7.7 | 0.17 | ug/kg wet | 13.33 | | 58.1 | 65-120 | 8.81 | 30 | |
| beta-BHC | 7.7 | 0.17 | ug/kg wet | 13.33 | | 57.4 | 60-125 | 7.72 | 30 | |
| delta-BHC | 3.2 | 0.17 | ug/kg wet | 13.33 | | 24.2 | 55-130 | 14.4 | 30 | |
| Dieldrin | 8.3 | 0.17 | ug/kg wet | 13.33 | | 62.0 | 65-125 | 5.47 | 30 | |
| Endrin | 9.7 | 0.17 | ug/kg wet | 13.33 | | 72.9 | 60-135 | 5.59 | 30 | |
| Endrin aldehyde [2C] | 3.9 | 0.17 | ug/kg wet | 13.33 | | 29.1 | 35-145 | 23.1 | 30 | |
| Endrin ketone [2C] | 10.8 | 0.17 | ug/kg wet | 13.33 | | 81.2 | 65-135 | 9.33 | 30 | |
| gamma-BHC [Lindane] [2C] | 6.0 | 0.17 | ug/kg wet | 13.33 | | 44.9 | 60-125 | 9.29 | 30 | |
| gamma-Chlordane | 7.7 | 0.17 | ug/kg wet | 13.33 | | 58.0 | 65-125 | 8.54 | 30 | |
| Heptachlor | 7.0 | 0.17 | ug/kg wet | 13.33 | | 52.5 | 50-140 | 11.6 | 30 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012007 - EPA 3545** | | | | | | | | | | |
| **LCS Dup (B012007-BSD2)** | | | | Prepared: 23-Nov-2010 Analyzed: 15-Dec-2010 | | | | | | |
| Heptachlor epoxide [2C] | 8.3 | 0.17 | ug/kg wet | 13.33 | | 62.5 | 65-130 | 7.16 | 30 | |
| Methoxychlor | 10.0 | 0.17 | ug/kg wet | 13.33 | | 75.0 | 55-145 | 8.41 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *15.4* | | *ug/kg wet* | *33.33* | | *46.2* | *60-120* | | | |
| *Surrogate: Decachlorobiphenyl* | *29.3* | | *ug/kg wet* | *33.33* | | *88.0* | *55-130* | | | |
| **Matrix Spike (B012007-MS2)** | **Source: 0111202-18** | | | Prepared: 23-Nov-2010 Analyzed: 17-Dec-2010 | | | | | | |
| 4,4´-DDD | 3.7 | 0.22 | ug/kg dry | 3.478 | 1.1 | 75.0 | 30-135 | | | |
| 4,4'-DDE [2C] | 2.1 | 0.22 | ug/kg dry | 3.478 | 0.4 | 49.5 | 70-125 | | | |
| 4,4´-DDT | 3.6 | 0.22 | ug/kg dry | 3.478 | 0.8 | 81.8 | 45-140 | | | |
| Aldrin [2C] | 1.4 | 0.22 | ug/kg dry | 3.478 | ND | 41.6 | 45-140 | | | |
| alpha-BHC | 1.0 | 0.22 | ug/kg dry | 3.478 | ND | 30.1 | 60-125 | | | |
| alpha-Chlordane [2C] | 1.6 | 0.22 | ug/kg dry | 3.478 | ND | 45.5 | 35-120 | | | |
| beta-BHC | 1.3 | 0.22 | ug/kg dry | 3.478 | ND | 36.0 | 60-125 | | | |
| delta-BHC [2C] | 2.1 | 0.22 | ug/kg dry | 3.478 | 1.0 | 32.5 | 55-130 | | | |
| Dieldrin [2C] | 3.3 | 0.22 | ug/kg dry | 3.478 | 0.4 | 82.4 | 65-125 | | | |
| Endrin | 1.6 | 0.22 | ug/kg dry | 3.478 | ND | 46.1 | 60-135 | | | |
| Endrin aldehyde [2C] | 2.4 | 0.22 | ug/kg dry | 3.478 | ND | 67.7 | 35-145 | | | |
| Endrin ketone | 2.6 | 0.22 | ug/kg dry | 3.478 | ND | 75.2 | 65-135 | | | |
| gamma-BHC [Lindane] [2C] | 1.5 | 0.22 | ug/kg dry | 3.478 | ND | 41.9 | 60-125 | | | |
| gamma-Chlorodane [2C] | 2.8 | 0.22 | ug/kg dry | 3.478 | ND | 79.2 | 65-125 | | | |
| Heptachlor [2C] | 1.3 | 0.22 | ug/kg dry | 3.478 | ND | 37.8 | 50-140 | | | |
| Heptachlor epoxide | 2.0 | 0.22 | ug/kg dry | 3.478 | ND | 57.6 | 65-130 | | | |
| Methoxychlor | 2.8 | 0.22 | ug/kg dry | 3.478 | ND | 80.3 | 55-145 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.27* | | *ug/kg dry* | *8.695* | | *26.1* | *50-110* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.84* | | *ug/kg dry* | *8.695* | | *78.7* | *55-130* | | | |
| **Matrix Spike Dup (B012007-MSD2)** | **Source: 0111202-18** | | | Prepared: 23-Nov-2010 Analyzed: 17-Dec-2010 | | | | | | |
| 4,4´-DDD | 2.7 | 0.22 | ug/kg dry | 3.478 | 1.1 | 46.3 | 30-135 | 31.3 | 30 | |
| 4,4´-DDE | 1.5 | 0.22 | ug/kg dry | 3.478 | 0.4 | 31.7 | 70-125 | 31.5 | 30 | |
| 4,4´-DDT | 2.3 | 0.22 | ug/kg dry | 3.478 | 0.8 | 42.9 | 45-140 | 46.2 | 30 | |
| Aldrin [2C] | 1.1 | 0.22 | ug/kg dry | 3.478 | ND | 32.7 | 45-140 | 23.8 | 30 | |
| alpha-BHC [2C] | 0.9 | 0.22 | ug/kg dry | 3.478 | ND | 25.6 | 60-125 | 14.5 | 30 | |
| alpha-Chlordane [2C] | 1.5 | 0.22 | ug/kg dry | 3.478 | ND | 42.8 | 35-120 | 6.02 | 30 | |
| beta-BHC | 0.9 | 0.22 | ug/kg dry | 3.478 | ND | 24.6 | 60-125 | 37.8 | 30 | |
| delta-BHC [2C] | 1.7 | 0.22 | ug/kg dry | 3.478 | 1.0 | 21.7 | 55-130 | 19.5 | 30 | |
| Dieldrin [2C] | 2.8 | 0.22 | ug/kg dry | 3.478 | 0.4 | 69.6 | 65-125 | 14.6 | 30 | |
| Endrin [2C] | 2.4 | 0.22 | ug/kg dry | 3.478 | ND | 69.9 | 60-135 | 42.2 | 30 | |
| Endrin aldehyde [2C] | 2.1 | 0.22 | ug/kg dry | 3.478 | ND | 59.2 | 35-145 | 13.3 | 30 | |
| Endrin ketone | 2.4 | 0.22 | ug/kg dry | 3.478 | ND | 69.6 | 65-135 | 7.77 | 30 | |
| gamma-BHC [Lindane] [2C] | 1.5 | 0.22 | ug/kg dry | 3.478 | ND | 43.1 | 60-125 | 2.86 | 30 | |
| gamma-Chlorodane [2C] | 2.1 | 0.22 | ug/kg dry | 3.478 | ND | 60.6 | 65-125 | 26.6 | 30 | |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012007 - EPA 3545** | | | | | | | | | | |
| **Matrix Spike Dup (B012007-MSD2)** | **Source: 0111202-18** | | | Prepared: 23-Nov-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Heptachlor [2C] | 1.2 | 0.22 | ug/kg dry | 3.478 | ND | 33.4 | 50-140 | 12.2 | 30 | |
| Heptachlor epoxide | 1.8 | 0.22 | ug/kg dry | 3.478 | ND | 50.5 | 65-130 | 13.1 | 30 | |
| Methoxychlor | 3.6 | 0.22 | ug/kg dry | 3.478 | ND | 104 | 55-145 | 25.9 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.12* | | *ug/kg dry* | *8.695* | | *24.3* | *50-110* | | | |
| *Surrogate: Decachlorobiphenyl* | *7.99* | | *ug/kg dry* | *8.695* | | *91.9* | *55-130* | | | |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

26 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| CH - 1 | 0111202-01 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 2 | 0111202-02 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 3 | 0111202-03 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 4 | 0111202-04 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 | 0111202-05 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 DUP | 0111202-06 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6a | 0111202-07 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6b | 0111202-08 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7a | 0111202-09 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7b | 0111202-10 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 8 | 0111202-11 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 1 (composite) | 0111202-12 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 2 (composite) | 0111202-13 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 1 | 0111202-14 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 2 | 0111202-15 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 3 | 0111202-16 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 4 | 0111202-17 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB Composite | 0111202-18 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 1 | 0111202-19 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 2 | 0111202-20 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 3 | 0111202-21 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS 4 | 0111202-22 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS Composite | 0111202-23 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU Sieved Composite | 0111202-24 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 1

**0111202-01 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 2.59 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.59 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.59 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.59 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.59 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.59 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.59 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 2

**0111202-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 3

**0111202-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.47 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.47 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.47 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.47 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.47 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.47 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.47 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 4

**0111202-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.62 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.62 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.62 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.62 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.62 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.62 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.62 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 5

**0111202-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.52 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.52 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.52 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.52 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.52 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.52 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.52 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 6a

**0111202-07 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.64 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.64 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.64 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.64 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.64 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.64 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.64 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 7b

**0111202-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.60 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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**3909 Halls Ferry Road**
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|---|---|---|
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| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## CH - 8

**0111202-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.78 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.78 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.78 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.78 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.78 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.78 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.78 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.67 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 2.63 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.63 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.63 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.63 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.63 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.63 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.63 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.28 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.28 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.28 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.28 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.28 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| **PCB 1254 [2C]** | **22.8** | 3.28 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | |
| PCB-1260 | ND | 3.28 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.29 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.29 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.29 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.29 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.29 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| **PCB 1254 [2C]** | **10.7** | 3.29 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | |
| PCB-1260 | ND | 3.29 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 3

**0111202-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.15 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.15 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.15 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.15 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.15 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| **PCB 1254 [2C]** | **9.00** | 3.15 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | |
| PCB-1260 | ND | 3.15 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.30 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.30 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.30 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.30 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.30 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| **PCB 1254 [2C]** | **26.7** | 3.30 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | |
| PCB-1260 | ND | 3.30 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## PB Composite

**0111202-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.19 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.19 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.19 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.19 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.19 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| **PCB 1254 [2C]** | **15.0** | 3.19 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | |
| PCB-1260 | ND | 3.19 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

**USACE ERDC-EP-C**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 1

**0111202-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 2

**0111202-20 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS - 3

**0111202-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.17 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.17 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.17 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.17 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.17 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 3.17 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 3.17 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.21 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.21 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.21 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.21 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.21 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 3.21 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 3.21 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## BS Composite

**0111202-23 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 3.18 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1221 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1232 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1242 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1248 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1254 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |
| PCB-1260 | ND | 2.69 | ug/kg | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA8082 | U |

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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012007 - EPA 3545** | | | | | | | | | | |
| **Blank (B012007-BLK1)** | | | | Prepared: 23-Nov-2010 Analyzed: 16-Dec-2010 | | | | | | |
| PCB-1016 | ND | 3.30 | ug/kg | | | | | | | U |
| PCB-1221 | ND | 3.30 | ug/kg | | | | | | | U |
| PCB-1232 | ND | 3.30 | ug/kg | | | | | | | U |
| PCB-1242 | ND | 3.30 | ug/kg | | | | | | | U |
| PCB-1248 | ND | 3.30 | ug/kg | | | | | | | U |
| PCB-1254 | ND | 3.30 | ug/kg | | | | | | | U |
| PCB-1260 | ND | 3.30 | ug/kg | | | | | | | U |
| **LCS (B012007-BS1)** | | | | Prepared: 23-Nov-2010 Analyzed: 16-Dec-2010 | | | | | | |
| PCB 1016 [2C] | 23.9 | 3.30 | ug/kg | 33.07 | | 72.2 | 60-130 | | | |
| PCB 1260 [2C] | 28.5 | 3.30 | ug/kg | 33.07 | | 86.3 | 65-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.89* | | *ug/kg* | *6.667* | | *73.4* | *70-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *8.55* | | *ug/kg* | *6.667* | | *128* | *70-120* | | | |
| **Matrix Spike (B012007-MS1)** | **Source: 0111202-18** | | | Prepared: 23-Nov-2010 Analyzed: 16-Dec-2010 | | | | | | |
| PCB 1016 [2C] | 24.6 | 3.42 | ug/kg | 34.30 | ND | 71.8 | 40-140 | | | |
| PCB-1260 | 29.6 | 3.42 | ug/kg | 34.30 | ND | 86.3 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.35* | | *ug/kg* | *6.916* | | *48.4* | *70-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *9.92* | | *ug/kg* | *6.916* | | *143* | *70-120* | | | |
| **Matrix Spike Dup (B012007-MSD1)** | **Source: 0111202-18** | | | Prepared: 23-Nov-2010 Analyzed: 16-Dec-2010 | | | | | | |
| PCB 1016 [2C] | 24.2 | 3.26 | ug/kg | 32.67 | ND | 74.2 | 40-140 | 1.54 | 30 | |
| PCB-1260 | 32.0 | 3.26 | ug/kg | 32.67 | ND | 98.0 | 40-140 | 7.85 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.91* | | *ug/kg* | *6.588* | | *44.2* | *70-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *10.7* | | *ug/kg* | *6.588* | | *162* | *70-120* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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28 January 2011

James Miller
Buffalo District
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-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| CH - 1 | 0111202-01 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 2 | 0111202-02 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 3 | 0111202-03 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 4 | 0111202-04 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 | 0111202-05 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 DUP | 0111202-06 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6a | 0111202-07 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6b | 0111202-08 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7a | 0111202-09 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7b | 0111202-10 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 8 | 0111202-11 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 1 (composite) | 0111202-12 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 2 (composite) | 0111202-13 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 1 | 0111202-14 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 2 | 0111202-15 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 3 | 0111202-16 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 4 | 0111202-17 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB Composite | 0111202-18 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 1 | 0111202-19 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 2 | 0111202-20 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 3 | 0111202-21 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS 4 | 0111202-22 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS Composite | 0111202-23 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU Sieved Composite | 0111202-24 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |

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## CH - 1

**0111202-01 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **73.8** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Aniline** | **180** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **115** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Hexachloroethane | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **755** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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## CH - 1

**0111202-01 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **615** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **222** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **107** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Dimethyl phthalate | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **250** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **263** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 1

**0111202-01 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **418** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1720** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **644** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **115** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **3710** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **2690** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **69.7** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1370** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **2060** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 1

**0111202-01 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **1570** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **320** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1430** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **1110** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **1190** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **1390** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **189** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **1190** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *57.0 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *48.0 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *91.2 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *79.2 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *93.6 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *90.0 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 1

**0111202-01RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **32.8** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **87.6** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachloroethane | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **558** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
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## CH - 1

**0111202-01RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **495** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **269** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **151** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **70.0** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Dimethyl phthalate | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **296** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **287** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

USACE ERDC-EP-C
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 1

**0111202-01RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **466** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pentachlorophenol** | **442** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Phenanthrene** | **1570** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **440** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **39.4** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **4650** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **2310** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **46.0** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1170** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1670** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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**0111202-01RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **930** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **326** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1080** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **908** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **891** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **626** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **76.6** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **519** | 54.5 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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**0111202-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **95.9** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **140** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Hexachloroethane | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **850** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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## CH - 2

**0111202-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **266** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **218** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **61.0** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **43.6** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 3-Nitroaniline | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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## CH - 2

**0111202-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **65.4** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1890** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **279** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **87.2** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **3950** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **2100** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **56.7** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1740** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1920** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

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**0111202-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **1460** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **340** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1560** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **1090** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **1210** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **1440** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **222** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **1180** | 109 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *88.2 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *75.0 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *56.4 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *40.8 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *119 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *81.6 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

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**0111202-02RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **49.9** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **34.9** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Hexachloroethane | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **932** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-02RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **145** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **312** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **69.8** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **32.4** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **32.4** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 3-Nitroaniline | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **29.9** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-02RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **62.3** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1650** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **229** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **57.3** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **4140** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1800** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **69.8** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1240** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1840** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 2

**0111202-02RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **1280** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **404** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1520** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **1010** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **1040** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **888** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **115** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **743** | 62.1 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 3

**0111202-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **103** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Aniline** | **254** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **194** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Hexachloroethane | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **1830** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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## CH - 3

**0111202-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **159** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **90.4** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **60.3** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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**0111202-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **56.0** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1540** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **241** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **116** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **2960** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1430** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **960** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1390** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

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**0111202-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **1620** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **357** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1060** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **685** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **823** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **990** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **155** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **818** | 107 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *76.8 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *64.8 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *68.4 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *39.6 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *118 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *70.8 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

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**0111202-03RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **52.3** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **75.0** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachloroethane | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **1800** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-03RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **97.7** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **298** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **88.6** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **34.1** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **90.9** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **105** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-03RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **191** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pentachlorophenol** | **443** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Phenanthrene** | **1430** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **311** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **84.1** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **3940** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **3270** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **114** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1210** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1890** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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## CH - 3

**0111202-03RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **1550** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **373** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1470** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **1020** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **1070** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **931** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **127** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **770** | 56.6 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 4

**0111202-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **39.3** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **161** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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**0111202-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **51.1** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 4-Chloroaniline | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **58.9** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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**0111202-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **47.1** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **397** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **86.4** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **62.9** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **1070** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **668** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **318** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **503** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

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**0111202-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **358** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **275** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **365** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **267** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **291** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **365** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **55.0** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **310** | 97.8 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *55.8 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *51.0 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *74.4 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *69.6 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *72.0 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *60.0 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

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**0111202-04RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **28.3** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **154** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-04RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 2,4-Dichlorophenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **66.7** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **295** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **90.9** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **30.3** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **50.5** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **70.7** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-04RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **119** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pentachlorophenol** | **390** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Phenanthrene** | **955** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **168** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **34.3** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **2940** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **2770** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **64.6** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **891** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1450** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 4

**0111202-04RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **656** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **299** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1130** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **877** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **774** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **667** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **88.9** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **562** | 50.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 5

**0111202-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **59.4** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **279** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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## CH - 5

**0111202-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **108** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **108** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **40.9** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **59.4** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 3-Nitroaniline | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **44.6** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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**0111202-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **55.7** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **691** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **152** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **100** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **2160** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1040** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **527** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **851** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

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## CH - 5

**0111202-05 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **802** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **279** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **624** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **464** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **487** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **657** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **100** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **561** | 92.5 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *70.8 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *61.8 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *103 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *72.0 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *89.4 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *61.2 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

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**0111202-05RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **30.1** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **251** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-05RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **90.4** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **284** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **126** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **26.4** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **75.4** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **81.0** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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**0111202-05RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **124** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1260** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **224** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **45.2** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **4440** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **3080** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **908** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1550** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 5

**0111202-05RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **853** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **279** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1100** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **840** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **767** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **759** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **102** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **650** | 46.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **61.7** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **704** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **115** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **74.1** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **844** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **98.8** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **49.4** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **1540** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **881** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **531** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **844** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **807** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **305** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **650** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **440** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **490** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **613** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **90.6** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **510** | 102 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *64.8 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *59.4 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *63.6 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *33.6 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *103 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *67.2 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

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## CH - 5 DUP

**0111202-06RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **56.3** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Aniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **459** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 5 DUP

**0111202-06RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **95.2** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **303** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **71.4** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **26.0** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 3-Nitroaniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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## CH - 5 DUP

**0111202-06RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **41.1** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1530** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **162** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **45.4** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **4330** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1680** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **963** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1570** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 5 DUP

**0111202-06RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **1050** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **329** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1170** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **846** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **790** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **664** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **90.9** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **539** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6a

**0111202-07 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **59.2** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **1,4-Dichlorobenzene** | **98.6** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **249** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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## CH - 6a

**0111202-07 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **615** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **343** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **59.2** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **469** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **442** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

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## CH - 6a

**0111202-07 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **533** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **5660** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **754** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **75.0** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **6450** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **5890** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **59.2** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **2470** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **3170** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

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## CH - 6a

**0111202-07 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **1200** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **296** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **2240** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **1550** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **1860** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **1980** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **327** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **1580** | 98.2 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *76.2 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *61.8 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *44.4 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *82.8 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *88.8 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *96.0 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

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## CH - 6a

**0111202-07RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **58.4** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Aniline | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **1,4-Dichlorobenzene** | **31.4** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 1,2-Dichlorobenzene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **600** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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## CH - 6a

**0111202-07RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **98.8** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **323** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **128** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **78.6** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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## CH - 6a

**0111202-07RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **121** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1180** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **218** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **53.9** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **4350** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **2900** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **887** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1480** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 6a

**0111202-07RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **1120** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **364** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1030** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **800** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **721** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **710** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **94.3** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **600** | 55.9 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenol** | **50.3** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **310** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **81.3** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| 4-Chloroaniline | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **50.3** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **627** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Anthracene** | **77.5** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **50.3** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **1360** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **600** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **407** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Chrysene** | **635** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **593** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **275** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **484** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **310** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **352** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **430** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **65.8** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **360** | 96.4 | ug/kg dry | 1 | 14-Dec-2010 | 17-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *52.2 %* | *35-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *50.4 %* | *40-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *33.6 %* | *35-100* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *30.0 %* | *45-105* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *99.0 %* | *35-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *56.4 %* | *30-125* | | *14-Dec-2010* | *17-Dec-2010* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **172** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Aniline | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **554** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **90.3** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **298** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **92.4** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **63.0** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **60.9** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **92.4** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **844** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **166** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **56.7** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **2680** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1010** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **29.4** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **491** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **856** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 6b

**0111202-08RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **336** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **290** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **523** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **390** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **372** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **323** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **44.1** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **260** | 52.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenol** | **79.1** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **654** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **133** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **104** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **50.3** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **35.9** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **57.5** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1060** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Anthracene** | **144** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **53.9** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **1920** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1450** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **46.7** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **924** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1270** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **1280** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **288** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1020** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **708** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **773** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **938** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **137** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **773** | 89.5 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *75.0 %* | *35-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *67.2 %* | *40-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *58.8 %* | *35-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *49.2 %* | *45-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *107 %* | *35-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *88.8 %* | *30-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |

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## CH - 7a

**0111202-09RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **167** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Aniline | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **1,3-Dichlorobenzene** | **46.0** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **1,4-Dichlorobenzene** | **46.0** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 1,2-Dichlorobenzene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **140** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7a

**0111202-09RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **326** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **247** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **194** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **23.0** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **215** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **230** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
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## CH - 7a

**0111202-09RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **305** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **2010** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **328** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **47.9** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **3260** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1630** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **34.5** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **827** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1170** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7a

**0111202-09RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **453** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **270** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **641** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **554** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **527** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **412** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **61.4** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **315** | 47.8 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7b

**0111202-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenol** | **71.0** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **734** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7b

**0111202-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **167** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **121** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **56.8** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **92.3** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **67.4** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7b

**0111202-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **92.3** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **1610** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Anthracene** | **287** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **121** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **4110** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1650** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **969** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1360** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |

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## CH - 7b

**0111202-10 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **1230** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **273** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **915** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **774** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **795** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **944** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **145** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **766** | 88.4 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *60.6 %* | *35-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *55.2 %* | *40-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *45.6 %* | *35-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *55.2 %* | *45-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *111 %* | *35-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *70.8 %* | *30-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |

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## CH - 7b

**0111202-10RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Phenol** | **228** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Aniline | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **2350** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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## CH - 7b

**0111202-10RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **135** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **245** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **93.0** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **24.7** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **96.8** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **112** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |

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## CH - 7b

**0111202-10RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **159** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pentachlorophenol** | **368** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Phenanthrene** | **1210** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Anthracene** | **228** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **43.7** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **2510** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1260** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **41.8** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **592** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Chrysene** | **920** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 7b

**0111202-10RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **668** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **285** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **531** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **450** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **397** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **298** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **43.7** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **230** | 47.3 | ug/kg dry | 1 | 23-Nov-2010 | 15-Dec-2010 | EPA 8270C | |

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## CH - 8

**0111202-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenol** | **69.9** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **499** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## CH - 8

**0111202-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **133** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **76.8** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

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## CH - 8

**0111202-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **34.9** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **716** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Anthracene** | **87.3** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **41.9** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **1310** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **727** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **534** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Chrysene** | **681** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |

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## CH - 8

**0111202-11 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **807** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **258** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **527** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **419** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **409** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **447** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **66.4** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **360** | 87.0 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *60.0 %* | *35-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *58.8 %* | *40-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *%* | *35-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | *U* |
| *Surrogate: 2-Fluorobiphenyl* | | *31.2 %* | *45-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *89.4 %* | *35-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *58.8 %* | *30-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |

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## CH - 8

**0111202-11RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenol** | **106** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Aniline | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **468** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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**0111202-11RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **129** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **288** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **79.7** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **28.6** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **26.6** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 3-Nitroaniline | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **32.7** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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**0111202-11RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **63.4** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pentachlorophenol** | **401** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Phenanthrene** | **1240** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **131** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **30.7** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **2780** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1240** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **38.8** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **920** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1260** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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**0111202-11RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **793** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **296** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **948** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **766** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **695** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **566** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **67.4** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **464** | 50.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

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## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenol** | **82.7** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **832** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **244** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **147** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **133** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Dimethyl phthalate | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **156** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **106** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **188** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **2190** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Anthracene** | **593** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **133** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **5720** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1930** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1540** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1680** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **1430** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **358** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1330** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **933** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **1060** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **1250** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **198** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **1040** | 114 | ug/kg dry | 1 | 14-Dec-2010 | 18-Dec-2010 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *40.8 %* | *35-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *31.8 %* | *40-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *58.8 %* | *35-100* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *52.8 %* | *45-105* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *91.2 %* | *35-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *52.8 %* | *30-125* | | *14-Dec-2010* | *18-Dec-2010* | *EPA 8270C* | |

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## DMU 1 (composite)

**0111202-12RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenol** | **44.2** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **96.2** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachloroethane | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **3510** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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## DMU 1 (composite)

**0111202-12RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **322** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **421** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **172** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **57.2** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **307** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **231** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 (composite)

**0111202-12RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **343** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Diethyl phthalate** | **39.0** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 4-Nitroaniline | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **2280** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **507** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **62.4** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **7980** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **2410** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1300** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1970** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 (composite)

**0111202-12RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **1070** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **387** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1380** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **1170** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **1040** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **733** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **101** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **587** | 64.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **94.2** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Aniline | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **4-Methylphenol** | **680** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **202** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **150** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthylene** | **48.8** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dimethyl phthalate | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **143** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 3-Nitroaniline | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **181** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **206** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **1200** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **213** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **66.3** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Fluoranthene** | **2230** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **2420** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **59.3** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **827** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **1170** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **939** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Di-n-octyl phthalate** | **45.4** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (b) fluoranthene** | **1010** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **789** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **771** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **911** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **143** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **820** | 86.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *63.0 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *52.8 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *44.4 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *98.4 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *89.4 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *101 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenol** | **52.9** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Aniline | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **983** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 2,4-Dichlorophenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **119** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **364** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **106** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **47.0** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **82.2** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **99.8** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **153** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Diethyl phthalate** | **29.4** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 4-Nitroaniline | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pentachlorophenol** | **380** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Phenanthrene** | **1160** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **227** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **33.3** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **3740** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1840** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **56.8** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **930** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1490** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 (composite)

**0111202-13RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **765** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **294** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1240** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **834** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **809** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **617** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **88.1** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **491** | 48.7 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **19.2** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Naphthalene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloroaniline | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthylene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dimethyl phthalate | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **16.8** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3-Nitroaniline | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **16.8** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **19.2** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **91.3** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **24.0** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **36.0** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Fluoranthene** | **163** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **163** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **69.6** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **79.2** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **86.5** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **48.0** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (k) fluoranthene** | **45.6** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (a) pyrene** | **40.8** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Indeno(1,2,3-cd)pyrene** | **40.8** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **38.4** | 59.8 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| *Surrogate: 2-Fluorophenol* | | *62.4 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *55.8 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *60.0 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *106 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *63.6 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *98.4 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 2,4-Dichlorophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Naphthalene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Chloroaniline** | **195** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **106** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **28.8** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **22.4** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **333** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **115** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **62.4** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **86.5** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 1

**0111202-14RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **89.7** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **46.4** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **44.8** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **40.0** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **25.6** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **20.8** | 39.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **23.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **14.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chloroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **16.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthylene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dimethyl phthalate | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **18.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3-Nitroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **16.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **16.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **112** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **25.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **44.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Fluoranthene** | **233** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **154** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **39.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **56.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Chrysene** | **84.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **95.6** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **42.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (k) fluoranthene** | **46.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (a) pyrene** | **39.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Indeno(1,2,3-cd)pyrene** | **35.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **35.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| *Surrogate: 2-Fluorophenol* | | *61.2 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *55.8 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *64.8 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *88.8 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *54.6 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *72.0 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
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|---|---|---|
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 2

**0111202-15RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 2

**0111202-15RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Naphthalene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Chloroaniline** | **197** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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## PB - 2

**0111202-15RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **152** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **34.0** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-butyl phthalate | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluoranthene** | **398** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **125** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **74.4** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **103** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

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**0111202-15RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **72.8** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **59.8** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **50.1** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **43.7** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **27.5** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **24.3** | 40.3 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **25.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Naphthalene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthylene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dimethyl phthalate | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **35.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3-Nitroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **30.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **39.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **98.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **30.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **53.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Fluoranthene** | **215** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **182** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **56.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Chrysene** | **70.0** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **149** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **32.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (k) fluoranthene** | **39.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (a) pyrene** | **32.7** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Indeno(1,2,3-cd)pyrene** | **23.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **23.3** | 58.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| *Surrogate: 2-Fluorophenol* | | *58.8 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *52.8 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *101 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *156 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *46.2 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *75.6 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Naphthalene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Chloroaniline** | **185** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **66.1** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **22.5** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-butyl phthalate | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluoranthene** | **189** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **78.1** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **27.0** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Chrysene** | **43.6** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 3

**0111202-16RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **78.1** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **216** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **22.5** | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Benzo (k) fluoranthene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzo (a) pyrene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Indeno(1,2,3-cd)pyrene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenz (a,h) anthracene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzo (g,h,i) perylene | ND | 37.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **25.1** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **13.7** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chloroaniline | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **25.1** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthylene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dimethyl phthalate | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **66.2** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 3-Nitroaniline | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **61.7** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **70.8** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **169** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **66.2** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **63.9** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **427** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **450** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **130** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **167** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **169** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **103** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **98.2** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **86.8** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **66.2** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **63.9** | 56.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *62.4 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *55.2 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *118 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *170 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *49.2 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *85.2 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Naphthalene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Chloroaniline** | **214** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **24.2** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 3-Nitroaniline | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **22.5** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **156** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **49.9** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Di-n-butyl phthalate | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluoranthene** | **554** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **222** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **90.2** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **139** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB - 4

**0111202-17RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **95.0** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **69.3** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **66.0** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **53.1** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **33.8** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **30.6** | 40.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Phenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Aniline | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Isophorone** | **45.9** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 2-Nitrophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Naphthalene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloroaniline | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **18.9** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthylene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dimethyl phthalate | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3-Nitroaniline | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **18.9** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **21.6** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **86.4** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **21.6** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **48.6** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Fluoranthene** | **165** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **151** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **48.6** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Chrysene** | **67.5** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **83.7** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **37.8** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (k) fluoranthene** | **32.4** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (a) pyrene** | **27.0** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Indeno(1,2,3-cd)pyrene** | **24.3** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **27.0** | 67.2 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| *Surrogate: 2-Fluorophenol* | | *79.2 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *67.2 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *75.6 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *124 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *81.0 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *109 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
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|---|---|---|
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Naphthalene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Chloroaniline** | **214** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **72.3** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **23.5** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-butyl phthalate | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluoranthene** | **242** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **95.9** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **40.4** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Chrysene** | **63.9** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## PB Composite

**0111202-18RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **40.4** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **25.2** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Benzo (k) fluoranthene** | **25.2** | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Benzo (a) pyrene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Indeno(1,2,3-cd)pyrene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenz (a,h) anthracene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzo (g,h,i) perylene | ND | 41.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

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**0111202-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Phenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Aniline | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

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**0111202-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **41.4** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chloroaniline | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **41.4** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthylene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dimethyl phthalate | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **16.6** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3-Nitroaniline | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **41.4** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

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**0111202-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Fluorene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **99.3** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **19.3** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **69.0** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **229** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **179** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **80.0** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **121** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 1

**0111202-19 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **46.9** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **80.0** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **63.5** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (a) pyrene** | **58.0** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Indeno(1,2,3-cd)pyrene** | **49.7** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **44.2** | 68.7 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| *Surrogate: 2-Fluorophenol* | | *3.60 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *3.60 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *88.8 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *154 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *52.8 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *80.4 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 1

**0111202-19RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 1

**0111202-19RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **29.7** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 4-Chloroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **22.7** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 1

**0111202-19RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **129** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **22.7** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **45.4** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **436** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **141** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **78.5** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **148** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 1

**0111202-19RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **22.7** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **90.8** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **61.1** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **50.6** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **31.4** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **26.2** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 2

**0111202-20 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **21.7** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

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**0111202-20 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **57.8** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chloroaniline | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **55.4** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Acenaphthylene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dimethyl phthalate | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **19.3** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3-Nitroaniline | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **72.2** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 2

**0111202-20 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **16.8** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **144** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **21.7** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **116** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **327** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **243** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **14.4** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **108** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **156** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

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**0111202-20 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **48.1** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **130** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **93.9** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **84.2** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **72.2** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **62.6** | 59.9 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *11.4 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *4.80 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *185 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *226 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *102 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *107 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

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**0111202-20RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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**0111202-20RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **29.2** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 4-Chloroaniline | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylnaphthalene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorocyclopentadiene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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**0111202-20RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **133** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Anthracene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Di-n-butyl phthalate** | **34.1** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **362** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **125** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **69.8** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **117** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

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**0111202-20RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **34.1** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **76.3** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **60.1** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **48.7** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **32.5** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **27.6** | 40.4 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |

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| Buffalo District | Project: Cleveland Harbor BU | |
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**0111202-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **28.6** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

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**0111202-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **152** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **100** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthylene** | **28.6** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dimethyl phthalate | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **20.1** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3-Nitroaniline | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **88.8** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

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**0111202-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **48.7** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **450** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **63.0** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **203** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **722** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **644** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **34.4** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **309** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **438** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 3

**0111202-21 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **109** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **355** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **255** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **238** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **275** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **45.8** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **226** | 71.3 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *6.00 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *%* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | *U* |
| *Surrogate: Nitrobenzene-d5* | | *51.6 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *75.6 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *72.0 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *79.2 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 3

**0111202-21RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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**0111202-21RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **89.1** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **45.4** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dibenzofuran | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
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**0111202-21RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **417** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **24.5** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **155** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **1230** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **344** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **24.5** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **238** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **400** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS - 3

**0111202-21RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl)phthalate** | **76.9** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **271** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **199** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **169** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **126** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **96.1** | 43.5 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **32.3** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **4-Methylphenol** | **38.2** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Nitrobenzene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2,4-Dimethylphenol** | **38.2** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Benzoic acid | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

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## BS 4

**0111202-22 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **1370** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **1880** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthylene** | **205** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **138** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 3-Nitroaniline | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **367** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **182** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **2220** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **273** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **96.8** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **2340** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **1210** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **848** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **798** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **76.3** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **534** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **528** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **563** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **405** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **73.4** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **332** | 73.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *6.00 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *6.00 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *63.6 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *85.2 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *55.8 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *63.6 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS 4

**0111202-22RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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## BS 4

**0111202-22RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **148** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **244** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **200** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **25.9** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **70.3** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

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## BS 4

**0111202-22RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **33.3** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **439** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **100** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-butyl phthalate** | **44.4** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Fluoranthene** | **1290** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **676** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **341** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **444** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS 4

**0111202-22RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **31.5** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **233** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **228** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **187** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **90.7** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **70.3** | 46.1 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

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## BS Composite

**0111202-23 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **24.4** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Methylphenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachloroethane | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Methylphenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Nitrobenzene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
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## BS Composite

**0111202-23 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **339** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **490** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthylene** | **29.8** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dimethyl phthalate | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **21.7** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 3-Nitroaniline | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Dibenzofuran** | **117** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

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| Buffalo District | Project: Cleveland Harbor BU | |
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## BS Composite

**0111202-23 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **37.9** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **461** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **48.8** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **97.6** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **778** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **360** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **198** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **298** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS Composite

**0111202-23 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **62.3** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **225** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **154** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **157** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **144** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **24.4** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **119** | 67.5 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *6.00 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *4.20 %* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *60.0 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *74.4 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *78.6 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *58.8 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS Composite

**0111202-23RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Phenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Aniline | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Methylphenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachloroethane | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Methylphenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Nitrobenzene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS Composite

**0111202-23RE1 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **89.5** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 4-Chloroaniline | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **103** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthylene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Dimethyl phthalate | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Acenaphthene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3-Nitroaniline | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **39.6** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| 2,4-Dinitrotoluene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS Composite

**0111202-23RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Fluorene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chlorophenyl phenyl ether | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Pentachlorophenol | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenanthrene** | **219** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **36.2** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| **Di-n-butyl phthalate** | **55.1** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Fluoranthene** | **608** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **298** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **158** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **234** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## BS Composite

**0111202-23RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **29.3** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Di-n-octyl phthalate | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (b) fluoranthene** | **167** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **112** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **102** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **63.7** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (g,h,i) perylene** | **49.9** | 42.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenol** | **74.1** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Aniline | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chlorophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzyl alcohol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylphenol** | **42.9** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Hexachloroethane | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **4-Methylphenol** | **620** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Isophorone | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitrophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Benzoic acid | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4-Dichlorophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Naphthalene** | **324** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobutadiene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **2-Methylnaphthalene** | **273** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2-Nitroaniline | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthylene** | **54.6** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| Dimethyl phthalate | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Acenaphthene** | **328** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 3-Nitroaniline | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Dibenzofuran | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 2,4-Dinitrotoluene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Fluorene** | **394** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Diethyl phthalate | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Nitroaniline | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Hexachlorobenzene | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| Pentachlorophenol | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Phenanthrene** | **2200** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Anthracene** | **1420** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **273** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **5230** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Pyrene** | **3360** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| 3,3´-Dichlorobenzidine | ND | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1480** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Chrysene** | **2020** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **1430** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Di-n-octyl phthalate** | **89.7** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | J |
| **Benzo (b) fluoranthene** | **1660** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **1290** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **1360** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **1430** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **238** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **1260** | 97.1 | ug/kg dry | 1 | 14-Dec-2010 | 27-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *6.60 %* | *35-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *%* | *40-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | *U* |
| *Surrogate: Nitrobenzene-d5* | | *22.8 %* | *35-100* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2-Fluorobiphenyl* | | *87.6 %* | *45-105* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *88.8 %* | *35-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *67.2 %* | *30-125* | | *14-Dec-2010* | *27-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Phenol** | **36.8** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Aniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethyl)ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,3-Dichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,4-Dichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2-Dichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzyl alcohol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroisopropyl)ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylphenol** | **32.5** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Hexachloroethane | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodi-n-propylamine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **4-Methylphenol** | **420** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Nitrobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Isophorone | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitrophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dimethylphenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Benzoic acid | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Bis(2-chloroethoxy)methane | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 2,4-Dichlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 1,2,4-Trichlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Naphthalene** | **294** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **4-Chloroaniline** | **389** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorobutadiene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Chloro-3-methylphenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **2-Methylnaphthalene** | **110** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,5-Trichlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4,6-Trichlorophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Chloronaphthalene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2-Nitroaniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthylene** | **47.6** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | J |
| Dimethyl phthalate | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,6-Dinitrotoluene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Acenaphthene** | **69.2** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 3-Nitroaniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 2,4-Dinitrophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Dibenzofuran** | **54.1** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 4-Nitrophenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluorene** | **160** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Diethyl phthalate | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Nitroaniline | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4,6-Dinitro-2-methylphenol | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| N-Nitrosodiphenylamine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| 4-Bromophenyl phenyl ether | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| Hexachlorobenzene | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pentachlorophenol** | **420** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Phenanthrene** | **2200** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Anthracene** | **1090** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Di-n-butyl phthalate | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Fluoranthene** | **6450** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| Benzidine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Pyrene** | **1970** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Butyl benzyl phthalate** | **75.7** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | U |
| **Benzo (a) anthracene** | **1100** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Chrysene** | **1660** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU Sieved Composite

**0111202-24RE1 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| **Bis(2-ethylhexyl)phthalate** | **865** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Di-n-octyl phthalate** | **335** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **1270** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **956** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (a) pyrene** | **865** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **554** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **77.9** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **441** | 53.9 | ug/kg dry | 1 | 23-Nov-2010 | 16-Dec-2010 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012033 - EPA 3545** | | | | | | | | | | |
| **Blank (B012033-BLK1)** | | | | Prepared: 14-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| N-Nitrosodimethylamine | ND | 24.9 | ug/kg wet | | | | | | | U |
| Phenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| Aniline | ND | 24.9 | ug/kg wet | | | | | | | U |
| Bis(2-chloroethyl)ether | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2-Chlorophenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| 1,3-Dichlorobenzene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 1,4-Dichlorobenzene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 1,2-Dichlorobenzene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzyl alcohol | ND | 24.9 | ug/kg wet | | | | | | | U |
| Bis(2-chloroisopropyl)ether | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2-Methylphenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| Hexachloroethane | ND | 24.9 | ug/kg wet | | | | | | | U |
| N-Nitrosodi-n-propylamine | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4-Methylphenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| Nitrobenzene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Isophorone | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2-Nitrophenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2,4-Dimethylphenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzoic acid | ND | 24.9 | ug/kg wet | | | | | | | U |
| Bis(2-chloroethoxy)methane | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2,4-Dichlorophenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| 1,2,4-Trichlorobenzene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Naphthalene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4-Chloroaniline | ND | 24.9 | ug/kg wet | | | | | | | U |
| Hexachlorobutadiene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4-Chloro-3-methylphenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2-Methylnaphthalene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Hexachlorocyclopentadiene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2,4,5-Trichlorophenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2,4,6-Trichlorophenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2-Chloronaphthalene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2-Nitroaniline | ND | 24.9 | ug/kg wet | | | | | | | U |
| Acenaphthylene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Dimethyl phthalate | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2,6-Dinitrotoluene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Acenaphthene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 3-Nitroaniline | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2,4-Dinitrophenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| Dibenzofuran | ND | 24.9 | ug/kg wet | | | | | | | U |
| 2,4-Dinitrotoluene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4-Nitrophenol | ND | 24.9 | ug/kg wet | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012033 - EPA 3545** | | | | | | | | | | |
| **Blank (B012033-BLK1)** | | | | Prepared: 14-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Fluorene | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4-Chlorophenyl phenyl ether | ND | 24.9 | ug/kg wet | | | | | | | U |
| Diethyl phthalate | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4-Nitroaniline | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4,6-Dinitro-2-methylphenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| N-Nitrosodiphenylamine | ND | 24.9 | ug/kg wet | | | | | | | U |
| 4-Bromophenyl phenyl ether | ND | 24.9 | ug/kg wet | | | | | | | U |
| Hexachlorobenzene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Pentachlorophenol | ND | 24.9 | ug/kg wet | | | | | | | U |
| Phenanthrene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Anthracene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Di-n-butyl phthalate | 12.0 | 24.9 | ug/kg wet | | | | | | | J |
| Fluoranthene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzidine | ND | 24.9 | ug/kg wet | | | | | | | U |
| Pyrene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Butyl benzyl phthalate | ND | 24.9 | ug/kg wet | | | | | | | U |
| 3,3´-Dichlorobenzidine | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzo (a) anthracene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Chrysene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Bis(2-ethylhexyl)phthalate | ND | 24.9 | ug/kg wet | | | | | | | U |
| Di-n-octyl phthalate | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzo (b) fluoranthene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzo (k) fluoranthene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzo (a) pyrene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Indeno(1,2,3-cd)pyrene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Dibenz (a,h) anthracene | ND | 24.9 | ug/kg wet | | | | | | | U |
| Benzo (g,h,i) perylene | ND | 24.9 | ug/kg wet | | | | | | | U |
| *Surrogate: 2-Fluorophenol* | *149* | | *ug/kg wet* | *166.7* | | *89.4* | *35-105* | | | |
| *Surrogate: Phenol-d5* | *129* | | *ug/kg wet* | *166.7* | | *77.4* | *40-100* | | | |
| *Surrogate: Nitrobenzene-d5* | *150* | | *ug/kg wet* | *83.33* | | *180* | *35-100* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *77.0* | | *ug/kg wet* | *83.33* | | *92.4* | *45-105* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *150* | | *ug/kg wet* | *166.7* | | *90.0* | *35-125* | | | |
| *Surrogate: Terphenyl-dl4* | *58.0* | | *ug/kg wet* | *83.33* | | *69.6* | *30-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012033 - EPA 3545** | | | | | | | | | | |
| **LCS (B012033-BS1)** | | | | Prepared: 14-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| N-Nitrosodimethylamine | 74.0 | 24.9 | ug/kg wet | 83.33 | | 88.8 | 20-115 | | | |
| Phenol | 47.0 | 24.9 | ug/kg wet | 83.33 | | 56.4 | 40-100 | | | |
| Aniline | 56.0 | 24.9 | ug/kg wet | 83.33 | | 67.2 | 75-125 | | | |
| Bis(2-chloroethyl)ether | 56.0 | 24.9 | ug/kg wet | 83.33 | | 67.2 | 40-105 | | | |
| 2-Chlorophenol | 48.0 | 24.9 | ug/kg wet | 83.33 | | 57.6 | 45-105 | | | |
| 1,3-Dichlorobenzene | 56.0 | 24.9 | ug/kg wet | 83.33 | | 67.2 | 40-100 | | | |
| 1,4-Dichlorobenzene | 56.0 | 24.9 | ug/kg wet | 83.33 | | 67.2 | 35-105 | | | |
| 1,2-Dichlorobenzene | 49.0 | 24.9 | ug/kg wet | 83.33 | | 58.8 | 45-95 | | | |
| Benzyl alcohol | 87.0 | 24.9 | ug/kg wet | 83.33 | | 104 | 20-125 | | | |
| Bis(2-chloroisopropyl)ether | 57.0 | 24.9 | ug/kg wet | 83.33 | | 68.4 | 20-115 | | | |
| 2-Methylphenol | 37.0 | 24.9 | ug/kg wet | 83.33 | | 44.4 | 40-105 | | | |
| Hexachloroethane | 64.0 | 24.9 | ug/kg wet | 83.33 | | 76.8 | 35-110 | | | |
| N-Nitrosodi-n-propylamine | 82.0 | 24.9 | ug/kg wet | 83.33 | | 98.4 | 40-115 | | | |
| 4-Methylphenol | 33.0 | 24.9 | ug/kg wet | 83.33 | | 39.6 | 40-105 | | | |
| Nitrobenzene | 97.0 | 24.9 | ug/kg wet | 83.33 | | 116 | 40-115 | | | |
| Isophorone | 51.0 | 24.9 | ug/kg wet | 83.33 | | 61.2 | 45-110 | | | |
| 2-Nitrophenol | 108 | 24.9 | ug/kg wet | 83.33 | | 130 | 40-110 | | | |
| 2,4-Dimethylphenol | 29.0 | 24.9 | ug/kg wet | 83.33 | | 34.8 | 30-105 | | | |
| Benzoic acid | ND | 24.9 | ug/kg wet | 83.33 | | | 75-125 | | | U |
| Bis(2-chloroethoxy)methane | 58.0 | 24.9 | ug/kg wet | 83.33 | | 69.6 | 45-110 | | | |
| 2,4-Dichlorophenol | 63.0 | 24.9 | ug/kg wet | 83.33 | | 75.6 | 45-110 | | | |
| 1,2,4-Trichlorobenzene | 72.0 | 24.9 | ug/kg wet | 83.33 | | 86.4 | 45-110 | | | |
| Naphthalene | 66.0 | 24.9 | ug/kg wet | 83.33 | | 79.2 | 40-105 | | | |
| 4-Chloroaniline | 88.0 | 24.9 | ug/kg wet | 83.33 | | 106 | 75-125 | | | |
| Hexachlorobutadiene | 51.0 | 24.9 | ug/kg wet | 83.33 | | 61.2 | 40-115 | | | |
| 4-Chloro-3-methylphenol | 91.0 | 24.9 | ug/kg wet | 83.33 | | 109 | 45-115 | | | |
| 2-Methylnaphthalene | 44.0 | 24.9 | ug/kg wet | 83.33 | | 52.8 | 45-105 | | | |
| Hexachlorocyclopentadiene | ND | 24.9 | ug/kg wet | 83.33 | | | 75-125 | | | U |
| 2,4,5-Trichlorophenol | 96.0 | 24.9 | ug/kg wet | 83.33 | | 115 | 50-110 | | | |
| 2,4,6-Trichlorophenol | 44.0 | 24.9 | ug/kg wet | 83.33 | | 52.8 | 45-110 | | | |
| 2-Chloronaphthalene | 95.0 | 24.9 | ug/kg wet | 83.33 | | 114 | 45-105 | | | |
| 2-Nitroaniline | 98.0 | 24.9 | ug/kg wet | 83.33 | | 118 | 45-120 | | | |
| Acenaphthylene | 56.0 | 24.9 | ug/kg wet | 83.33 | | 67.2 | 45-105 | | | |
| Dimethyl phthalate | 20.0 | 24.9 | ug/kg wet | 83.33 | | 24.0 | 50-110 | | | J |
| 2,6-Dinitrotoluene | ND | 24.9 | ug/kg wet | 83.33 | | | 50-110 | | | U |
| Acenaphthene | 22.0 | 24.9 | ug/kg wet | 83.33 | | 26.4 | 45-110 | | | J |
| 3-Nitroaniline | 63.0 | 24.9 | ug/kg wet | 83.33 | | 75.6 | 25-110 | | | |
| 2,4-Dinitrophenol | 116 | 24.9 | ug/kg wet | 83.33 | | 139 | 15-130 | | | |
| Dibenzofuran | 15.0 | 24.9 | ug/kg wet | 83.33 | | 18.0 | 75-125 | | | J |
| 2,4-Dinitrotoluene | 59.0 | 24.9 | ug/kg wet | 83.33 | | 70.8 | 50-115 | | | |
| 4-Nitrophenol | 91.0 | 24.9 | ug/kg wet | 83.33 | | 109 | 15-140 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012033 - EPA 3545** | | | | | | | | | | |
| **LCS (B012033-BS1)** | | | | Prepared: 14-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Fluorene | 21.0 | 24.9 | ug/kg wet | 83.33 | | 25.2 | 50-110 | | | J |
| 4-Chlorophenyl phenyl ether | 50.0 | 24.9 | ug/kg wet | 83.33 | | 60.0 | 45-110 | | | |
| Diethyl phthalate | 22.0 | 24.9 | ug/kg wet | 83.33 | | 26.4 | 50-115 | | | J |
| 4-Nitroaniline | 74.0 | 24.9 | ug/kg wet | 83.33 | | 88.8 | 35-115 | | | |
| 4,6-Dinitro-2-methylphenol | 97.0 | 24.9 | ug/kg wet | 83.33 | | 116 | 30-135 | | | |
| N-Nitrosodiphenylamine | ND | 24.9 | ug/kg wet | 83.33 | | | 50-115 | | | U |
| 4-Bromophenyl phenyl ether | 61.0 | 24.9 | ug/kg wet | 83.33 | | 73.2 | 45-115 | | | |
| Hexachlorobenzene | 68.0 | 24.9 | ug/kg wet | 83.33 | | 81.6 | 45-120 | | | |
| Pentachlorophenol | 124 | 24.9 | ug/kg wet | 83.33 | | 149 | 25-120 | | | |
| Phenanthrene | 72.0 | 24.9 | ug/kg wet | 83.33 | | 86.4 | 50-110 | | | |
| Anthracene | 50.0 | 24.9 | ug/kg wet | 83.33 | | 60.0 | 55-105 | | | |
| Di-n-butyl phthalate | 56.0 | 24.9 | ug/kg wet | 83.33 | | 67.2 | 55-110 | | | |
| Fluoranthene | 67.0 | 24.9 | ug/kg wet | 83.33 | | 80.4 | 55-115 | | | |
| Benzidine | 41.0 | 24.9 | ug/kg wet | 83.33 | | 49.2 | 75-125 | | | |
| Pyrene | 42.0 | 24.9 | ug/kg wet | 83.33 | | 50.4 | 45-125 | | | |
| Butyl benzyl phthalate | 40.0 | 24.9 | ug/kg wet | 83.33 | | 48.0 | 50-125 | | | |
| 3,3´-Dichlorobenzidine | ND | 24.9 | ug/kg wet | 83.33 | | | 0-200 | | | U |
| Benzo (a) anthracene | 60.0 | 24.9 | ug/kg wet | 83.33 | | 72.0 | 50-110 | | | |
| Chrysene | 69.0 | 24.9 | ug/kg wet | 83.33 | | 82.8 | 55-110 | | | |
| Bis(2-ethylhexyl)phthalate | 49.0 | 24.9 | ug/kg wet | 83.33 | | 58.8 | 45-125 | | | |
| Di-n-octyl phthalate | 93.0 | 24.9 | ug/kg wet | 83.33 | | 112 | 40-130 | | | |
| Benzo (b) fluoranthene | 41.0 | 24.9 | ug/kg wet | 83.33 | | 49.2 | 45-115 | | | |
| Benzo (k) fluoranthene | 54.0 | 24.9 | ug/kg wet | 83.33 | | 64.8 | 45-125 | | | |
| Benzo (a) pyrene | 40.0 | 24.9 | ug/kg wet | 83.33 | | 48.0 | 50-110 | | | |
| Indeno(1,2,3-cd)pyrene | 37.0 | 24.9 | ug/kg wet | 83.33 | | 44.4 | 40-120 | | | |
| Dibenz (a,h) anthracene | 40.0 | 24.9 | ug/kg wet | 83.33 | | 48.0 | 40-125 | | | |
| Benzo (g,h,i) perylene | 48.0 | 24.9 | ug/kg wet | 83.33 | | 57.6 | 40-125 | | | |
| *Surrogate: 2-Fluorophenol* | *102* | | *ug/kg wet* | *166.7* | | *61.2* | *35-105* | | | |
| *Surrogate: Phenol-d5* | *83.0* | | *ug/kg wet* | *166.7* | | *49.8* | *40-100* | | | |
| *Surrogate: Nitrobenzene-d5* | *54.0* | | *ug/kg wet* | *83.33* | | *64.8* | *35-100* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *28.0* | | *ug/kg wet* | *83.33* | | *33.6* | *45-105* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *108* | | *ug/kg wet* | *166.7* | | *64.8* | *35-125* | | | |
| *Surrogate: Terphenyl-dl4* | *44.0* | | *ug/kg wet* | *83.33* | | *52.8* | *30-125* | | | |

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**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012033 - EPA 3545** | | | | | | | | | | |
| **LCS Dup (B012033-BSD1)** | | | | Prepared: 14-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| N-Nitrosodimethylamine | 102 | 24.9 | ug/kg wet | 83.33 | | 122 | 20-115 | 31.8 | 20 | |
| Phenol | 64.0 | 24.9 | ug/kg wet | 83.33 | | 76.8 | 40-100 | 30.6 | 20 | |
| Aniline | 74.0 | 24.9 | ug/kg wet | 83.33 | | 88.8 | 75-125 | 27.7 | 20 | |
| Bis(2-chloroethyl)ether | 74.0 | 24.9 | ug/kg wet | 83.33 | | 88.8 | 40-105 | 27.7 | 20 | |
| 2-Chlorophenol | 66.0 | 24.9 | ug/kg wet | 83.33 | | 79.2 | 45-105 | 31.6 | 20 | |
| 1,3-Dichlorobenzene | 72.0 | 24.9 | ug/kg wet | 83.33 | | 86.4 | 40-100 | 25.0 | 20 | |
| 1,4-Dichlorobenzene | 72.0 | 24.9 | ug/kg wet | 83.33 | | 86.4 | 35-105 | 25.0 | 20 | |
| 1,2-Dichlorobenzene | 76.0 | 24.9 | ug/kg wet | 83.33 | | 91.2 | 45-95 | 43.2 | 20 | |
| Benzyl alcohol | 112 | 24.9 | ug/kg wet | 83.33 | | 134 | 20-125 | 25.1 | 20 | |
| Bis(2-chloroisopropyl)ether | 80.0 | 24.9 | ug/kg wet | 83.33 | | 96.0 | 20-115 | 33.6 | 20 | |
| 2-Methylphenol | 69.0 | 24.9 | ug/kg wet | 83.33 | | 82.8 | 40-105 | 60.4 | 20 | |
| Hexachloroethane | 82.0 | 24.9 | ug/kg wet | 83.33 | | 98.4 | 35-110 | 24.7 | 20 | |
| N-Nitrosodi-n-propylamine | 115 | 24.9 | ug/kg wet | 83.33 | | 138 | 40-115 | 33.5 | 20 | |
| 4-Methylphenol | 64.0 | 24.9 | ug/kg wet | 83.33 | | 76.8 | 40-105 | 63.9 | 20 | |
| Nitrobenzene | 141 | 24.9 | ug/kg wet | 83.33 | | 169 | 40-115 | 37.0 | 20 | |
| Isophorone | 76.0 | 24.9 | ug/kg wet | 83.33 | | 91.2 | 45-110 | 39.4 | 20 | |
| 2-Nitrophenol | 142 | 24.9 | ug/kg wet | 83.33 | | 170 | 40-110 | 27.2 | 20 | |
| 2,4-Dimethylphenol | 76.0 | 24.9 | ug/kg wet | 83.33 | | 91.2 | 30-105 | 89.5 | 20 | |
| Benzoic acid | ND | 24.9 | ug/kg wet | 83.33 | | | 75-125 | | 20 | U |
| Bis(2-chloroethoxy)methane | 83.0 | 24.9 | ug/kg wet | 83.33 | | 99.6 | 45-110 | 35.5 | 20 | |
| 2,4-Dichlorophenol | 96.0 | 24.9 | ug/kg wet | 83.33 | | 115 | 45-110 | 41.5 | 20 | |
| 1,2,4-Trichlorobenzene | 79.0 | 24.9 | ug/kg wet | 83.33 | | 94.8 | 45-110 | 9.27 | 20 | |
| Naphthalene | 74.0 | 24.9 | ug/kg wet | 83.33 | | 88.8 | 40-105 | 11.4 | 20 | |
| 4-Chloroaniline | 108 | 24.9 | ug/kg wet | 83.33 | | 130 | 75-125 | 20.4 | 20 | |
| Hexachlorobutadiene | 105 | 24.9 | ug/kg wet | 83.33 | | 126 | 40-115 | 69.2 | 20 | |
| 4-Chloro-3-methylphenol | 116 | 24.9 | ug/kg wet | 83.33 | | 139 | 45-115 | 24.2 | 20 | |
| 2-Methylnaphthalene | 85.0 | 24.9 | ug/kg wet | 83.33 | | 102 | 45-105 | 63.6 | 20 | |
| Hexachlorocyclopentadiene | 45.0 | 24.9 | ug/kg wet | 83.33 | | 54.0 | 75-125 | | 20 | |
| 2,4,5-Trichlorophenol | 134 | 24.9 | ug/kg wet | 83.33 | | 161 | 50-110 | 33.0 | 20 | |
| 2,4,6-Trichlorophenol | 92.0 | 24.9 | ug/kg wet | 83.33 | | 110 | 45-110 | 70.6 | 20 | |
| 2-Chloronaphthalene | 146 | 24.9 | ug/kg wet | 83.33 | | 175 | 45-105 | 42.3 | 20 | |
| 2-Nitroaniline | 135 | 24.9 | ug/kg wet | 83.33 | | 162 | 45-120 | 31.8 | 20 | |
| Acenaphthylene | 85.0 | 24.9 | ug/kg wet | 83.33 | | 102 | 45-105 | 41.1 | 20 | |
| Dimethyl phthalate | 92.0 | 24.9 | ug/kg wet | 83.33 | | 110 | 50-110 | 129 | 20 | |
| 2,6-Dinitrotoluene | 16.0 | 24.9 | ug/kg wet | 83.33 | | 19.2 | 50-110 | | 20 | J |
| Acenaphthene | 87.0 | 24.9 | ug/kg wet | 83.33 | | 104 | 45-110 | 119 | 20 | |
| 3-Nitroaniline | 91.0 | 24.9 | ug/kg wet | 83.33 | | 109 | 25-110 | 36.4 | 20 | |
| 2,4-Dinitrophenol | 142 | 24.9 | ug/kg wet | 83.33 | | 170 | 15-130 | 20.2 | 20 | |
| Dibenzofuran | 75.0 | 24.9 | ug/kg wet | 83.33 | | 90.0 | 75-125 | 133 | 20 | |
| 2,4-Dinitrotoluene | 83.0 | 24.9 | ug/kg wet | 83.33 | | 99.6 | 50-115 | 33.8 | 20 | |
| 4-Nitrophenol | 112 | 24.9 | ug/kg wet | 83.33 | | 134 | 15-140 | 20.7 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012033 - EPA 3545** | | | | | | | | | | |
| **LCS Dup (B012033-BSD1)** | | | | Prepared: 14-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Fluorene | 73.0 | 24.9 | ug/kg wet | 83.33 | | 87.6 | 50-110 | 111 | 20 | |
| 4-Chlorophenyl phenyl ether | 125 | 24.9 | ug/kg wet | 83.33 | | 150 | 45-110 | 85.7 | 20 | |
| Diethyl phthalate | 96.0 | 24.9 | ug/kg wet | 83.33 | | 115 | 50-115 | 125 | 20 | |
| 4-Nitroaniline | 108 | 24.9 | ug/kg wet | 83.33 | | 130 | 35-115 | 37.4 | 20 | |
| 4,6-Dinitro-2-methylphenol | 116 | 24.9 | ug/kg wet | 83.33 | | 139 | 30-135 | 17.8 | 20 | |
| N-Nitrosodiphenylamine | 25.0 | 24.9 | ug/kg wet | 83.33 | | 30.0 | 50-115 | | 20 | |
| 4-Bromophenyl phenyl ether | 107 | 24.9 | ug/kg wet | 83.33 | | 128 | 45-115 | 54.8 | 20 | |
| Hexachlorobenzene | 103 | 24.9 | ug/kg wet | 83.33 | | 124 | 45-120 | 40.9 | 20 | |
| Pentachlorophenol | 138 | 24.9 | ug/kg wet | 83.33 | | 166 | 25-120 | 10.7 | 20 | |
| Phenanthrene | 81.0 | 24.9 | ug/kg wet | 83.33 | | 97.2 | 50-110 | 11.8 | 20 | |
| Anthracene | 82.0 | 24.9 | ug/kg wet | 83.33 | | 98.4 | 55-105 | 48.5 | 20 | |
| Di-n-butyl phthalate | 128 | 24.9 | ug/kg wet | 83.33 | | 154 | 55-110 | 78.3 | 20 | |
| Fluoranthene | 94.0 | 24.9 | ug/kg wet | 83.33 | | 113 | 55-115 | 33.5 | 20 | |
| Benzidine | 60.0 | 24.9 | ug/kg wet | 83.33 | | 72.0 | 75-125 | 37.6 | 20 | |
| Pyrene | 76.0 | 24.9 | ug/kg wet | 83.33 | | 91.2 | 45-125 | 57.6 | 20 | |
| Butyl benzyl phthalate | 56.0 | 24.9 | ug/kg wet | 83.33 | | 67.2 | 50-125 | 33.3 | 20 | |
| 3,3´-Dichlorobenzidine | 35.0 | 24.9 | ug/kg wet | 83.33 | | 42.0 | 0-200 | | 20 | |
| Benzo (a) anthracene | 83.0 | 24.9 | ug/kg wet | 83.33 | | 99.6 | 50-110 | 32.2 | 20 | |
| Chrysene | 95.0 | 24.9 | ug/kg wet | 83.33 | | 114 | 55-110 | 31.7 | 20 | |
| Bis(2-ethylhexyl)phthalate | 68.0 | 24.9 | ug/kg wet | 83.33 | | 81.6 | 45-125 | 32.5 | 20 | |
| Di-n-octyl phthalate | 102 | 24.9 | ug/kg wet | 83.33 | | 122 | 40-130 | 9.23 | 20 | |
| Benzo (b) fluoranthene | 57.0 | 24.9 | ug/kg wet | 83.33 | | 68.4 | 45-115 | 32.7 | 20 | |
| Benzo (k) fluoranthene | 71.0 | 24.9 | ug/kg wet | 83.33 | | 85.2 | 45-125 | 27.2 | 20 | |
| Benzo (a) pyrene | 55.0 | 24.9 | ug/kg wet | 83.33 | | 66.0 | 50-110 | 31.6 | 20 | |
| Indeno(1,2,3-cd)pyrene | 55.0 | 24.9 | ug/kg wet | 83.33 | | 66.0 | 40-120 | 39.1 | 20 | |
| Dibenz (a,h) anthracene | 61.0 | 24.9 | ug/kg wet | 83.33 | | 73.2 | 40-125 | 41.6 | 20 | |
| Benzo (g,h,i) perylene | 73.0 | 24.9 | ug/kg wet | 83.33 | | 87.6 | 40-125 | 41.3 | 20 | |
| *Surrogate: 2-Fluorophenol* | *139* | | *ug/kg wet* | *166.7* | | *83.4* | *35-105* | | | |
| *Surrogate: Phenol-d5* | *115* | | *ug/kg wet* | *166.7* | | *69.0* | *40-100* | | | |
| *Surrogate: Nitrobenzene-d5* | *152* | | *ug/kg wet* | *83.33* | | *182* | *35-100* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *85.0* | | *ug/kg wet* | *83.33* | | *102* | *45-105* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *140* | | *ug/kg wet* | *166.7* | | *84.0* | *35-125* | | | |
| *Surrogate: Terphenyl-dl4* | *60.0* | | *ug/kg wet* | *83.33* | | *72.0* | *30-125* | | | |

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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 200-2983-1

SDG Number: 200-2983-1

Job Description: Vicksburg Quote

For:
White Water Associates
429 River Lane
PO BOX 27
Amasa, MI 49903

Attention: Dr. Bette J Premo

Approved for release.
Sara S Goff
Project Manager I
1/12/2011 3:03 PM

Sara S Goff
Project Manager I
sara.goff@testamericainc.com
01/12/2011

The test results in this report relate only to sample(s) as received by the laboratory. These test results were derived under a quality system that adheres to the requirements of NELAC. Pursuant to NELAC, this report may not be produced in full without written approval from the laboratory

# CASE NARRATIVE

## Client: White Water Associates

## Project: Vicksburg Quote

## Report Number: 200-2983-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

**RECEIPT**

The samples were received on 12/15/2010; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.3 and 4.7 C.

Method(s) 8260B, 9012A, AVS, Lloyd Kahn, None, SM 4500 NH3 B, SM 4500 NH3 C, SM 4500 Norg C, SM4500Norg_C: The following sample(s) was received outside of holding time: BS 4, BS COMPOSITE, BS-1, BS-2, BS-3, CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), DMU SIEVED COMPOSITE, PB COMPOSITE, PB-1, PB-2, PB-3, PB-4.

**VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were prepared on 12/17/2010 and analyzed on 12/21/2010, 12/22/2010 and 12/23/2010.

1,2,4-Trichlorobenzene, Bromomethane and Methyl iodide were detected in method blank MB 200-11425/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Several analytes were detected in method blank MB 200-11567/6 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Several analytes were detected in method blank MB 200-11588/7 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Refer to the QC report for details.

One or more samples required reanalysis due to one or more internal standard or surrogate failure. All samples with surrogate or internal standard failures were reanalyzed to confirm outage. Please note the reanalysis of this sample BS 4 fell 11 minutes outside the 12 hour analytical window. Refer to the QC report for details.

Methyl iodide failed the recovery criteria low for LCS 200-11425/6-A. Refer to the QC report for details.

No other difficulties were encountered during the volatiles analyses. All other quality control parameters were within the acceptance limits.

**ACID VOLATILE SULFIDES**

Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for acid volatile sulfides in accordance with AVS. The samples were prepared and analyzed on 12/20/2010.

No difficulties were encountered during the AVS analyses. All quality control parameters were within the acceptance limits.

**TOTAL AND AMENABLE CYANIDE**

Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for total and amenable cyanide in accordance with EPA SW-846 Method 9012A. The samples were prepared and analyzed on 12/20/2010.

No difficulties were encountered during the cyanide analyses. All quality control parameters were within the acceptance limits.

**GRAIN SIZE**
Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for grain size in accordance with D422 grain size. The samples were analyzed on 01/05/2011.

No difficulties were encountered during the grain size analyses. All quality control parameters were within the acceptance limits.

**TOTAL ORGANIC CARBON**
Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for total organic carbon in accordance with Lloyd Kahn Method. The samples were analyzed on 12/22/2010.

No difficulties were encountered during the TOC analyses. All quality control parameters were within the acceptance limits.

**PERCENT SOLIDS**
Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for percent solids in accordance with EPA SW846 3550C. The samples were analyzed on 12/20/2010.

No difficulties were encountered during the % solids analyses. All quality control parameters were within the acceptance limits.

**AMMONIA**
Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for ammonia in accordance with SM18 4500 NH3 C. The samples were prepared and analyzed on 12/22/2010 and 12/23/2010.

Ammonia was detected in method blank MB 200-11752/2-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Refer to the QC report for details.

Samples CH-1[4X], CH-3[2X], CH-5[2X], CH-5 DUP[2X], CH-6A[2X], CH-6B[2X], CH-7A[2X], CH-7B[2X], DMU 1 (COMPOSITE)[2X], DMU 2 (COMPOSITE)[2X], BS-3[2X], BS 4[2X], BS COMPOSITE[2X] and DMU SIEVED COMPOSITE[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the ammonia analyses. All other quality control parameters were within the acceptance limits.

**NITROGEN-TOTAL KJELDAHL**
Samples CH-1, CH-2, CH-3, CH-4, CH-5, CH-5 DUP, CH-6A, CH-6B, CH-7A, CH-7B, CH-8, DMU 1 (COMPOSITE), DMU 2 (COMPOSITE), PB-1, PB-2, PB-3, PB-4, PB COMPOSITE, BS-1, BS-2, BS-3, BS 4, BS COMPOSITE and DMU SIEVED COMPOSITE were analyzed for Nitrogen-Total Kjeldahl in accordance with SM 4500Norg_C. The samples were prepared on 01/04/2011 and 01/05/2011 and analyzed on 01/05/2011 and 01/06/2011.

Samples CH-1[10X], CH-2[10X], CH-3[10X], CH-4[10X], CH-5[10X], CH-5 DUP[4X], CH-6A[10X], CH-6B[4X], CH-7A[10X], CH-7B[10X], CH-8[10X], DMU 1 (COMPOSITE)[10X], DMU 2 (COMPOSITE)[4X], BS-1[10X], BS-2[10X], BS-3[10X], BS 4[10X] and BS COMPOSITE[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the TKN analyses. All quality control parameters were within the acceptance limits.

**MOISTRE, ASH AND ORGANIC MATTER OF PEAT AND OTHER ORGANIC SOILS**
Samples DMU 1 (COMPOSITE) and DMU 2 (COMPOSITE) were analyzed for Moistre, Ash and Organic Matter of Peat and Other Organic Soils in accordance with ASTM Method D_2974. The samples were analyzed on 01/05/2011.

No difficulties were encountered during the FOC analyses. All quality control parameters were within the acceptance limits.

**WATER CONTENT OF SOIL AND ROCK BY MASS**
Samples DMU 1 (COMPOSITE) and DMU 2 (COMPOSITE) were analyzed for Water Content of Soil and Rock by Mass in accordance with ASTM D2216-90. The samples were analyzed on 01/05/2011.

No difficulties were encountered during the moisture content analyses. All quality control parameters were within the acceptance limits.

**LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX OF SOILS**
Samples DMU 1 (COMPOSITE) and DMU 2 (COMPOSITE) were analyzed for Liquid Limit, Plastic Limit & Plasticity Index of Soils in accordance with D_4318. The samples were analyzed on 01/05/2011.

No difficulties were encountered during the Atterberg Limits analyses. All quality control parameters were within the acceptance limits.

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-1** | **CH-1** | | | | | |
| Bromomethane | | 85 | J H B | 220 | ug/Kg | 8260B |
| Carbon disulfide | | 48 | J H | 220 | ug/Kg | 8260B |
| Methyl acetate | | 910 | H | 220 | ug/Kg | 8260B |
| Toluene | | 4300 | H | 220 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 37 | J H B | 220 | ug/Kg | 8260B |
| Naphthalene | | 490 | H | 220 | ug/Kg | 8260B |
| Cyanide, Total | | 0.46 | J H | 1.0 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 56.0 | H | 33.6 | mg/Kg | AVS |
| Total Organic Carbon | | 37400 | H | 2200 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 54.5 | H | 0.25 | % | Moisture |
| Percent Solids | | 45.5 | H | 0.25 | % | Moisture |
| Ammonia | | 12.3 | H B | 0.88 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 2350 | H | 439 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 3.2 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 19.1 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 1.0 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 1.3 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 16.8 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 97.3 | | | % Passing | D422 |
| Silt | | 60.8 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 96.8 | | | % Passing | D422 |
| Clay | | 16.9 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 95.8 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 95.3 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 94.5 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 92.5 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 89.3 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 87.8 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 77.7 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 48.4 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 41.4 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 29.1 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 22.2 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 16.9 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 9.7 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 6.2 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-2** | **CH-2** | | | | | |
| Methyl acetate | | 920 | H | 210 | ug/Kg | 8260B |
| Toluene | | 3900 | H | 210 | ug/Kg | 8260B |
| Naphthalene | | 120 | J H | 210 | ug/Kg | 8260B |
| Cyanide, Total | | 0.63 | J H | 1.0 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 55.4 | H | 33.3 | mg/Kg | AVS |
| Total Organic Carbon | | 37200 | H | 2190 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 54.4 | H | 0.25 | % | Moisture |
| Percent Solids | | 45.6 | H | 0.25 | % | Moisture |
| Ammonia | | 3.9 | H B | 0.22 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 2110 | H | 438 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 2.3 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 15.2 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 1.7 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 1.2 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 12.3 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 98.9 | | | % Passing | D422 |
| Silt | | 63.5 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 97.7 | | | % Passing | D422 |
| Clay | | 19.0 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 96.0 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 95.4 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 94.8 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 93.9 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 92.5 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 91.6 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 82.5 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 59.8 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 49.0 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 38.3 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 25.4 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 19.0 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 12.2 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 7.7 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-3** | **CH-3** | | | | | |
| Methyl acetate | | 1100 | H | 220 | ug/Kg | 8260B |
| Toluene | | 11000 | H | 220 | ug/Kg | 8260B |
| Cyanide, Total | | 0.47 | J H | 1.1 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 70.6 | H | 35.4 | mg/Kg | AVS |
| Total Organic Carbon | | 35200 | H | 2220 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 54.9 | H | 0.25 | % | Moisture |
| Percent Solids | | 45.1 | H | 0.25 | % | Moisture |
| Ammonia | | 6.5 | H B | 0.44 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 2530 | H | 426 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 2.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 16.2 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.9 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 1.2 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 14.1 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 98.6 | | | % Passing | D422 |
| Silt | | 60.2 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 98.0 | | | % Passing | D422 |
| Clay | | 21.6 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 97.1 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 96.6 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 95.9 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 94.4 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 92.1 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 90.7 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 81.8 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 56.7 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 45.7 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 32.5 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 23.8 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 21.6 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 12.4 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 7.9 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-4** | **CH-4** | | | | | |
| Acetone | | 120 | H | 9.3 | ug/Kg | 8260B |
| Carbon disulfide | | 0.89 | J H B | 9.3 | ug/Kg | 8260B |
| 2-Butanone | | 29 | H | 9.3 | ug/Kg | 8260B |
| Methylcyclohexane | | 2.7 | J H | 9.3 | ug/Kg | 8260B |
| Toluene | | 1.7 | J H | 9.3 | ug/Kg | 8260B |
| 1,2,4-Trimethylbenzene | | 0.72 | J H B | 9.3 | ug/Kg | 8260B |
| 1,3-Dichlorobenzene | | 0.33 | J H B | 9.3 | ug/Kg | 8260B |
| 4-Isopropyltoluene | | 0.72 | J H B | 9.3 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 0.58 | J H B | 9.3 | ug/Kg | 8260B |
| 1,2-Dichlorobenzene | | 0.40 | J H B | 9.3 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.99 | J H B | 9.3 | ug/Kg | 8260B |
| Naphthalene | | 2.5 | J H B | 9.3 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 1.4 | J H B | 9.3 | ug/Kg | 8260B |
| Cyanide, Total | | 0.26 | J H | 0.96 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 61.7 | H | 31.2 | mg/Kg | AVS |
| Total Organic Carbon | | 26500 | H | 1980 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 49.4 | H | 0.25 | % | Moisture |
| Percent Solids | | 50.6 | H | 0.25 | % | Moisture |
| Ammonia | | 3.8 | H B | 0.20 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1790 | H | 373 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 6.9 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.1 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.4 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 6.4 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 64.2 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 28.9 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.9 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 99.5 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 99.1 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 98.4 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 97.9 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 93.1 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 74.2 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 61.3 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 43.4 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 35.3 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 28.9 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 18.9 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 12.3 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-5** | **CH-5** | | | | | |
| Methyl acetate | | 550 | H | 190 | ug/Kg | 8260B |
| Toluene | | 920 | H | 190 | ug/Kg | 8260B |
| Cyanide, Total | | 0.37 | J H | 1.0 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 60.8 | H | 31.4 | mg/Kg | AVS |
| Total Organic Carbon | | 27200 | H | 2020 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 50.5 | H | 0.25 | % | Moisture |
| Percent Solids | | 49.5 | H | 0.25 | % | Moisture |
| Ammonia | | 6.5 | H B | 0.40 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 2080 | H | 382 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.2 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 5.7 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.1 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.1 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 5.5 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 67.7 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.8 | | | % Passing | D422 |
| Clay | | 26.4 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 99.1 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 98.5 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 98.1 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 94.1 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 76.4 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 63.0 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 43.0 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 33.0 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 26.4 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 16.1 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 11.1 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-6** | **CH-5 DUP** | | | | | |
| Methyl acetate | | 680 | H | 190 | ug/Kg | 8260B |
| Toluene | | 9000 | H | 190 | ug/Kg | 8260B |
| Cyanide, Total | | 0.44 | J H | 0.95 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 62.0 | H | 31.3 | mg/Kg | AVS |
| Total Organic Carbon | | 30300 | H | 1980 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 49.4 | H | 0.25 | % | Moisture |
| Percent Solids | | 50.6 | H | 0.25 | % | Moisture |
| Ammonia | | 5.9 | H B | 0.40 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1070 | H | 158 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 5.8 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.0 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.3 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 5.5 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 68.5 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 25.7 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.9 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 99.2 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 98.5 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 98.2 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 94.2 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 76.0 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 62.1 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 41.3 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 30.9 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 25.7 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 16.8 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 11.6 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-7** | **CH-6A** | | | | | |
| Methyl acetate | | 770 | H | 200 | ug/Kg | 8260B |
| Toluene | | 5000 | H | 200 | ug/Kg | 8260B |
| Cyanide, Total | | 0.56 | J H | 1.0 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 58.9 | H | 31.4 | mg/Kg | AVS |
| Total Organic Carbon | | 33200 | H | 2100 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 52.3 | H | 0.25 | % | Moisture |
| Percent Solids | | 47.7 | H | 0.25 | % | Moisture |
| Ammonia | | 8.2 | H B | 0.42 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 2310 | H | 388 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.1 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 5.1 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.2 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.3 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 4.6 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 69.0 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.9 | | | % Passing | D422 |
| Clay | | 25.8 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 99.4 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 99.0 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 98.5 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 98.3 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 94.8 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 78.5 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 64.4 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 44.2 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 33.9 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 25.8 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 17.4 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 11.3 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-8** | **CH-6B** | | | | | |
| Methyl acetate | | 550 | H | 190 | ug/Kg | 8260B |
| Toluene | | 1300 | H | 190 | ug/Kg | 8260B |
| Cyanide, Total | | 0.42 | J H | 0.88 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 58.3 | H | 29.8 | mg/Kg | AVS |
| Total Organic Carbon | | 28100 | H | 1910 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 47.6 | H | 0.25 | % | Moisture |
| Percent Solids | | 52.4 | H | 0.25 | % | Moisture |
| Ammonia | | 7.1 | H B | 0.38 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1130 | H | 153 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 8.5 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.0 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.2 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 8.3 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 67.0 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 24.5 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.9 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 99.8 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 98.9 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 98.3 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 91.5 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 73.9 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 61.5 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 43.0 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 30.5 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 24.5 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 16.3 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 11.7 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-9** | **CH-7A** | | | | | |
| Methyl acetate | | 490 | H | 180 | ug/Kg | 8260B |
| Toluene | | 1200 | H | 180 | ug/Kg | 8260B |
| Chlorobenzene | | 58 | J H | 180 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 73 | J H | 180 | ug/Kg | 8260B |
| Naphthalene | | 400 | H | 180 | ug/Kg | 8260B |
| Cyanide, Total | | 0.39 | J H | 0.88 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 47.1 | H | 28.0 | mg/Kg | AVS |
| Total Organic Carbon | | 27100 | H | 1820 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 45.1 | H | 0.25 | % | Moisture |
| Percent Solids | | 54.9 | H | 0.25 | % | Moisture |
| Ammonia | | 4.9 | H B | 0.36 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1840 | H | 331 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.7 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 10.5 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.3 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 1.1 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 9.1 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 64.8 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.3 | | | % Passing | D422 |
| Clay | | 24.0 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.0 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 98.6 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 97.9 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 96.8 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 95.8 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 95.1 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 88.8 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 70.0 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 57.8 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 42.5 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 31.7 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 24.0 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 16.2 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 10.1 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-10** | **CH-7B** | | | | | |
| Methyl acetate | | 480 | H | 170 | ug/Kg | 8260B |
| Toluene | | 5000 | H | 170 | ug/Kg | 8260B |
| Naphthalene | | 200 | H | 170 | ug/Kg | 8260B |
| Cyanide, Total | | 0.38 | J H | 0.86 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 50.7 | H | 26.3 | mg/Kg | AVS |
| Total Organic Carbon | | 24000 | H | 1710 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 41.6 | H | 0.25 | % | Moisture |
| Percent Solids | | 58.4 | H | 0.25 | % | Moisture |
| Ammonia | | 4.1 | H B | 0.34 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1610 | H | 342 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 7.8 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.1 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.1 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 7.6 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 70.2 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 22.0 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.9 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.8 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 99.8 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 99.3 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 98.9 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 92.2 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 70.9 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 59.0 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 41.2 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 32.3 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 22.0 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 15.8 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 9.8 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-11** | **CH-8** | | | | | |
| Acetone | | 92 | H | 8.6 | ug/Kg | 8260B |
| Carbon disulfide | | 0.95 | J H B | 8.6 | ug/Kg | 8260B |
| 2-Butanone | | 22 | H | 8.6 | ug/Kg | 8260B |
| Benzene | | 0.36 | J H | 8.6 | ug/Kg | 8260B |
| Methylcyclohexane | | 3.3 | J H | 8.6 | ug/Kg | 8260B |
| Toluene | | 150 | H | 8.6 | ug/Kg | 8260B |
| Ethylbenzene | | 0.79 | J H | 8.6 | ug/Kg | 8260B |
| m&p-Xylene | | 0.71 | J H | 8.6 | ug/Kg | 8260B |
| Xylenes, Total | | 0.71 | J H | 8.6 | ug/Kg | 8260B |
| Bromobenzene | | 0.49 | J H | 8.6 | ug/Kg | 8260B |
| 1,3,5-Trimethylbenzene | | 1.0 | J H | 8.6 | ug/Kg | 8260B |
| 1,2,4-Trimethylbenzene | | 2.1 | J H B | 8.6 | ug/Kg | 8260B |
| sec-Butylbenzene | | 0.99 | J H B | 8.6 | ug/Kg | 8260B |
| 1,3-Dichlorobenzene | | 1.4 | J H B | 8.6 | ug/Kg | 8260B |
| 4-Isopropyltoluene | | 1.3 | J H B | 8.6 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 2.7 | J H B | 8.6 | ug/Kg | 8260B |
| 1,2-Dichlorobenzene | | 1.6 | J H B | 8.6 | ug/Kg | 8260B |
| n-Butylbenzene | | 1.6 | J H B | 8.6 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 3.8 | J H B | 8.6 | ug/Kg | 8260B |
| Hexachlorobutadiene | | 1.6 | J H B | 8.6 | ug/Kg | 8260B |
| Naphthalene | | 8.4 | J H B | 8.6 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 4.0 | J H B | 8.6 | ug/Kg | 8260B |
| Cyanide, Total | | 0.45 | J H | 0.89 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 47.3 | H | 27.9 | mg/Kg | AVS |
| Total Organic Carbon | | 29000 | H | 1800 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 44.5 | H | 0.25 | % | Moisture |
| Percent Solids | | 55.5 | H | 0.25 | % | Moisture |
| Ammonia | | 3.4 | H B | 0.18 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1450 | H | 340 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.4 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 10.7 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.3 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.4 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 10.0 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 66.9 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Clay | | 22.0 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.3 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.1 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 98.9 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 98.6 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 98.2 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Client Sample ID / Analyte | Result / Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|
| Sieve Size #100 - Percent Finer | 97.8 | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | 88.9 | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | 70.0 | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | 57.2 | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | 38.0 | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | 28.5 | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | 22.0 | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | 15.4 | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | 8.9 | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-12** | **DMU 1 (COMPOSITE)** | | | | | |
| Methyl acetate | | 1300 | H | 260 | ug/Kg | 8260B |
| Toluene | | 9600 | H | 260 | ug/Kg | 8260B |
| Naphthalene | | 280 | H | 260 | ug/Kg | 8260B |
| Cyanide, Total | | 0.54 | J H | 1.2 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 80.4 | H | 40.5 | mg/Kg | AVS |
| Total Organic Carbon | | 39000 | H | 2550 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 60.7 | H | 0.25 | % | Moisture |
| Percent Solids | | 39.3 | H | 0.25 | % | Moisture |
| Ammonia | | 6.1 | H B | 0.51 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 2790 | H | 490 | mg/Kg | SM 4500 Norg C |
| Moisture Content | | 136.5 | H | | % | D2216-90 |
| Total Organic Matter | | 8.6 | | | % | D2974 |
| Moisture Content | | 136.5 | | | % | D2974 |
| Ash Content | | 91.4 | | | % | D2974 |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.2 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 17.5 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 1.4 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 1.2 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 14.9 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 61.1 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.8 | | | % Passing | D422 |
| Clay | | 21.2 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 98.4 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 97.9 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 97.2 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 95.8 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 93.5 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 92.2 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 82.3 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 59.2 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 46.6 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 32.2 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 25.0 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 21.2 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 15.5 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 8.3 | | | % Passing | D422 |
| Liquid Limit | | 75 | | | NONE | D4318 |
| Plastic Limit | | 40 | | | NONE | D4318 |
| Plasticity Index | | 35 | | | NONE | D4318 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-13** | **DMU 2 (COMPOSITE)** | | | | | |
| Methyl acetate | | 480 | H | 180 | ug/Kg | 8260B |
| Toluene | | 4400 | H | 180 | ug/Kg | 8260B |
| Naphthalene | | 120 | J H | 180 | ug/Kg | 8260B |
| Cyanide, Total | | 0.42 | J H | 0.86 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 58.0 | H | 27.7 | mg/Kg | AVS |
| Total Organic Carbon | | 25900 | H | 1860 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 46.3 | H | 0.25 | % | Moisture |
| Percent Solids | | 53.7 | H | 0.25 | % | Moisture |
| Ammonia | | 5.2 | H B | 0.37 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1200 | H | 146 | mg/Kg | SM 4500 Norg C |
| Moisture Content | | 83.1 | H | | % | D2216-90 |
| Total Organic Matter | | 5.4 | | | % | D2974 |
| Moisture Content | | 83.1 | | | % | D2974 |
| Ash Content | | 94.6 | | | % | D2974 |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 7.5 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.1 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 0.5 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 6.9 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 59.7 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 32.8 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.9 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 99.4 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 99.0 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 98.4 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 98.0 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 92.5 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 78.5 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 64.9 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 46.3 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 39.5 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 32.8 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 22.3 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 16.9 | | | % Passing | D422 |
| Liquid Limit | | 60 | | | NONE | D4318 |
| Plastic Limit | | 33 | | | NONE | D4318 |
| Plasticity Index | | 27 | | | NONE | D4318 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-14** | **PB-1** | | | | | |
| Carbon disulfide | | 0.097 | J H B | 5.8 | ug/Kg | 8260B |
| Methylene Chloride | | 0.20 | J H B | 5.8 | ug/Kg | 8260B |
| Tetrahydrofuran | | 2.3 | J H B | 58 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.19 | J H B | 5.8 | ug/Kg | 8260B |
| Naphthalene | | 0.42 | J H B | 5.8 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.25 | J H B | 5.8 | ug/Kg | 8260B |
| Cyanide, Total | | 0.22 | J H | 0.59 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 37.0 | H | 17.8 | mg/Kg | AVS |
| Total Organic Carbon | | 9710 | H | 1200 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 16.8 | H | 0.25 | % | Moisture |
| Percent Solids | | 83.2 | H | 0.25 | % | Moisture |
| Ammonia | | 0.084 | J H | 0.12 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 94.1 | H | 24.0 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.3 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 97.4 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 4.8 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 21.5 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 71.1 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 1.1 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Clay | | 1.1 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 94.9 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 88.6 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 73.4 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 44.5 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 22.2 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 14.5 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 2.3 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 1.1 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 1.1 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 1.1 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-15** | **PB-2** | | | | | |
| Carbon disulfide | | 0.12 | J H B | 5.9 | ug/Kg | 8260B |
| Methylene Chloride | | 0.36 | J H B | 5.9 | ug/Kg | 8260B |
| Tetrahydrofuran | | 1.7 | J H B | 59 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.22 | J H B | 5.9 | ug/Kg | 8260B |
| Naphthalene | | 0.43 | J H B | 5.9 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.25 | J H B | 5.9 | ug/Kg | 8260B |
| Acid Volatile Sulfides (AVS) | | 35.7 | H | 18.8 | mg/Kg | AVS |
| Total Organic Carbon | | 6780 | H | 1240 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 19.6 | H | 0.25 | % | Moisture |
| Percent Solids | | 80.4 | H | 0.25 | % | Moisture |
| Ammonia | | 0.095 | J H | 0.12 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 107 | H | 23.0 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.6 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 97.8 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 1.0 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 11.9 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 84.9 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 0.4 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.4 | | | % Passing | D422 |
| Clay | | 1.2 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 98.4 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 95.4 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 86.5 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 62.0 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 32.7 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 21.2 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 1.6 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 1.3 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 1.0 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 1.0 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-16** | **PB-3** | | | | | |
| Carbon disulfide | | 0.091 | J H B | 5.8 | ug/Kg | 8260B |
| Methylene Chloride | | 0.31 | J H B | 5.8 | ug/Kg | 8260B |
| Tetrahydrofuran | | 2.0 | J H B | 58 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.18 | J H B | 5.8 | ug/Kg | 8260B |
| Naphthalene | | 0.34 | J H B | 5.8 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.22 | J H B | 5.8 | ug/Kg | 8260B |
| Cyanide, Total | | 0.079 | J H | 0.60 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 36.9 | H | 18.0 | mg/Kg | AVS |
| Total Organic Carbon | | 7340 | H | 1240 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 19.1 | H | 0.25 | % | Moisture |
| Percent Solids | | 80.9 | H | 0.25 | % | Moisture |
| Ammonia | | 0.072 | J H | 0.12 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 93.1 | H | 24.7 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.9 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 96.7 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 2.8 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 12.9 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 81.0 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 1.3 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.1 | | | % Passing | D422 |
| Clay | | 1.0 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 96.3 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 91.7 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 83.4 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 64.4 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 41.1 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 29.5 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 2.4 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 1.0 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 1.0 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 1.0 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-17** | **PB-4** | | | | | |
| Carbon disulfide | | 0.19 | J H B | 6.0 | ug/Kg | 8260B |
| Methylene Chloride | | 0.99 | J H B | 6.0 | ug/Kg | 8260B |
| Tetrahydrofuran | | 2.5 | J H B | 60 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.21 | J H B | 6.0 | ug/Kg | 8260B |
| Naphthalene | | 0.48 | J H B | 6.0 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.26 | J H B | 6.0 | ug/Kg | 8260B |
| Acid Volatile Sulfides (AVS) | | 28.2 | H | 16.6 | mg/Kg | AVS |
| Total Organic Carbon | | 9500 | H | 1230 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 18.5 | H | 0.25 | % | Moisture |
| Percent Solids | | 81.5 | H | 0.25 | % | Moisture |
| Ammonia | | 0.11 | J H | 0.12 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 102 | H | 24.6 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 94.7 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.4 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 2.1 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 92.2 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 4.2 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 1.1 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.0 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 97.5 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 90.6 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 72.4 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 57.6 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 5.3 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 3.1 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 3.1 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 2.1 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 1.1 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 0.9 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 0.9 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-18** | **PB COMPOSITE** | | | | | |
| Carbon disulfide | | 0.18 | J H B | 5.8 | ug/Kg | 8260B |
| Methylene Chloride | | 0.76 | J H B | 5.8 | ug/Kg | 8260B |
| Tetrahydrofuran | | 4.3 | J H B | 58 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.18 | J H B | 5.8 | ug/Kg | 8260B |
| Naphthalene | | 0.37 | J H B | 5.8 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.24 | J H B | 5.8 | ug/Kg | 8260B |
| Acid Volatile Sulfides (AVS) | | 31.6 | H | 17.7 | mg/Kg | AVS |
| Total Organic Carbon | | 5430 | H | 1240 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 19.2 | H | 0.25 | % | Moisture |
| Percent Solids | | 80.8 | H | 0.25 | % | Moisture |
| Ammonia | | 0.098 | J H | 0.12 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 72.0 | H | 22.9 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.3 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 98.3 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 2.8 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 10.7 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 84.8 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 0.3 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Clay | | 1.1 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 96.9 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 93.1 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 86.2 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 70.5 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 50.0 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 38.3 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 1.4 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 1.2 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 1.1 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 0.9 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 0.9 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-19** | **BS-1** | | | | | |
| Acetone | | 11 | H | 6.4 | ug/Kg | 8260B |
| Carbon disulfide | | 0.13 | J H B | 6.4 | ug/Kg | 8260B |
| Methyl acetate | | 2.8 | J H | 6.4 | ug/Kg | 8260B |
| Tetrahydrofuran | | 2.4 | J H B | 64 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 0.24 | J H B | 6.4 | ug/Kg | 8260B |
| 1,2-Dichlorobenzene | | 0.18 | J H B | 6.4 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.44 | J H B | 6.4 | ug/Kg | 8260B |
| Naphthalene | | 0.93 | J H B | 6.4 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.49 | J H B | 6.4 | ug/Kg | 8260B |
| Cyanide, Total | | 0.081 | J H | 0.63 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 41.6 | H | 21.0 | mg/Kg | AVS |
| Total Organic Carbon | | 33200 | H | 1320 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 24.3 | H | 0.25 | % | Moisture |
| Percent Solids | | 75.7 | H | 0.25 | % | Moisture |
| Ammonia | | 2.0 | H | 0.13 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1550 | H | 254 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 12.8 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.3 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 4.9 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 7.6 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 48.5 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 38.7 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 99.7 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 97.2 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 94.8 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 93.4 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 92.0 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 91.1 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 87.2 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 72.5 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 66.1 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 53.3 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 46.9 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 38.7 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 27.5 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 17.9 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-20** | **BS-2** | | | | | |
| Acetone | | 86 | H | 6.0 | ug/Kg | 8260B |
| Carbon disulfide | | 0.11 | J H B | 6.0 | ug/Kg | 8260B |
| Methyl acetate | | 4.6 | J H | 6.0 | ug/Kg | 8260B |
| 2-Butanone | | 2.5 | J H | 6.0 | ug/Kg | 8260B |
| Tetrahydrofuran | | 3.5 | J H B | 60 | ug/Kg | 8260B |
| Chloroform | | 0.29 | J H | 6.0 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 0.22 | J H B | 6.0 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.35 | J H B | 6.0 | ug/Kg | 8260B |
| Naphthalene | | 0.68 | J H B | 6.0 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.40 | J H B | 6.0 | ug/Kg | 8260B |
| Acid Volatile Sulfides (AVS) | | 36.6 | H | 19.1 | mg/Kg | AVS |
| Total Organic Carbon | | 18200 | H | 1240 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 19.5 | H | 0.25 | % | Moisture |
| Percent Solids | | 80.5 | H | 0.25 | % | Moisture |
| Ammonia | | 2.2 | H | 0.12 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1070 | H | 226 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 16.4 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.0 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 6.0 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 10.4 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 46.6 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 37.0 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 97.4 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 94.0 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 91.9 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 90.2 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 89.3 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 83.6 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 66.2 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 60.3 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 51.6 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 44.3 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 37.0 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 28.0 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 19.0 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-21** | **BS-3** | | | | | |
| Acetone | | 160 | H | 6.5 | ug/Kg | 8260B |
| Carbon disulfide | | 0.091 | J H B | 6.5 | ug/Kg | 8260B |
| Methyl acetate | | 6.1 | J H | 6.5 | ug/Kg | 8260B |
| 2-Butanone | | 4.0 | J H | 6.5 | ug/Kg | 8260B |
| 4-Isopropyltoluene | | 0.32 | J H B | 6.5 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 0.25 | J H B | 6.5 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.35 | J H B | 6.5 | ug/Kg | 8260B |
| Naphthalene | | 0.74 | J H B | 6.5 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.51 | J H B | 6.5 | ug/Kg | 8260B |
| Cyanide, Total | | 0.21 | J H | 0.65 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 35.0 | H | 20.6 | mg/Kg | AVS |
| Total Organic Carbon | | 96200 | H | 1330 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 25.0 | H | 0.25 | % | Moisture |
| Percent Solids | | 75.0 | H | 0.25 | % | Moisture |
| Ammonia | | 4.3 | H | 0.27 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 2640 | H | 267 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 1.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 29.8 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.7 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 12.0 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 17.1 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 47.4 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 99.0 | | | % Passing | D422 |
| Clay | | 21.8 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 98.3 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 94.1 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 86.3 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 80.3 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 76.8 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 75.5 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 69.2 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 42.7 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 40.1 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 34.9 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 27.0 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 21.8 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 13.5 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 10.5 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-22** | **BS 4** | | | | | |
| Carbon disulfide | | 0.78 | J H B | 6.6 | ug/Kg | 8260B |
| Methyl acetate | | 2.2 | J H | 6.6 | ug/Kg | 8260B |
| Methylene Chloride | | 0.22 | J H B | 6.6 | ug/Kg | 8260B |
| Tetrahydrofuran | | 3.5 | J H B | 66 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 0.23 | J H B | 6.6 | ug/Kg | 8260B |
| 1,2-Dichlorobenzene | | 0.19 | J H B | 6.6 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.49 | J H B | 6.6 | ug/Kg | 8260B |
| Naphthalene | | 0.99 | J H B | 6.6 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.53 | J H B | 6.6 | ug/Kg | 8260B |
| Cyanide, Total | | 0.19 | J H | 0.71 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 38.4 | H | 22.3 | mg/Kg | AVS |
| Total Organic Carbon | | 103000 | H | 1410 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 29.2 | H | 0.25 | % | Moisture |
| Percent Solids | | 70.8 | H | 0.25 | % | Moisture |
| Ammonia | | 4.2 | H | 0.28 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1810 | H | 282 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 10.8 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 40.3 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 16.7 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 12.5 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 11.1 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 25.2 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 89.2 | | | % Passing | D422 |
| Clay | | 23.7 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 72.5 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 64.3 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 60.0 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 56.8 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 54.6 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 53.7 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 48.9 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 36.2 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 34.2 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 30.0 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 25.8 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 23.7 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 17.1 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 10.5 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-23** | **BS COMPOSITE** | | | | | |
| Acetone | | 76 | H | 6.7 | ug/Kg | 8260B |
| Carbon disulfide | | 0.11 | J H B | 6.7 | ug/Kg | 8260B |
| Methyl acetate | | 8.5 | H | 6.7 | ug/Kg | 8260B |
| 2-Butanone | | 2.5 | J H | 6.7 | ug/Kg | 8260B |
| Tetrahydrofuran | | 2.3 | J H B | 67 | ug/Kg | 8260B |
| Chlorobenzene | | 0.22 | J H | 6.7 | ug/Kg | 8260B |
| 4-Isopropyltoluene | | 0.52 | J H B | 6.7 | ug/Kg | 8260B |
| 1,4-Dichlorobenzene | | 0.33 | J H B | 6.7 | ug/Kg | 8260B |
| 1,2-Dichlorobenzene | | 0.61 | J H B | 6.7 | ug/Kg | 8260B |
| 1,2,4-Trichlorobenzene | | 0.29 | J H B | 6.7 | ug/Kg | 8260B |
| Naphthalene | | 0.77 | J H B | 6.7 | ug/Kg | 8260B |
| 1,2,3-Trichlorobenzene | | 0.41 | J H B | 6.7 | ug/Kg | 8260B |
| Cyanide, Total | | 0.15 | J H | 0.64 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 36.2 | H | 21.1 | mg/Kg | AVS |
| Total Organic Carbon | | 65800 | H | 1350 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 25.9 | H | 0.25 | % | Moisture |
| Percent Solids | | 74.1 | H | 0.25 | % | Moisture |
| Ammonia | | 3.9 | H | 0.27 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 1130 | H | 270 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 5.8 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 23.5 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 2.3 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 10.4 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 10.8 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 94.8 | | | % Passing | D422 |
| Silt | | 42.5 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 94.2 | | | % Passing | D422 |
| Clay | | 28.2 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 91.9 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 88.0 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 81.5 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 78.1 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 76.1 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 75.2 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 70.7 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 52.4 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 47.2 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 40.3 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 33.4 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 28.2 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 19.0 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 12.1 | | | % Passing | D422 |

## EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2983-24** | **DMU SIEVED COMPOSITE** | | | | | |
| Methyl acetate | | 630 | H | 220 | ug/Kg | 8260B |
| Toluene | | 4300 | H | 220 | ug/Kg | 8260B |
| Naphthalene | | 240 | H | 220 | ug/Kg | 8260B |
| Cyanide, Total | | 0.40 | J H | 0.99 | mg/Kg | 9012A |
| Acid Volatile Sulfides (AVS) | | 66.9 | H | 34.2 | mg/Kg | AVS |
| Total Organic Carbon | | 39700 | H | 2180 | mg/Kg | Lloyd Kahn |
| Percent Moisture | | 54.2 | H | 0.25 | % | Moisture |
| Percent Solids | | 45.8 | H | 0.25 | % | Moisture |
| Ammonia | | 6.8 | H | 0.44 | mg/Kg | SM 4500 NH3 C |
| Nitrogen, Kjeldahl | | 395 | H | 43.6 | mg/Kg | SM 4500 Norg C |
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Gravel | | 0.0 | | | % | D422 |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sand | | 17.8 | | | % | D422 |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Coarse Sand | | 0.0 | | | % | D422 |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Medium Sand | | 1.2 | | | % | D422 |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Fine Sand | | 16.6 | | | % | D422 |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | % Passing | D422 |
| Silt | | 64.6 | | | % | D422 |
| Sieve Size #4 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Clay | | 17.6 | | | % | D422 |
| Sieve Size #10 - Percent Finer | | 100.0 | | | % Passing | D422 |
| Sieve Size #20 - Percent Finer | | 99.6 | | | % Passing | D422 |
| Sieve Size #40 - Percent Finer | | 98.8 | | | % Passing | D422 |
| Sieve Size #60 - Percent Finer | | 97.0 | | | % Passing | D422 |
| Sieve Size #80 - Percent Finer | | 94.2 | | | % Passing | D422 |
| Sieve Size #100 - Percent Finer | | 92.7 | | | % Passing | D422 |
| Sieve Size #200 - Percent Finer | | 82.2 | | | % Passing | D422 |
| Hydrometer Reading 1 - Percent Finer | | 57.8 | | | % Passing | D422 |
| Hydrometer Reading 2 - Percent Finer | | 44.5 | | | % Passing | D422 |
| Hydrometer Reading 3 - Percent Finer | | 28.5 | | | % Passing | D422 |
| Hydrometer Reading 4 - Percent Finer | | 21.8 | | | % Passing | D422 |
| Hydrometer Reading 5 - Percent Finer | | 17.6 | | | % Passing | D422 |
| Hydrometer Reading 6 - Percent Finer | | 12.2 | | | % Passing | D422 |
| Hydrometer Reading 7 - Percent Finer | | 9.3 | | | % Passing | D422 |

# METHOD SUMMARY

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Sediment** | | | |
| Volatile Organic Compounds (GC/MS) | TAL BUR | SW846 8260B | |
| Closed System Purge and Trap | TAL BUR | | SW846 5035 |
| Volatile Organic Compounds (GC/MS) | TAL BUR | SW846 8260B | |
| Purge and Trap | TAL BUR | | SW846 5035 |
| Cyanide, Total and/or Amenable | TAL BUR | SW846 9012A | |
| Cyanide, Total and/or Amenable, Distillation | TAL BUR | | SW846 9012A |
| Acid Volatile Sulfide (AVS) | TAL BUR | EPA AVS | |
| Preparation, Acid Volatile Sulfide (AVS) and Simultaneously Extracted Metals (SE | TAL BUR | | EPA AVSSEM |
| Organic Carbon, Total (TOC) | TAL BUR | NJDEP Lloyd Kahn | |
| Percent Moisture | TAL BUR | EPA Moisture | |
| Ammonia | TAL BUR | SM SM 4500 NH3 C | |
| Ammonia, Distillation | TAL BUR | | SM SM 4500 NH3 B |
| Nitrogen-Total Kjeldahl | TAL BUR | SM SM 4500 Norg C | |
| Preparation, Nitrogen -Total Kjeldahl | TAL BUR | | SM SM4500Norg_C |
| Water (Moisture) Content | TAL BUR | ASTM D2216-90 | |
| Moisture, Ash and Organic Matter | TAL BUR | ASTM D2974 | |
| Grain Size | TAL BUR | ASTM D422 | |
| Liquid Limit, Plastic Limit and Plasticity Index of Soils | TAL BUR | ASTM D4318 | |

**Lab References:**

TAL BUR = TestAmerica Burlington

**Method References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

NJDEP = New Jersey Department of Environmental Protection

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Heald, John | JRH |
| SW846 8260B | Phillips, Mark T | MTP |
| SW846 9012A | Nelson, Andrea J | AJN |
| EPA AVS | Nelson, Andrea J | AJN |
| EPA AVS | Tam, Michelle N | MNT |
| NJDEP Lloyd Kahn | Tam, Michelle N | MNT |
| EPA Moisture | Nelson, Andrea J | AJN |
| SM SM 4500 NH3 C | Tam, Michelle N | MNT |
| SM SM 4500 Norg C | Nelson, Andrea J | AJN |
| SM SM 4500 Norg C | Tam, Michelle N | MNT |
| ASTM D2216-90 | Peterson, Mark A | MAP |
| ASTM D2974 | Peterson, Mark A | MAP |
| ASTM D422 | Peterson, Mark A | MAP |
| ASTM D4318 | Peterson, Mark A | MAP |

## SAMPLE SUMMARY

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 200-2983-1 | CH-1 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-2 | CH-2 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-3 | CH-3 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-4 | CH-4 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-5 | CH-5 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-6 | CH-5 DUP | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-7 | CH-6A | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-8 | CH-6B | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-9 | CH-7A | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-10 | CH-7B | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-11 | CH-8 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-12 | DMU 1 (COMPOSITE) | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-13 | DMU 2 (COMPOSITE) | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-14 | PB-1 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-15 | PB-2 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-16 | PB-3 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-17 | PB-4 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-18 | PB COMPOSITE | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-19 | BS-1 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-20 | BS-2 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-21 | BS-3 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-22 | BS 4 | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-23 | BS COMPOSITE | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |
| 200-2983-24 | DMU SIEVED COMPOSITE | Sediment | 11/09/2010 0000 | 12/15/2010 1020 |

# SAMPLE RESULTS

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-1**

Lab Sample ID: 200-2983-1
Client Matrix: Sediment
% Moisture: 54.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw06.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.007 g |
| Date Analyzed: | 12/21/2010 1226 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 220 | U H | 110 | 220 |
| Chloromethane | | 220 | U H | 81 | 220 |
| Vinyl chloride | | 220 | U H | 110 | 220 |
| Bromomethane | | 85 | J H B | 77 | 220 |
| Chloroethane | | 220 | U H | 130 | 220 |
| Trichlorofluoromethane | | 220 | U H | 110 | 220 |
| 1,1-Dichloroethene | | 220 | U H | 46 | 220 |
| Freon TF | | 220 | U H | 61 | 220 |
| Acetone | | 1100 | U H | 220 | 1100 |
| Methyl iodide | | 220 | U H * | 110 | 220 |
| Carbon disulfide | | 48 | J H | 42 | 220 |
| Methyl acetate | | 910 | H | 110 | 220 |
| Methylene Chloride | | 220 | U H | 110 | 220 |
| trans-1,2-Dichloroethene | | 220 | U H | 110 | 220 |
| 1,2-Dichloroethene, Total | | 220 | U H | 75 | 220 |
| Methyl t-butyl ether | | 220 | U H | 110 | 220 |
| 1,1-Dichloroethane | | 220 | U H | 79 | 220 |
| Vinyl acetate | | 220 | U H | 110 | 220 |
| 2,2-Dichloropropane | | 220 | U H | 100 | 220 |
| cis-1,2-Dichloroethene | | 220 | U H | 46 | 220 |
| 2-Butanone | | 1100 | U H | 240 | 1100 |
| Bromochloromethane | | 220 | U H | 120 | 220 |
| Tetrahydrofuran | | 3100 | U H | 1100 | 3100 |
| Chloroform | | 220 | U H | 72 | 220 |
| 1,1,1-Trichloroethane | | 220 | U H | 79 | 220 |
| Cyclohexane | | 220 | U H | 77 | 220 |
| 1,1-Dichloropropene | | 220 | U H | 48 | 220 |
| Carbon tetrachloride | | 220 | U H | 70 | 220 |
| Isobutyl alcohol | | 11000 | U H | 5500 | 11000 |
| Benzene | | 220 | U H | 68 | 220 |
| 1,2-Dichloroethane | | 220 | U H | 72 | 220 |
| Trichloroethene | | 220 | U H | 110 | 220 |
| Methylcyclohexane | | 220 | U H | 110 | 220 |
| 1,2-Dichloropropane | | 220 | U H | 83 | 220 |
| Dibromomethane | | 220 | U H | 55 | 220 |
| 1,4-Dioxane | | 11000 | U H | 5900 | 11000 |
| Bromodichloromethane | | 220 | U H | 81 | 220 |
| 2-Chloroethyl vinyl ether | | 220 | U H | 29 | 220 |
| cis-1,3-Dichloropropene | | 220 | U H | 70 | 220 |
| 4-Methyl-2-pentanone | | 1100 | U H | 46 | 1100 |
| Toluene | | 4300 | H | 110 | 220 |
| trans-1,3-Dichloropropene | | 220 | U H | 110 | 220 |
| 1,1,2-Trichloroethane | | 220 | U H | 92 | 220 |
| Tetrachloroethene | | 220 | U H | 110 | 220 |
| 1,3-Dichloropropane | | 220 | U H | 72 | 220 |
| 2-Hexanone | | 1100 | U H | 220 | 1100 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-1**

Lab Sample ID: 200-2983-1
Client Matrix: Sediment
% Moisture: 54.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw06.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.007 g |
| Date Analyzed: | 12/21/2010 1226 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 220 | U H | 81 | 220 |
| 1,2-Dibromoethane | | 220 | U H | 110 | 220 |
| Chlorobenzene | | 220 | U H | 50 | 220 |
| 1,1,1,2-Tetrachloroethane | | 220 | U H | 79 | 220 |
| Ethylbenzene | | 220 | U H | 110 | 220 |
| m&p-Xylene | | 220 | U H | 110 | 220 |
| o-Xylene | | 220 | U H | 110 | 220 |
| Xylenes, Total | | 220 | U H | 110 | 220 |
| Styrene | | 220 | U H | 110 | 220 |
| Bromoform | | 220 | U H | 86 | 220 |
| Isopropylbenzene | | 220 | U H | 110 | 220 |
| Bromobenzene | | 220 | U H | 81 | 220 |
| 1,1,2,2-Tetrachloroethane | | 220 | U H | 81 | 220 |
| 1,2,3-Trichloropropane | | 220 | U H | 120 | 220 |
| n-Propylbenzene | | 220 | U H | 110 | 220 |
| 2-Chlorotoluene | | 220 | U H | 72 | 220 |
| 4-Chlorotoluene | | 220 | U H | 75 | 220 |
| 1,3,5-Trimethylbenzene | | 220 | U H | 70 | 220 |
| tert-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,2,4-Trimethylbenzene | | 220 | U H | 75 | 220 |
| sec-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,3-Dichlorobenzene | | 220 | U H | 55 | 220 |
| 4-Isopropyltoluene | | 220 | U H | 39 | 220 |
| 1,4-Dichlorobenzene | | 220 | U H | 50 | 220 |
| 1,2-Dichlorobenzene | | 220 | U H | 61 | 220 |
| n-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,2-Dibromo-3-Chloropropane | | 220 | U H | 100 | 220 |
| 1,2,4-Trichlorobenzene | | 37 | J H B | 35 | 220 |
| Hexachlorobutadiene | | 220 | U H | 110 | 220 |
| Naphthalene | | 490 | H | 110 | 220 |
| 1,2,3-Trichlorobenzene | | 220 | U H | 55 | 220 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | | 65 - 155 |
| Toluene-d8 | 106 | | 80 - 115 |
| Bromofluorobenzene | 99 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 105 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-2**

Lab Sample ID: 200-2983-2
Client Matrix: Sediment
% Moisture: 54.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw18.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.135 g |
| Date Analyzed: | 12/21/2010 1852 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 210 | U H | 110 | 210 |
| Chloromethane | | 210 | U H | 79 | 210 |
| Vinyl chloride | | 210 | U H | 110 | 210 |
| Bromomethane | | 210 | U H | 75 | 210 |
| Chloroethane | | 210 | U H | 130 | 210 |
| Trichlorofluoromethane | | 210 | U H | 110 | 210 |
| 1,1-Dichloroethene | | 210 | U H | 45 | 210 |
| Freon TF | | 210 | U H | 60 | 210 |
| Acetone | | 1100 | U H | 210 | 1100 |
| Methyl iodide | | 210 | U H * | 110 | 210 |
| Carbon disulfide | | 210 | U H | 41 | 210 |
| Methyl acetate | | 920 | H | 110 | 210 |
| Methylene Chloride | | 210 | U H | 110 | 210 |
| trans-1,2-Dichloroethene | | 210 | U H | 110 | 210 |
| 1,2-Dichloroethene, Total | | 210 | U H | 73 | 210 |
| Methyl t-butyl ether | | 210 | U H | 110 | 210 |
| 1,1-Dichloroethane | | 210 | U H | 77 | 210 |
| Vinyl acetate | | 210 | U H | 110 | 210 |
| 2,2-Dichloropropane | | 210 | U H | 98 | 210 |
| cis-1,2-Dichloroethene | | 210 | U H | 45 | 210 |
| 2-Butanone | | 1100 | U H | 230 | 1100 |
| Bromochloromethane | | 210 | U H | 110 | 210 |
| Tetrahydrofuran | | 3000 | U H | 1100 | 3000 |
| Chloroform | | 210 | U H | 70 | 210 |
| 1,1,1-Trichloroethane | | 210 | U H | 77 | 210 |
| Cyclohexane | | 210 | U H | 75 | 210 |
| 1,1-Dichloropropene | | 210 | U H | 47 | 210 |
| Carbon tetrachloride | | 210 | U H | 68 | 210 |
| Isobutyl alcohol | | 11000 | U H | 5300 | 11000 |
| Benzene | | 210 | U H | 66 | 210 |
| 1,2-Dichloroethane | | 210 | U H | 70 | 210 |
| Trichloroethene | | 210 | U H | 110 | 210 |
| Methylcyclohexane | | 210 | U H | 110 | 210 |
| 1,2-Dichloropropane | | 210 | U H | 81 | 210 |
| Dibromomethane | | 210 | U H | 53 | 210 |
| 1,4-Dioxane | | 11000 | U H | 5800 | 11000 |
| Bromodichloromethane | | 210 | U H | 79 | 210 |
| 2-Chloroethyl vinyl ether | | 210 | U H | 28 | 210 |
| cis-1,3-Dichloropropene | | 210 | U H | 68 | 210 |
| 4-Methyl-2-pentanone | | 1100 | U H | 45 | 1100 |
| Toluene | | 3900 | H | 110 | 210 |
| trans-1,3-Dichloropropene | | 210 | U H | 110 | 210 |
| 1,1,2-Trichloroethane | | 210 | U H | 90 | 210 |
| Tetrachloroethene | | 210 | U H | 110 | 210 |
| 1,3-Dichloropropane | | 210 | U H | 70 | 210 |
| 2-Hexanone | | 1100 | U H | 210 | 1100 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-2**

Lab Sample ID: 200-2983-2
Client Matrix: Sediment
% Moisture: 54.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw18.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.135 g |
| Date Analyzed: | 12/21/2010 1852 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 210 | U H | 79 | 210 |
| 1,2-Dibromoethane | | 210 | U H | 110 | 210 |
| Chlorobenzene | | 210 | U H | 49 | 210 |
| 1,1,1,2-Tetrachloroethane | | 210 | U H | 77 | 210 |
| Ethylbenzene | | 210 | U H | 110 | 210 |
| m&p-Xylene | | 210 | U H | 110 | 210 |
| o-Xylene | | 210 | U H | 110 | 210 |
| Xylenes, Total | | 210 | U H | 110 | 210 |
| Styrene | | 210 | U H | 110 | 210 |
| Bromoform | | 210 | U H | 83 | 210 |
| Isopropylbenzene | | 210 | U H | 110 | 210 |
| Bromobenzene | | 210 | U H | 79 | 210 |
| 1,1,2,2-Tetrachloroethane | | 210 | U H | 79 | 210 |
| 1,2,3-Trichloropropane | | 210 | U H | 120 | 210 |
| n-Propylbenzene | | 210 | U H | 110 | 210 |
| 2-Chlorotoluene | | 210 | U H | 70 | 210 |
| 4-Chlorotoluene | | 210 | U H | 73 | 210 |
| 1,3,5-Trimethylbenzene | | 210 | U H | 68 | 210 |
| tert-Butylbenzene | | 210 | U H | 110 | 210 |
| 1,2,4-Trimethylbenzene | | 210 | U H | 73 | 210 |
| sec-Butylbenzene | | 210 | U H | 110 | 210 |
| 1,3-Dichlorobenzene | | 210 | U H | 53 | 210 |
| 4-Isopropyltoluene | | 210 | U H | 38 | 210 |
| 1,4-Dichlorobenzene | | 210 | U H | 49 | 210 |
| 1,2-Dichlorobenzene | | 210 | U H | 60 | 210 |
| n-Butylbenzene | | 210 | U H | 110 | 210 |
| 1,2-Dibromo-3-Chloropropane | | 210 | U H | 98 | 210 |
| 1,2,4-Trichlorobenzene | | 210 | U H | 34 | 210 |
| Hexachlorobutadiene | | 210 | U H | 110 | 210 |
| Naphthalene | | 120 | J H | 110 | 210 |
| 1,2,3-Trichlorobenzene | | 210 | U H | 53 | 210 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 84 | | 65 - 155 |
| Toluene-d8 | 104 | | 80 - 115 |
| Bromofluorobenzene | 98 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 103 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-3**

Lab Sample ID: 200-2983-3
Client Matrix: Sediment
% Moisture: 54.9

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw08.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.99 g |
| Date Analyzed: | 12/21/2010 1330 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 220 | U H | 110 | 220 |
| Chloromethane | | 220 | U H | 82 | 220 |
| Vinyl chloride | | 220 | U H | 110 | 220 |
| Bromomethane | | 220 | U H | 78 | 220 |
| Chloroethane | | 220 | U H | 130 | 220 |
| Trichlorofluoromethane | | 220 | U H | 110 | 220 |
| 1,1-Dichloroethene | | 220 | U H | 47 | 220 |
| Freon TF | | 220 | U H | 62 | 220 |
| Acetone | | 1100 | U H | 220 | 1100 |
| Methyl iodide | | 220 | U H * | 110 | 220 |
| Carbon disulfide | | 220 | U H | 42 | 220 |
| Methyl acetate | | 1100 | H | 110 | 220 |
| Methylene Chloride | | 220 | U H | 110 | 220 |
| trans-1,2-Dichloroethene | | 220 | U H | 110 | 220 |
| 1,2-Dichloroethene, Total | | 220 | U H | 76 | 220 |
| Methyl t-butyl ether | | 220 | U H | 110 | 220 |
| 1,1-Dichloroethane | | 220 | U H | 80 | 220 |
| Vinyl acetate | | 220 | U H | 110 | 220 |
| 2,2-Dichloropropane | | 220 | U H | 100 | 220 |
| cis-1,2-Dichloroethene | | 220 | U H | 47 | 220 |
| 2-Butanone | | 1100 | U H | 240 | 1100 |
| Bromochloromethane | | 220 | U H | 120 | 220 |
| Tetrahydrofuran | | 3100 | U H | 1100 | 3100 |
| Chloroform | | 220 | U H | 73 | 220 |
| 1,1,1-Trichloroethane | | 220 | U H | 80 | 220 |
| Cyclohexane | | 220 | U H | 78 | 220 |
| 1,1-Dichloropropene | | 220 | U H | 49 | 220 |
| Carbon tetrachloride | | 220 | U H | 71 | 220 |
| Isobutyl alcohol | | 11000 | U H | 5600 | 11000 |
| Benzene | | 220 | U H | 69 | 220 |
| 1,2-Dichloroethane | | 220 | U H | 73 | 220 |
| Trichloroethene | | 220 | U H | 110 | 220 |
| Methylcyclohexane | | 220 | U H | 110 | 220 |
| 1,2-Dichloropropane | | 220 | U H | 84 | 220 |
| Dibromomethane | | 220 | U H | 56 | 220 |
| 1,4-Dioxane | | 11000 | U H | 6000 | 11000 |
| Bromodichloromethane | | 220 | U H | 82 | 220 |
| 2-Chloroethyl vinyl ether | | 220 | U H | 29 | 220 |
| cis-1,3-Dichloropropene | | 220 | U H | 71 | 220 |
| 4-Methyl-2-pentanone | | 1100 | U H | 47 | 1100 |
| Toluene | | 11000 | H | 110 | 220 |
| trans-1,3-Dichloropropene | | 220 | U H | 110 | 220 |
| 1,1,2-Trichloroethane | | 220 | U H | 93 | 220 |
| Tetrachloroethene | | 220 | U H | 110 | 220 |
| 1,3-Dichloropropane | | 220 | U H | 73 | 220 |
| 2-Hexanone | | 1100 | U H | 220 | 1100 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-3**

Lab Sample ID: 200-2983-3
Client Matrix: Sediment
% Moisture: 54.9

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw08.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.99 g |
| Date Analyzed: | 12/21/2010 1330 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 220 | U H | 82 | 220 |
| 1,2-Dibromoethane | | 220 | U H | 110 | 220 |
| Chlorobenzene | | 220 | U H | 51 | 220 |
| 1,1,1,2-Tetrachloroethane | | 220 | U H | 80 | 220 |
| Ethylbenzene | | 220 | U H | 110 | 220 |
| m&p-Xylene | | 220 | U H | 110 | 220 |
| o-Xylene | | 220 | U H | 110 | 220 |
| Xylenes, Total | | 220 | U H | 110 | 220 |
| Styrene | | 220 | U H | 110 | 220 |
| Bromoform | | 220 | U H | 87 | 220 |
| Isopropylbenzene | | 220 | U H | 110 | 220 |
| Bromobenzene | | 220 | U H | 82 | 220 |
| 1,1,2,2-Tetrachloroethane | | 220 | U H | 82 | 220 |
| 1,2,3-Trichloropropane | | 220 | U H | 120 | 220 |
| n-Propylbenzene | | 220 | U H | 110 | 220 |
| 2-Chlorotoluene | | 220 | U H | 73 | 220 |
| 4-Chlorotoluene | | 220 | U H | 76 | 220 |
| 1,3,5-Trimethylbenzene | | 220 | U H | 71 | 220 |
| tert-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,2,4-Trimethylbenzene | | 220 | U H | 76 | 220 |
| sec-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,3-Dichlorobenzene | | 220 | U H | 56 | 220 |
| 4-Isopropyltoluene | | 220 | U H | 40 | 220 |
| 1,4-Dichlorobenzene | | 220 | U H | 51 | 220 |
| 1,2-Dichlorobenzene | | 220 | U H | 62 | 220 |
| n-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,2-Dibromo-3-Chloropropane | | 220 | U H | 100 | 220 |
| 1,2,4-Trichlorobenzene | | 220 | U H | 36 | 220 |
| Hexachlorobutadiene | | 220 | U H | 110 | 220 |
| Naphthalene | | 220 | U H | 110 | 220 |
| 1,2,3-Trichlorobenzene | | 220 | U H | 56 | 220 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 84 | | 65 - 155 |
| Toluene-d8 | 105 | | 80 - 115 |
| Bromofluorobenzene | 99 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 104 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-4**

Lab Sample ID: 200-2983-4
Client Matrix: Sediment
% Moisture: 49.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia09.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.313 g |
| Date Analyzed: | 12/22/2010 1557 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 9.3 | U H | 0.14 | 9.3 |
| Chloromethane | | 9.3 | U H | 0.93 | 9.3 |
| Vinyl chloride | | 9.3 | U H | 0.93 | 9.3 |
| Bromomethane | | 9.3 | U H | 0.32 | 9.3 |
| Chloroethane | | 9.3 | U H | 0.54 | 9.3 |
| Trichlorofluoromethane | | 9.3 | U H | 0.13 | 9.3 |
| 1,1-Dichloroethene | | 9.3 | U H | 0.12 | 9.3 |
| Freon TF | | 9.3 | U H | 0.13 | 9.3 |
| Acetone | | 120 | H | 3.7 | 9.3 |
| Methyl iodide | | 9.3 | U H | 1.9 | 9.3 |
| Carbon disulfide | | 0.89 | J H B | 0.089 | 9.3 |
| Methyl acetate | | 9.3 | U H | 0.58 | 9.3 |
| Methylene Chloride | | 9.3 | U H | 0.26 | 9.3 |
| trans-1,2-Dichloroethene | | 9.3 | U H | 0.15 | 9.3 |
| 1,2-Dichloroethene, Total | | 9.3 | U H | 0.74 | 9.3 |
| Methyl t-butyl ether | | 9.3 | U H | 0.14 | 9.3 |
| 1,1-Dichloroethane | | 9.3 | U H | 1.9 | 9.3 |
| Vinyl acetate | | 9.3 | U H | 0.71 | 9.3 |
| 2,2-Dichloropropane | | 9.3 | U H | 1.9 | 9.3 |
| cis-1,2-Dichloroethene | | 9.3 | U H | 0.93 | 9.3 |
| 2-Butanone | | 29 | H | 1.5 | 9.3 |
| Bromochloromethane | | 9.3 | U H | 0.84 | 9.3 |
| Tetrahydrofuran | | 93 | U H | 1.9 | 93 |
| Chloroform | | 9.3 | U H | 0.12 | 9.3 |
| 1,1,1-Trichloroethane | | 9.3 | U H | 0.93 | 9.3 |
| Cyclohexane | | 9.3 | U H | 1.9 | 9.3 |
| 1,1-Dichloropropene | | 9.3 | U H | 0.93 | 9.3 |
| Carbon tetrachloride | | 9.3 | U H | 0.13 | 9.3 |
| Isobutyl alcohol | | 460 | U H | 12 | 460 |
| Benzene | | 9.3 | U H | 0.37 | 9.3 |
| 1,2-Dichloroethane | | 9.3 | U H | 3.7 | 9.3 |
| Trichloroethene | | 9.3 | U H | 0.12 | 9.3 |
| Methylcyclohexane | | 2.7 | J H | 0.22 | 9.3 |
| 1,2-Dichloropropane | | 9.3 | U H | 3.7 | 9.3 |
| Dibromomethane | | 9.3 | U H | 0.26 | 9.3 |
| 1,4-Dioxane | | 460 | U H | 19 | 460 |
| Bromodichloromethane | | 9.3 | U H | 3.7 | 9.3 |
| 2-Chloroethyl vinyl ether | | 9.3 | U H | 0.22 | 9.3 |
| cis-1,3-Dichloropropene | | 9.3 | U H | 0.24 | 9.3 |
| 4-Methyl-2-pentanone | | 9.3 | U H | 0.089 | 9.3 |
| Toluene | | 1.7 | J H | 0.15 | 9.3 |
| trans-1,3-Dichloropropene | | 9.3 | U H | 0.93 | 9.3 |
| 1,1,2-Trichloroethane | | 9.3 | U H | 0.15 | 9.3 |
| Tetrachloroethene | | 9.3 | U H | 0.61 | 9.3 |
| 1,3-Dichloropropane | | 9.3 | U H | 0.12 | 9.3 |
| 2-Hexanone | | 9.3 | U H | 1.9 | 9.3 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-4**

Lab Sample ID: 200-2983-4
Client Matrix: Sediment
% Moisture: 49.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia09.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.313 g |
| Date Analyzed: | 12/22/2010 1557 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 9.3 | U H | 0.73 | 9.3 |
| 1,2-Dibromoethane | | 9.3 | U H | 3.7 | 9.3 |
| Chlorobenzene | | 9.3 | U H | 0.093 | 9.3 |
| 1,1,1,2-Tetrachloroethane | | 9.3 | U H | 0.93 | 9.3 |
| Ethylbenzene | | 9.3 | U H | 0.10 | 9.3 |
| m&p-Xylene | | 9.3 | U H | 0.74 | 9.3 |
| o-Xylene | | 9.3 | U H | 0.16 | 9.3 |
| Xylenes, Total | | 9.3 | U H | 0.28 | 9.3 |
| Styrene | | 9.3 | U H | 0.37 | 9.3 |
| Bromoform | | 9.3 | U H | 3.7 | 9.3 |
| Isopropylbenzene | | 9.3 | U H | 0.20 | 9.3 |
| Bromobenzene | | 9.3 | U H | 0.15 | 9.3 |
| 1,1,2,2-Tetrachloroethane | | 9.3 | U H | 1.9 | 9.3 |
| 1,2,3-Trichloropropane | | 9.3 | U H | 0.39 | 9.3 |
| n-Propylbenzene | | 9.3 | U H | 0.22 | 9.3 |
| 2-Chlorotoluene | | 9.3 | U H | 0.24 | 9.3 |
| 4-Chlorotoluene | | 9.3 | U H | 0.30 | 9.3 |
| 1,3,5-Trimethylbenzene | | 9.3 | U H | 0.20 | 9.3 |
| tert-Butylbenzene | | 9.3 | U H | 0.26 | 9.3 |
| 1,2,4-Trimethylbenzene | | 0.72 | J H B | 0.16 | 9.3 |
| sec-Butylbenzene | | 9.3 | U H | 0.24 | 9.3 |
| 1,3-Dichlorobenzene | | 0.33 | J H B | 0.20 | 9.3 |
| 4-Isopropyltoluene | | 0.72 | J H B | 0.20 | 9.3 |
| 1,4-Dichlorobenzene | | 0.58 | J H B | 0.24 | 9.3 |
| 1,2-Dichlorobenzene | | 0.40 | J H B | 0.22 | 9.3 |
| n-Butylbenzene | | 9.3 | U H | 0.16 | 9.3 |
| 1,2-Dibromo-3-Chloropropane | | 9.3 | U H | 1.9 | 9.3 |
| 1,2,4-Trichlorobenzene | | 0.99 | J H B | 0.13 | 9.3 |
| Hexachlorobutadiene | | 9.3 | U H | 0.37 | 9.3 |
| Naphthalene | | 2.5 | J H B | 0.17 | 9.3 |
| 1,2,3-Trichlorobenzene | | 1.4 | J H B | 0.24 | 9.3 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 113 | | 65 - 155 |
| Toluene-d8 | 128 | X | 80 - 115 |
| Bromofluorobenzene | 178 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 140 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-4**

Lab Sample ID: 200-2983-4
Client Matrix: Sediment
% Moisture: 49.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia20.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.081 g |
| Date Analyzed: | 12/22/2010 2132 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 9.7 | U H | 0.15 | 9.7 |
| Chloromethane | | 9.7 | U H | 0.97 | 9.7 |
| Vinyl chloride | | 9.7 | U H | 0.97 | 9.7 |
| Bromomethane | | 9.7 | U H | 0.33 | 9.7 |
| Chloroethane | | 9.7 | U H | 0.56 | 9.7 |
| Trichlorofluoromethane | | 9.7 | U H | 0.13 | 9.7 |
| 1,1-Dichloroethene | | 9.7 | U H | 0.12 | 9.7 |
| Freon TF | | 9.7 | U H | 0.14 | 9.7 |
| Acetone | | 190 | H | 3.9 | 9.7 |
| Methyl iodide | | 9.7 | U H | 1.9 | 9.7 |
| Carbon disulfide | | 1.5 | J H B | 0.093 | 9.7 |
| Methyl acetate | | 5.1 | J H | 0.60 | 9.7 |
| Methylene Chloride | | 9.7 | U H | 0.27 | 9.7 |
| trans-1,2-Dichloroethene | | 9.7 | U H | 0.16 | 9.7 |
| 1,2-Dichloroethene, Total | | 9.7 | U H | 0.78 | 9.7 |
| Methyl t-butyl ether | | 9.7 | U H | 0.15 | 9.7 |
| 1,1-Dichloroethane | | 9.7 | U H | 1.9 | 9.7 |
| Vinyl acetate | | 9.7 | U H | 0.74 | 9.7 |
| 2,2-Dichloropropane | | 9.7 | U H | 1.9 | 9.7 |
| cis-1,2-Dichloroethene | | 9.7 | U H | 0.97 | 9.7 |
| 2-Butanone | | 48 | H | 1.5 | 9.7 |
| Bromochloromethane | | 9.7 | U H | 0.87 | 9.7 |
| Tetrahydrofuran | | 6.3 | J H B | 1.9 | 97 |
| Chloroform | | 9.7 | U H | 0.13 | 9.7 |
| 1,1,1-Trichloroethane | | 9.7 | U H | 0.97 | 9.7 |
| Cyclohexane | | 9.7 | U H | 1.9 | 9.7 |
| 1,1-Dichloropropene | | 9.7 | U H | 0.97 | 9.7 |
| Carbon tetrachloride | | 9.7 | U H | 0.13 | 9.7 |
| Isobutyl alcohol | | 490 | U H | 13 | 490 |
| Benzene | | 0.41 | J H | 0.39 | 9.7 |
| 1,2-Dichloroethane | | 9.7 | U H | 3.9 | 9.7 |
| Trichloroethene | | 9.7 | U H | 0.12 | 9.7 |
| Methylcyclohexane | | 3.7 | J H | 0.23 | 9.7 |
| 1,2-Dichloropropane | | 9.7 | U H | 3.9 | 9.7 |
| Dibromomethane | | 9.7 | U H | 0.27 | 9.7 |
| 1,4-Dioxane | | 490 | U H | 19 | 490 |
| Bromodichloromethane | | 9.7 | U H | 3.9 | 9.7 |
| 2-Chloroethyl vinyl ether | | 9.7 | U H | 0.23 | 9.7 |
| cis-1,3-Dichloropropene | | 9.7 | U H | 0.25 | 9.7 |
| 4-Methyl-2-pentanone | | 9.7 | U H | 0.093 | 9.7 |
| Toluene | | 5.6 | J H | 0.16 | 9.7 |
| trans-1,3-Dichloropropene | | 9.7 | U H | 0.97 | 9.7 |
| 1,1,2-Trichloroethane | | 9.7 | U H | 0.16 | 9.7 |
| Tetrachloroethene | | 9.7 | U H | 0.64 | 9.7 |
| 1,3-Dichloropropane | | 9.7 | U H | 0.12 | 9.7 |
| 2-Hexanone | | 9.7 | U H | 1.9 | 9.7 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-4**

Lab Sample ID: 200-2983-4
Client Matrix: Sediment
% Moisture: 49.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia20.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.081 g |
| Date Analyzed: | 12/22/2010 2132 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 9.7 | U H | 0.76 | 9.7 |
| 1,2-Dibromoethane | | 9.7 | U H | 3.9 | 9.7 |
| Chlorobenzene | | 9.7 | U H | 0.097 | 9.7 |
| 1,1,1,2-Tetrachloroethane | | 9.7 | U H | 0.97 | 9.7 |
| Ethylbenzene | | 0.54 | J H | 0.11 | 9.7 |
| m&p-Xylene | | 9.7 | U H | 0.78 | 9.7 |
| o-Xylene | | 0.22 | J H | 0.16 | 9.7 |
| Xylenes, Total | | 9.7 | U H | 0.29 | 9.7 |
| Styrene | | 9.7 | U H | 0.39 | 9.7 |
| Bromoform | | 9.7 | U H | 3.9 | 9.7 |
| Isopropylbenzene | | 9.7 | U H | 0.21 | 9.7 |
| Bromobenzene | | 9.7 | U H | 0.16 | 9.7 |
| 1,1,2,2-Tetrachloroethane | | 9.7 | U H | 1.9 | 9.7 |
| 1,2,3-Trichloropropane | | 9.7 | U H | 0.41 | 9.7 |
| n-Propylbenzene | | 9.7 | U H | 0.23 | 9.7 |
| 2-Chlorotoluene | | 9.7 | U H | 0.25 | 9.7 |
| 4-Chlorotoluene | | 9.7 | U H | 0.31 | 9.7 |
| 1,3,5-Trimethylbenzene | | 9.7 | U H | 0.21 | 9.7 |
| tert-Butylbenzene | | 9.7 | U H | 0.27 | 9.7 |
| 1,2,4-Trimethylbenzene | | 1.2 | J H B | 0.17 | 9.7 |
| sec-Butylbenzene | | 9.7 | U H | 0.25 | 9.7 |
| 1,3-Dichlorobenzene | | 9.7 | U H | 0.21 | 9.7 |
| 4-Isopropyltoluene | | 0.98 | J H B | 0.21 | 9.7 |
| 1,4-Dichlorobenzene | | 0.62 | J H B | 0.25 | 9.7 |
| 1,2-Dichlorobenzene | | 9.7 | U H | 0.23 | 9.7 |
| n-Butylbenzene | | 0.68 | J H B | 0.17 | 9.7 |
| 1,2-Dibromo-3-Chloropropane | | 9.7 | U H | 1.9 | 9.7 |
| 1,2,4-Trichlorobenzene | | 0.64 | J H B | 0.13 | 9.7 |
| Hexachlorobutadiene | | 9.7 | U H | 0.39 | 9.7 |
| Naphthalene | | 1.9 | J H B | 0.17 | 9.7 |
| 1,2,3-Trichlorobenzene | | 0.93 | J H B | 0.25 | 9.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 114 | | 65 - 155 |
| Toluene-d8 | 133 | X | 80 - 115 |
| Bromofluorobenzene | 180 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 138 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5**

Lab Sample ID: 200-2983-5
Client Matrix: Sediment
% Moisture: 50.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw09.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.339 g |
| Date Analyzed: | 12/21/2010 1402 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 190 | U H | 95 | 190 |
| Chloromethane | | 190 | U H | 70 | 190 |
| Vinyl chloride | | 190 | U H | 95 | 190 |
| Bromomethane | | 190 | U H | 66 | 190 |
| Chloroethane | | 190 | U H | 110 | 190 |
| Trichlorofluoromethane | | 190 | U H | 95 | 190 |
| 1,1-Dichloroethene | | 190 | U H | 40 | 190 |
| Freon TF | | 190 | U H | 53 | 190 |
| Acetone | | 950 | U H | 190 | 950 |
| Methyl iodide | | 190 | U H * | 95 | 190 |
| Carbon disulfide | | 190 | U H | 36 | 190 |
| Methyl acetate | | 550 | H | 95 | 190 |
| Methylene Chloride | | 190 | U H | 95 | 190 |
| trans-1,2-Dichloroethene | | 190 | U H | 95 | 190 |
| 1,2-Dichloroethene, Total | | 190 | U H | 64 | 190 |
| Methyl t-butyl ether | | 190 | U H | 95 | 190 |
| 1,1-Dichloroethane | | 190 | U H | 68 | 190 |
| Vinyl acetate | | 190 | U H | 95 | 190 |
| 2,2-Dichloropropane | | 190 | U H | 87 | 190 |
| cis-1,2-Dichloroethene | | 190 | U H | 40 | 190 |
| 2-Butanone | | 950 | U H | 210 | 950 |
| Bromochloromethane | | 190 | U H | 100 | 190 |
| Tetrahydrofuran | | 2700 | U H | 950 | 2700 |
| Chloroform | | 190 | U H | 62 | 190 |
| 1,1,1-Trichloroethane | | 190 | U H | 68 | 190 |
| Cyclohexane | | 190 | U H | 66 | 190 |
| 1,1-Dichloropropene | | 190 | U H | 42 | 190 |
| Carbon tetrachloride | | 190 | U H | 61 | 190 |
| Isobutyl alcohol | | 9500 | U H | 4700 | 9500 |
| Benzene | | 190 | U H | 59 | 190 |
| 1,2-Dichloroethane | | 190 | U H | 62 | 190 |
| Trichloroethene | | 190 | U H | 95 | 190 |
| Methylcyclohexane | | 190 | U H | 95 | 190 |
| 1,2-Dichloropropane | | 190 | U H | 72 | 190 |
| Dibromomethane | | 190 | U H | 47 | 190 |
| 1,4-Dioxane | | 9500 | U H | 5100 | 9500 |
| Bromodichloromethane | | 190 | U H | 70 | 190 |
| 2-Chloroethyl vinyl ether | | 190 | U H | 25 | 190 |
| cis-1,3-Dichloropropene | | 190 | U H | 61 | 190 |
| 4-Methyl-2-pentanone | | 950 | U H | 40 | 950 |
| Toluene | | 920 | H | 95 | 190 |
| trans-1,3-Dichloropropene | | 190 | U H | 95 | 190 |
| 1,1,2-Trichloroethane | | 190 | U H | 80 | 190 |
| Tetrachloroethene | | 190 | U H | 95 | 190 |
| 1,3-Dichloropropane | | 190 | U H | 62 | 190 |
| 2-Hexanone | | 950 | U H | 190 | 950 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5**

Lab Sample ID: 200-2983-5
Client Matrix: Sediment
% Moisture: 50.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw09.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.339 g |
| Date Analyzed: | 12/21/2010 1402 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 190 | U H | 70 | 190 |
| 1,2-Dibromoethane | | 190 | U H | 95 | 190 |
| Chlorobenzene | | 190 | U H | 44 | 190 |
| 1,1,1,2-Tetrachloroethane | | 190 | U H | 68 | 190 |
| Ethylbenzene | | 190 | U H | 95 | 190 |
| m&p-Xylene | | 190 | U H | 95 | 190 |
| o-Xylene | | 190 | U H | 95 | 190 |
| Xylenes, Total | | 190 | U H | 95 | 190 |
| Styrene | | 190 | U H | 95 | 190 |
| Bromoform | | 190 | U H | 74 | 190 |
| Isopropylbenzene | | 190 | U H | 95 | 190 |
| Bromobenzene | | 190 | U H | 70 | 190 |
| 1,1,2,2-Tetrachloroethane | | 190 | U H | 70 | 190 |
| 1,2,3-Trichloropropane | | 190 | U H | 100 | 190 |
| n-Propylbenzene | | 190 | U H | 95 | 190 |
| 2-Chlorotoluene | | 190 | U H | 62 | 190 |
| 4-Chlorotoluene | | 190 | U H | 64 | 190 |
| 1,3,5-Trimethylbenzene | | 190 | U H | 61 | 190 |
| tert-Butylbenzene | | 190 | U H | 95 | 190 |
| 1,2,4-Trimethylbenzene | | 190 | U H | 64 | 190 |
| sec-Butylbenzene | | 190 | U H | 95 | 190 |
| 1,3-Dichlorobenzene | | 190 | U H | 47 | 190 |
| 4-Isopropyltoluene | | 190 | U H | 34 | 190 |
| 1,4-Dichlorobenzene | | 190 | U H | 44 | 190 |
| 1,2-Dichlorobenzene | | 190 | U H | 53 | 190 |
| n-Butylbenzene | | 190 | U H | 95 | 190 |
| 1,2-Dibromo-3-Chloropropane | | 190 | U H | 87 | 190 |
| 1,2,4-Trichlorobenzene | | 190 | U H | 30 | 190 |
| Hexachlorobutadiene | | 190 | U H | 95 | 190 |
| Naphthalene | | 190 | U H | 95 | 190 |
| 1,2,3-Trichlorobenzene | | 190 | U H | 47 | 190 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | | 65 - 155 |
| Toluene-d8 | 105 | | 80 - 115 |
| Bromofluorobenzene | 100 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 104 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5 DUP**

Lab Sample ID: 200-2983-6
Client Matrix: Sediment
% Moisture: 49.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw10.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.094 g |
| Date Analyzed: | 12/21/2010 1435 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 190 | U H | 97 | 190 |
| Chloromethane | | 190 | U H | 72 | 190 |
| Vinyl chloride | | 190 | U H | 97 | 190 |
| Bromomethane | | 190 | U H | 68 | 190 |
| Chloroethane | | 190 | U H | 120 | 190 |
| Trichlorofluoromethane | | 190 | U H | 97 | 190 |
| 1,1-Dichloroethene | | 190 | U H | 41 | 190 |
| Freon TF | | 190 | U H | 54 | 190 |
| Acetone | | 970 | U H | 190 | 970 |
| Methyl iodide | | 190 | U H * | 97 | 190 |
| Carbon disulfide | | 190 | U H | 37 | 190 |
| Methyl acetate | | 680 | H | 97 | 190 |
| Methylene Chloride | | 190 | U H | 97 | 190 |
| trans-1,2-Dichloroethene | | 190 | U H | 97 | 190 |
| 1,2-Dichloroethene, Total | | 190 | U H | 66 | 190 |
| Methyl t-butyl ether | | 190 | U H | 97 | 190 |
| 1,1-Dichloroethane | | 190 | U H | 70 | 190 |
| Vinyl acetate | | 190 | U H | 97 | 190 |
| 2,2-Dichloropropane | | 190 | U H | 89 | 190 |
| cis-1,2-Dichloroethene | | 190 | U H | 41 | 190 |
| 2-Butanone | | 970 | U H | 210 | 970 |
| Bromochloromethane | | 190 | U H | 100 | 190 |
| Tetrahydrofuran | | 2700 | U H | 970 | 2700 |
| Chloroform | | 190 | U H | 64 | 190 |
| 1,1,1-Trichloroethane | | 190 | U H | 70 | 190 |
| Cyclohexane | | 190 | U H | 68 | 190 |
| 1,1-Dichloropropene | | 190 | U H | 43 | 190 |
| Carbon tetrachloride | | 190 | U H | 62 | 190 |
| Isobutyl alcohol | | 9700 | U H | 4800 | 9700 |
| Benzene | | 190 | U H | 60 | 190 |
| 1,2-Dichloroethane | | 190 | U H | 64 | 190 |
| Trichloroethene | | 190 | U H | 97 | 190 |
| Methylcyclohexane | | 190 | U H | 97 | 190 |
| 1,2-Dichloropropane | | 190 | U H | 74 | 190 |
| Dibromomethane | | 190 | U H | 48 | 190 |
| 1,4-Dioxane | | 9700 | U H | 5200 | 9700 |
| Bromodichloromethane | | 190 | U H | 72 | 190 |
| 2-Chloroethyl vinyl ether | | 190 | U H | 25 | 190 |
| cis-1,3-Dichloropropene | | 190 | U H | 62 | 190 |
| 4-Methyl-2-pentanone | | 970 | U H | 41 | 970 |
| Toluene | | 9000 | H | 97 | 190 |
| trans-1,3-Dichloropropene | | 190 | U H | 97 | 190 |
| 1,1,2-Trichloroethane | | 190 | U H | 81 | 190 |
| Tetrachloroethene | | 190 | U H | 97 | 190 |
| 1,3-Dichloropropane | | 190 | U H | 64 | 190 |
| 2-Hexanone | | 970 | U H | 190 | 970 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5 DUP**

Lab Sample ID: 200-2983-6
Client Matrix: Sediment
% Moisture: 49.4

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw10.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.094 g |
| Date Analyzed: | 12/21/2010 1435 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 190 | U H | 72 | 190 |
| 1,2-Dibromoethane | | 190 | U H | 97 | 190 |
| Chlorobenzene | | 190 | U H | 45 | 190 |
| 1,1,1,2-Tetrachloroethane | | 190 | U H | 70 | 190 |
| Ethylbenzene | | 190 | U H | 97 | 190 |
| m&p-Xylene | | 190 | U H | 97 | 190 |
| o-Xylene | | 190 | U H | 97 | 190 |
| Xylenes, Total | | 190 | U H | 97 | 190 |
| Styrene | | 190 | U H | 97 | 190 |
| Bromoform | | 190 | U H | 76 | 190 |
| Isopropylbenzene | | 190 | U H | 97 | 190 |
| Bromobenzene | | 190 | U H | 72 | 190 |
| 1,1,2,2-Tetrachloroethane | | 190 | U H | 72 | 190 |
| 1,2,3-Trichloropropane | | 190 | U H | 100 | 190 |
| n-Propylbenzene | | 190 | U H | 97 | 190 |
| 2-Chlorotoluene | | 190 | U H | 64 | 190 |
| 4-Chlorotoluene | | 190 | U H | 66 | 190 |
| 1,3,5-Trimethylbenzene | | 190 | U H | 62 | 190 |
| tert-Butylbenzene | | 190 | U H | 97 | 190 |
| 1,2,4-Trimethylbenzene | | 190 | U H | 66 | 190 |
| sec-Butylbenzene | | 190 | U H | 97 | 190 |
| 1,3-Dichlorobenzene | | 190 | U H | 48 | 190 |
| 4-Isopropyltoluene | | 190 | U H | 35 | 190 |
| 1,4-Dichlorobenzene | | 190 | U H | 45 | 190 |
| 1,2-Dichlorobenzene | | 190 | U H | 54 | 190 |
| n-Butylbenzene | | 190 | U H | 97 | 190 |
| 1,2-Dibromo-3-Chloropropane | | 190 | U H | 89 | 190 |
| 1,2,4-Trichlorobenzene | | 190 | U H | 31 | 190 |
| Hexachlorobutadiene | | 190 | U H | 97 | 190 |
| Naphthalene | | 190 | U H | 97 | 190 |
| 1,2,3-Trichlorobenzene | | 190 | U H | 48 | 190 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 85 | | 65 - 155 |
| Toluene-d8 | 106 | | 80 - 115 |
| Bromofluorobenzene | 101 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 105 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6A**

Lab Sample ID: 200-2983-7
Client Matrix: Sediment

% Moisture: 52.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw11.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.184 g |
| Date Analyzed: | 12/21/2010 1507 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 200 | U H | 100 | 200 |
| Chloromethane | | 200 | U H | 75 | 200 |
| Vinyl chloride | | 200 | U H | 100 | 200 |
| Bromomethane | | 200 | U H | 71 | 200 |
| Chloroethane | | 200 | U H | 120 | 200 |
| Trichlorofluoromethane | | 200 | U H | 100 | 200 |
| 1,1-Dichloroethene | | 200 | U H | 42 | 200 |
| Freon TF | | 200 | U H | 57 | 200 |
| Acetone | | 1000 | U H | 200 | 1000 |
| Methyl iodide | | 200 | U H * | 100 | 200 |
| Carbon disulfide | | 200 | U H | 38 | 200 |
| Methyl acetate | | 770 | H | 100 | 200 |
| Methylene Chloride | | 200 | U H | 100 | 200 |
| trans-1,2-Dichloroethene | | 200 | U H | 100 | 200 |
| 1,2-Dichloroethene, Total | | 200 | U H | 69 | 200 |
| Methyl t-butyl ether | | 200 | U H | 100 | 200 |
| 1,1-Dichloroethane | | 200 | U H | 73 | 200 |
| Vinyl acetate | | 200 | U H | 100 | 200 |
| 2,2-Dichloropropane | | 200 | U H | 93 | 200 |
| cis-1,2-Dichloroethene | | 200 | U H | 42 | 200 |
| 2-Butanone | | 1000 | U H | 220 | 1000 |
| Bromochloromethane | | 200 | U H | 110 | 200 |
| Tetrahydrofuran | | 2800 | U H | 1000 | 2800 |
| Chloroform | | 200 | U H | 67 | 200 |
| 1,1,1-Trichloroethane | | 200 | U H | 73 | 200 |
| Cyclohexane | | 200 | U H | 71 | 200 |
| 1,1-Dichloropropene | | 200 | U H | 44 | 200 |
| Carbon tetrachloride | | 200 | U H | 65 | 200 |
| Isobutyl alcohol | | 10000 | U H | 5100 | 10000 |
| Benzene | | 200 | U H | 63 | 200 |
| 1,2-Dichloroethane | | 200 | U H | 67 | 200 |
| Trichloroethene | | 200 | U H | 100 | 200 |
| Methylcyclohexane | | 200 | U H | 100 | 200 |
| 1,2-Dichloropropane | | 200 | U H | 77 | 200 |
| Dibromomethane | | 200 | U H | 51 | 200 |
| 1,4-Dioxane | | 10000 | U H | 5500 | 10000 |
| Bromodichloromethane | | 200 | U H | 75 | 200 |
| 2-Chloroethyl vinyl ether | | 200 | U H | 26 | 200 |
| cis-1,3-Dichloropropene | | 200 | U H | 65 | 200 |
| 4-Methyl-2-pentanone | | 1000 | U H | 42 | 1000 |
| Toluene | | 5000 | H | 100 | 200 |
| trans-1,3-Dichloropropene | | 200 | U H | 100 | 200 |
| 1,1,2-Trichloroethane | | 200 | U H | 85 | 200 |
| Tetrachloroethene | | 200 | U H | 100 | 200 |
| 1,3-Dichloropropane | | 200 | U H | 67 | 200 |
| 2-Hexanone | | 1000 | U H | 200 | 1000 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6A**

Lab Sample ID: 200-2983-7
Client Matrix: Sediment
% Moisture: 52.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw11.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.184 g |
| Date Analyzed: | 12/21/2010 1507 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 200 | U H | 75 | 200 |
| 1,2-Dibromoethane | | 200 | U H | 100 | 200 |
| Chlorobenzene | | 200 | U H | 47 | 200 |
| 1,1,1,2-Tetrachloroethane | | 200 | U H | 73 | 200 |
| Ethylbenzene | | 200 | U H | 100 | 200 |
| m&p-Xylene | | 200 | U H | 100 | 200 |
| o-Xylene | | 200 | U H | 100 | 200 |
| Xylenes, Total | | 200 | U H | 100 | 200 |
| Styrene | | 200 | U H | 100 | 200 |
| Bromoform | | 200 | U H | 79 | 200 |
| Isopropylbenzene | | 200 | U H | 100 | 200 |
| Bromobenzene | | 200 | U H | 75 | 200 |
| 1,1,2,2-Tetrachloroethane | | 200 | U H | 75 | 200 |
| 1,2,3-Trichloropropane | | 200 | U H | 110 | 200 |
| n-Propylbenzene | | 200 | U H | 100 | 200 |
| 2-Chlorotoluene | | 200 | U H | 67 | 200 |
| 4-Chlorotoluene | | 200 | U H | 69 | 200 |
| 1,3,5-Trimethylbenzene | | 200 | U H | 65 | 200 |
| tert-Butylbenzene | | 200 | U H | 100 | 200 |
| 1,2,4-Trimethylbenzene | | 200 | U H | 69 | 200 |
| sec-Butylbenzene | | 200 | U H | 100 | 200 |
| 1,3-Dichlorobenzene | | 200 | U H | 51 | 200 |
| 4-Isopropyltoluene | | 200 | U H | 36 | 200 |
| 1,4-Dichlorobenzene | | 200 | U H | 47 | 200 |
| 1,2-Dichlorobenzene | | 200 | U H | 57 | 200 |
| n-Butylbenzene | | 200 | U H | 100 | 200 |
| 1,2-Dibromo-3-Chloropropane | | 200 | U H | 93 | 200 |
| 1,2,4-Trichlorobenzene | | 200 | U H | 32 | 200 |
| Hexachlorobutadiene | | 200 | U H | 100 | 200 |
| Naphthalene | | 200 | U H | 100 | 200 |
| 1,2,3-Trichlorobenzene | | 200 | U H | 51 | 200 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | | 65 - 155 |
| Toluene-d8 | 106 | | 80 - 115 |
| Bromofluorobenzene | 101 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 107 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6B**

Lab Sample ID: 200-2983-8
Client Matrix: Sediment
% Moisture: 47.6

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw12.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.031 g |
| Date Analyzed: | 12/21/2010 1539 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 190 | U H | 95 | 190 |
| Chloromethane | | 190 | U H | 70 | 190 |
| Vinyl chloride | | 190 | U H | 95 | 190 |
| Bromomethane | | 190 | U H | 66 | 190 |
| Chloroethane | | 190 | U H | 110 | 190 |
| Trichlorofluoromethane | | 190 | U H | 95 | 190 |
| 1,1-Dichloroethene | | 190 | U H | 40 | 190 |
| Freon TF | | 190 | U H | 53 | 190 |
| Acetone | | 950 | U H | 190 | 950 |
| Methyl iodide | | 190 | U H * | 95 | 190 |
| Carbon disulfide | | 190 | U H | 36 | 190 |
| Methyl acetate | | 550 | H | 95 | 190 |
| Methylene Chloride | | 190 | U H | 95 | 190 |
| trans-1,2-Dichloroethene | | 190 | U H | 95 | 190 |
| 1,2-Dichloroethene, Total | | 190 | U H | 65 | 190 |
| Methyl t-butyl ether | | 190 | U H | 95 | 190 |
| 1,1-Dichloroethane | | 190 | U H | 68 | 190 |
| Vinyl acetate | | 190 | U H | 95 | 190 |
| 2,2-Dichloropropane | | 190 | U H | 87 | 190 |
| cis-1,2-Dichloroethene | | 190 | U H | 40 | 190 |
| 2-Butanone | | 950 | U H | 210 | 950 |
| Bromochloromethane | | 190 | U H | 100 | 190 |
| Tetrahydrofuran | | 2700 | U H | 950 | 2700 |
| Chloroform | | 190 | U H | 63 | 190 |
| 1,1,1-Trichloroethane | | 190 | U H | 68 | 190 |
| Cyclohexane | | 190 | U H | 66 | 190 |
| 1,1-Dichloropropene | | 190 | U H | 42 | 190 |
| Carbon tetrachloride | | 190 | U H | 61 | 190 |
| Isobutyl alcohol | | 9500 | U H | 4700 | 9500 |
| Benzene | | 190 | U H | 59 | 190 |
| 1,2-Dichloroethane | | 190 | U H | 63 | 190 |
| Trichloroethene | | 190 | U H | 95 | 190 |
| Methylcyclohexane | | 190 | U H | 95 | 190 |
| 1,2-Dichloropropane | | 190 | U H | 72 | 190 |
| Dibromomethane | | 190 | U H | 47 | 190 |
| 1,4-Dioxane | | 9500 | U H | 5100 | 9500 |
| Bromodichloromethane | | 190 | U H | 70 | 190 |
| 2-Chloroethyl vinyl ether | | 190 | U H | 25 | 190 |
| cis-1,3-Dichloropropene | | 190 | U H | 61 | 190 |
| 4-Methyl-2-pentanone | | 950 | U H | 40 | 950 |
| Toluene | | 1300 | H | 95 | 190 |
| trans-1,3-Dichloropropene | | 190 | U H | 95 | 190 |
| 1,1,2-Trichloroethane | | 190 | U H | 80 | 190 |
| Tetrachloroethene | | 190 | U H | 95 | 190 |
| 1,3-Dichloropropane | | 190 | U H | 63 | 190 |
| 2-Hexanone | | 950 | U H | 190 | 950 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6B**

Lab Sample ID: 200-2983-8
Client Matrix: Sediment
% Moisture: 47.6

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw12.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.031 g |
| Date Analyzed: | 12/21/2010 1539 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 190 | U H | 70 | 190 |
| 1,2-Dibromoethane | | 190 | U H | 95 | 190 |
| Chlorobenzene | | 190 | U H | 44 | 190 |
| 1,1,1,2-Tetrachloroethane | | 190 | U H | 68 | 190 |
| Ethylbenzene | | 190 | U H | 95 | 190 |
| m&p-Xylene | | 190 | U H | 95 | 190 |
| o-Xylene | | 190 | U H | 95 | 190 |
| Xylenes, Total | | 190 | U H | 95 | 190 |
| Styrene | | 190 | U H | 95 | 190 |
| Bromoform | | 190 | U H | 74 | 190 |
| Isopropylbenzene | | 190 | U H | 95 | 190 |
| Bromobenzene | | 190 | U H | 70 | 190 |
| 1,1,2,2-Tetrachloroethane | | 190 | U H | 70 | 190 |
| 1,2,3-Trichloropropane | | 190 | U H | 100 | 190 |
| n-Propylbenzene | | 190 | U H | 95 | 190 |
| 2-Chlorotoluene | | 190 | U H | 63 | 190 |
| 4-Chlorotoluene | | 190 | U H | 65 | 190 |
| 1,3,5-Trimethylbenzene | | 190 | U H | 61 | 190 |
| tert-Butylbenzene | | 190 | U H | 95 | 190 |
| 1,2,4-Trimethylbenzene | | 190 | U H | 65 | 190 |
| sec-Butylbenzene | | 190 | U H | 95 | 190 |
| 1,3-Dichlorobenzene | | 190 | U H | 47 | 190 |
| 4-Isopropyltoluene | | 190 | U H | 34 | 190 |
| 1,4-Dichlorobenzene | | 190 | U H | 44 | 190 |
| 1,2-Dichlorobenzene | | 190 | U H | 53 | 190 |
| n-Butylbenzene | | 190 | U H | 95 | 190 |
| 1,2-Dibromo-3-Chloropropane | | 190 | U H | 87 | 190 |
| 1,2,4-Trichlorobenzene | | 190 | U H | 30 | 190 |
| Hexachlorobutadiene | | 190 | U H | 95 | 190 |
| Naphthalene | | 190 | U H | 95 | 190 |
| 1,2,3-Trichlorobenzene | | 190 | U H | 47 | 190 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | | 65 - 155 |
| Toluene-d8 | 108 | | 80 - 115 |
| Bromofluorobenzene | 103 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 107 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7A**

Lab Sample ID: 200-2983-9
Client Matrix: Sediment

% Moisture: 45.1

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw13.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.965 g |
| Date Analyzed: | 12/21/2010 1611 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 180 | U H | 92 | 180 |
| Chloromethane | | 180 | U H | 68 | 180 |
| Vinyl chloride | | 180 | U H | 92 | 180 |
| Bromomethane | | 180 | U H | 64 | 180 |
| Chloroethane | | 180 | U H | 110 | 180 |
| Trichlorofluoromethane | | 180 | U H | 92 | 180 |
| 1,1-Dichloroethene | | 180 | U H | 39 | 180 |
| Freon TF | | 180 | U H | 51 | 180 |
| Acetone | | 920 | U H | 180 | 920 |
| Methyl iodide | | 180 | U H * | 92 | 180 |
| Carbon disulfide | | 180 | U H | 35 | 180 |
| Methyl acetate | | 490 | H | 92 | 180 |
| Methylene Chloride | | 180 | U H | 92 | 180 |
| trans-1,2-Dichloroethene | | 180 | U H | 92 | 180 |
| 1,2-Dichloroethene, Total | | 180 | U H | 62 | 180 |
| Methyl t-butyl ether | | 180 | U H | 92 | 180 |
| 1,1-Dichloroethane | | 180 | U H | 66 | 180 |
| Vinyl acetate | | 180 | U H | 92 | 180 |
| 2,2-Dichloropropane | | 180 | U H | 84 | 180 |
| cis-1,2-Dichloroethene | | 180 | U H | 39 | 180 |
| 2-Butanone | | 920 | U H | 200 | 920 |
| Bromochloromethane | | 180 | U H | 97 | 180 |
| Tetrahydrofuran | | 2600 | U H | 920 | 2600 |
| Chloroform | | 180 | U H | 61 | 180 |
| 1,1,1-Trichloroethane | | 180 | U H | 66 | 180 |
| Cyclohexane | | 180 | U H | 64 | 180 |
| 1,1-Dichloropropene | | 180 | U H | 40 | 180 |
| Carbon tetrachloride | | 180 | U H | 59 | 180 |
| Isobutyl alcohol | | 9200 | U H | 4600 | 9200 |
| Benzene | | 180 | U H | 57 | 180 |
| 1,2-Dichloroethane | | 180 | U H | 61 | 180 |
| Trichloroethene | | 180 | U H | 92 | 180 |
| Methylcyclohexane | | 180 | U H | 92 | 180 |
| 1,2-Dichloropropane | | 180 | U H | 70 | 180 |
| Dibromomethane | | 180 | U H | 46 | 180 |
| 1,4-Dioxane | | 9200 | U H | 5000 | 9200 |
| Bromodichloromethane | | 180 | U H | 68 | 180 |
| 2-Chloroethyl vinyl ether | | 180 | U H | 24 | 180 |
| cis-1,3-Dichloropropene | | 180 | U H | 59 | 180 |
| 4-Methyl-2-pentanone | | 920 | U H | 39 | 920 |
| Toluene | | 1200 | H | 92 | 180 |
| trans-1,3-Dichloropropene | | 180 | U H | 92 | 180 |
| 1,1,2-Trichloroethane | | 180 | U H | 77 | 180 |
| Tetrachloroethene | | 180 | U H | 92 | 180 |
| 1,3-Dichloropropane | | 180 | U H | 61 | 180 |
| 2-Hexanone | | 920 | U H | 180 | 920 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7A**

Lab Sample ID: 200-2983-9
Client Matrix: Sediment
% Moisture: 45.1

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw13.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.965 g |
| Date Analyzed: | 12/21/2010 1611 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 180 | U H | 68 | 180 |
| 1,2-Dibromoethane | | 180 | U H | 92 | 180 |
| Chlorobenzene | | 58 | J H | 42 | 180 |
| 1,1,1,2-Tetrachloroethane | | 180 | U H | 66 | 180 |
| Ethylbenzene | | 180 | U H | 92 | 180 |
| m&p-Xylene | | 180 | U H | 92 | 180 |
| o-Xylene | | 180 | U H | 92 | 180 |
| Xylenes, Total | | 180 | U H | 92 | 180 |
| Styrene | | 180 | U H | 92 | 180 |
| Bromoform | | 180 | U H | 72 | 180 |
| Isopropylbenzene | | 180 | U H | 92 | 180 |
| Bromobenzene | | 180 | U H | 68 | 180 |
| 1,1,2,2-Tetrachloroethane | | 180 | U H | 68 | 180 |
| 1,2,3-Trichloropropane | | 180 | U H | 99 | 180 |
| n-Propylbenzene | | 180 | U H | 92 | 180 |
| 2-Chlorotoluene | | 180 | U H | 61 | 180 |
| 4-Chlorotoluene | | 180 | U H | 62 | 180 |
| 1,3,5-Trimethylbenzene | | 180 | U H | 59 | 180 |
| tert-Butylbenzene | | 180 | U H | 92 | 180 |
| 1,2,4-Trimethylbenzene | | 180 | U H | 62 | 180 |
| sec-Butylbenzene | | 180 | U H | 92 | 180 |
| 1,3-Dichlorobenzene | | 180 | U H | 46 | 180 |
| 4-Isopropyltoluene | | 180 | U H | 33 | 180 |
| 1,4-Dichlorobenzene | | 73 | J H | 42 | 180 |
| 1,2-Dichlorobenzene | | 180 | U H | 51 | 180 |
| n-Butylbenzene | | 180 | U H | 92 | 180 |
| 1,2-Dibromo-3-Chloropropane | | 180 | U H | 84 | 180 |
| 1,2,4-Trichlorobenzene | | 180 | U H | 29 | 180 |
| Hexachlorobutadiene | | 180 | U H | 92 | 180 |
| Naphthalene | | 400 | H | 92 | 180 |
| 1,2,3-Trichlorobenzene | | 180 | U H | 46 | 180 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 84 | | 65 - 155 |
| Toluene-d8 | 104 | | 80 - 115 |
| Bromofluorobenzene | 100 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 105 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7B**

Lab Sample ID: 200-2983-10
Client Matrix: Sediment
% Moisture: 41.6

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw14.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.975 g |
| Date Analyzed: | 12/21/2010 1643 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 170 | U H | 86 | 170 |
| Chloromethane | | 170 | U H | 64 | 170 |
| Vinyl chloride | | 170 | U H | 86 | 170 |
| Bromomethane | | 170 | U H | 60 | 170 |
| Chloroethane | | 170 | U H | 100 | 170 |
| Trichlorofluoromethane | | 170 | U H | 86 | 170 |
| 1,1-Dichloroethene | | 170 | U H | 36 | 170 |
| Freon TF | | 170 | U H | 48 | 170 |
| Acetone | | 860 | U H | 170 | 860 |
| Methyl iodide | | 170 | U H * | 86 | 170 |
| Carbon disulfide | | 170 | U H | 33 | 170 |
| Methyl acetate | | 480 | H | 86 | 170 |
| Methylene Chloride | | 170 | U H | 86 | 170 |
| trans-1,2-Dichloroethene | | 170 | U H | 86 | 170 |
| 1,2-Dichloroethene, Total | | 170 | U H | 58 | 170 |
| Methyl t-butyl ether | | 170 | U H | 86 | 170 |
| 1,1-Dichloroethane | | 170 | U H | 62 | 170 |
| Vinyl acetate | | 170 | U H | 86 | 170 |
| 2,2-Dichloropropane | | 170 | U H | 79 | 170 |
| cis-1,2-Dichloroethene | | 170 | U H | 36 | 170 |
| 2-Butanone | | 860 | U H | 190 | 860 |
| Bromochloromethane | | 170 | U H | 91 | 170 |
| Tetrahydrofuran | | 2400 | U H | 860 | 2400 |
| Chloroform | | 170 | U H | 57 | 170 |
| 1,1,1-Trichloroethane | | 170 | U H | 62 | 170 |
| Cyclohexane | | 170 | U H | 60 | 170 |
| 1,1-Dichloropropene | | 170 | U H | 38 | 170 |
| Carbon tetrachloride | | 170 | U H | 55 | 170 |
| Isobutyl alcohol | | 8600 | U H | 4300 | 8600 |
| Benzene | | 170 | U H | 53 | 170 |
| 1,2-Dichloroethane | | 170 | U H | 57 | 170 |
| Trichloroethene | | 170 | U H | 86 | 170 |
| Methylcyclohexane | | 170 | U H | 86 | 170 |
| 1,2-Dichloropropane | | 170 | U H | 65 | 170 |
| Dibromomethane | | 170 | U H | 43 | 170 |
| 1,4-Dioxane | | 8600 | U H | 4600 | 8600 |
| Bromodichloromethane | | 170 | U H | 64 | 170 |
| 2-Chloroethyl vinyl ether | | 170 | U H | 22 | 170 |
| cis-1,3-Dichloropropene | | 170 | U H | 55 | 170 |
| 4-Methyl-2-pentanone | | 860 | U H | 36 | 860 |
| Toluene | | 5000 | H | 86 | 170 |
| trans-1,3-Dichloropropene | | 170 | U H | 86 | 170 |
| 1,1,2-Trichloroethane | | 170 | U H | 72 | 170 |
| Tetrachloroethene | | 170 | U H | 86 | 170 |
| 1,3-Dichloropropane | | 170 | U H | 57 | 170 |
| 2-Hexanone | | 860 | U H | 170 | 860 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7B**

Lab Sample ID: 200-2983-10
Client Matrix: Sediment
% Moisture: 41.6

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw14.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.975 g |
| Date Analyzed: | 12/21/2010 1643 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 170 | U H | 64 | 170 |
| 1,2-Dibromoethane | | 170 | U H | 86 | 170 |
| Chlorobenzene | | 170 | U H | 40 | 170 |
| 1,1,1,2-Tetrachloroethane | | 170 | U H | 62 | 170 |
| Ethylbenzene | | 170 | U H | 86 | 170 |
| m&p-Xylene | | 170 | U H | 86 | 170 |
| o-Xylene | | 170 | U H | 86 | 170 |
| Xylenes, Total | | 170 | U H | 86 | 170 |
| Styrene | | 170 | U H | 86 | 170 |
| Bromoform | | 170 | U H | 67 | 170 |
| Isopropylbenzene | | 170 | U H | 86 | 170 |
| Bromobenzene | | 170 | U H | 64 | 170 |
| 1,1,2,2-Tetrachloroethane | | 170 | U H | 64 | 170 |
| 1,2,3-Trichloropropane | | 170 | U H | 93 | 170 |
| n-Propylbenzene | | 170 | U H | 86 | 170 |
| 2-Chlorotoluene | | 170 | U H | 57 | 170 |
| 4-Chlorotoluene | | 170 | U H | 58 | 170 |
| 1,3,5-Trimethylbenzene | | 170 | U H | 55 | 170 |
| tert-Butylbenzene | | 170 | U H | 86 | 170 |
| 1,2,4-Trimethylbenzene | | 170 | U H | 58 | 170 |
| sec-Butylbenzene | | 170 | U H | 86 | 170 |
| 1,3-Dichlorobenzene | | 170 | U H | 43 | 170 |
| 4-Isopropyltoluene | | 170 | U H | 31 | 170 |
| 1,4-Dichlorobenzene | | 170 | U H | 40 | 170 |
| 1,2-Dichlorobenzene | | 170 | U H | 48 | 170 |
| n-Butylbenzene | | 170 | U H | 86 | 170 |
| 1,2-Dibromo-3-Chloropropane | | 170 | U H | 79 | 170 |
| 1,2,4-Trichlorobenzene | | 170 | U H | 28 | 170 |
| Hexachlorobutadiene | | 170 | U H | 86 | 170 |
| Naphthalene | | 200 | H | 86 | 170 |
| 1,2,3-Trichlorobenzene | | 170 | U H | 43 | 170 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 84 | | 65 - 155 |
| Toluene-d8 | 105 | | 80 - 115 |
| Bromofluorobenzene | 101 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 106 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-8**

Lab Sample ID: 200-2983-11
Client Matrix: Sediment
% Moisture: 44.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia07.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.218 g |
| Date Analyzed: | 12/22/2010 1456 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 8.6 | U H | 0.13 | 8.6 |
| Chloromethane | | 8.6 | U H | 0.86 | 8.6 |
| Vinyl chloride | | 8.6 | U H | 0.86 | 8.6 |
| Bromomethane | | 8.6 | U H | 0.29 | 8.6 |
| Chloroethane | | 8.6 | U H | 0.50 | 8.6 |
| Trichlorofluoromethane | | 8.6 | U H | 0.12 | 8.6 |
| 1,1-Dichloroethene | | 8.6 | U H | 0.11 | 8.6 |
| Freon TF | | 8.6 | U H | 0.12 | 8.6 |
| Acetone | | 92 | H | 3.5 | 8.6 |
| Methyl iodide | | 8.6 | U H | 1.7 | 8.6 |
| Carbon disulfide | | 0.95 | J H B | 0.083 | 8.6 |
| Methyl acetate | | 8.6 | U H | 0.53 | 8.6 |
| Methylene Chloride | | 8.6 | U H | 0.24 | 8.6 |
| trans-1,2-Dichloroethene | | 8.6 | U H | 0.14 | 8.6 |
| 1,2-Dichloroethene, Total | | 8.6 | U H | 0.69 | 8.6 |
| Methyl t-butyl ether | | 8.6 | U H | 0.13 | 8.6 |
| 1,1-Dichloroethane | | 8.6 | U H | 1.7 | 8.6 |
| Vinyl acetate | | 8.6 | U H | 0.66 | 8.6 |
| 2,2-Dichloropropane | | 8.6 | U H | 1.7 | 8.6 |
| cis-1,2-Dichloroethene | | 8.6 | U H | 0.86 | 8.6 |
| 2-Butanone | | 22 | H | 1.3 | 8.6 |
| Bromochloromethane | | 8.6 | U H | 0.78 | 8.6 |
| Tetrahydrofuran | | 86 | U H | 1.7 | 86 |
| Chloroform | | 8.6 | U H | 0.11 | 8.6 |
| 1,1,1-Trichloroethane | | 8.6 | U H | 0.86 | 8.6 |
| Cyclohexane | | 8.6 | U H | 1.7 | 8.6 |
| 1,1-Dichloropropene | | 8.6 | U H | 0.86 | 8.6 |
| Carbon tetrachloride | | 8.6 | U H | 0.12 | 8.6 |
| Isobutyl alcohol | | 430 | U H | 11 | 430 |
| Benzene | | 0.36 | J H | 0.35 | 8.6 |
| 1,2-Dichloroethane | | 8.6 | U H | 3.5 | 8.6 |
| Trichloroethene | | 8.6 | U H | 0.11 | 8.6 |
| Methylcyclohexane | | 3.3 | J H | 0.21 | 8.6 |
| 1,2-Dichloropropane | | 8.6 | U H | 3.5 | 8.6 |
| Dibromomethane | | 8.6 | U H | 0.24 | 8.6 |
| 1,4-Dioxane | | 430 | U H | 17 | 430 |
| Bromodichloromethane | | 8.6 | U H | 3.5 | 8.6 |
| 2-Chloroethyl vinyl ether | | 8.6 | U H | 0.21 | 8.6 |
| cis-1,3-Dichloropropene | | 8.6 | U H | 0.22 | 8.6 |
| 4-Methyl-2-pentanone | | 8.6 | U H | 0.083 | 8.6 |
| Toluene | | 150 | H | 0.14 | 8.6 |
| trans-1,3-Dichloropropene | | 8.6 | U H | 0.86 | 8.6 |
| 1,1,2-Trichloroethane | | 8.6 | U H | 0.14 | 8.6 |
| Tetrachloroethene | | 8.6 | U H | 0.57 | 8.6 |
| 1,3-Dichloropropane | | 8.6 | U H | 0.11 | 8.6 |
| 2-Hexanone | | 8.6 | U H | 1.7 | 8.6 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-8**

Lab Sample ID: 200-2983-11
Client Matrix: Sediment
% Moisture: 44.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia07.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.218 g |
| Date Analyzed: | 12/22/2010 1456 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 8.6 | U H | 0.67 | 8.6 |
| 1,2-Dibromoethane | | 8.6 | U H | 3.5 | 8.6 |
| Chlorobenzene | | 8.6 | U H | 0.086 | 8.6 |
| 1,1,1,2-Tetrachloroethane | | 8.6 | U H | 0.86 | 8.6 |
| Ethylbenzene | | 0.79 | J H | 0.095 | 8.6 |
| m&p-Xylene | | 0.71 | J H | 0.69 | 8.6 |
| o-Xylene | | 8.6 | U H | 0.14 | 8.6 |
| Xylenes, Total | | 0.71 | J H | 0.26 | 8.6 |
| Styrene | | 8.6 | U H | 0.35 | 8.6 |
| Bromoform | | 8.6 | U H | 3.5 | 8.6 |
| Isopropylbenzene | | 8.6 | U H | 0.19 | 8.6 |
| Bromobenzene | | 0.49 | J H | 0.14 | 8.6 |
| 1,1,2,2-Tetrachloroethane | | 8.6 | U H | 1.7 | 8.6 |
| 1,2,3-Trichloropropane | | 8.6 | U H | 0.36 | 8.6 |
| n-Propylbenzene | | 8.6 | U H | 0.21 | 8.6 |
| 2-Chlorotoluene | | 8.6 | U H | 0.22 | 8.6 |
| 4-Chlorotoluene | | 8.6 | U H | 0.28 | 8.6 |
| 1,3,5-Trimethylbenzene | | 1.0 | J H | 0.19 | 8.6 |
| tert-Butylbenzene | | 8.6 | U H | 0.24 | 8.6 |
| 1,2,4-Trimethylbenzene | | 2.1 | J H B | 0.15 | 8.6 |
| sec-Butylbenzene | | 0.99 | J H B | 0.22 | 8.6 |
| 1,3-Dichlorobenzene | | 1.4 | J H B | 0.19 | 8.6 |
| 4-Isopropyltoluene | | 1.3 | J H B | 0.19 | 8.6 |
| 1,4-Dichlorobenzene | | 2.7 | J H B | 0.22 | 8.6 |
| 1,2-Dichlorobenzene | | 1.6 | J H B | 0.21 | 8.6 |
| n-Butylbenzene | | 1.6 | J H B | 0.15 | 8.6 |
| 1,2-Dibromo-3-Chloropropane | | 8.6 | U H | 1.7 | 8.6 |
| 1,2,4-Trichlorobenzene | | 3.8 | J H B | 0.12 | 8.6 |
| Hexachlorobutadiene | | 1.6 | J H B | 0.35 | 8.6 |
| Naphthalene | | 8.4 | J H B | 0.15 | 8.6 |
| 1,2,3-Trichlorobenzene | | 4.0 | J H B | 0.22 | 8.6 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 80 | | 65 - 155 |
| Toluene-d8 | 93 | | 80 - 115 |
| Bromofluorobenzene | 93 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 72 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-8**

Lab Sample ID: 200-2983-11
Client Matrix: Sediment
% Moisture: 44.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11588 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndib08.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.414 g |
| Date Analyzed: | 12/23/2010 1127 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 8.3 | U H | 0.12 | 8.3 |
| Chloromethane | | 8.3 | U H | 0.83 | 8.3 |
| Vinyl chloride | | 8.3 | U H | 0.83 | 8.3 |
| Bromomethane | | 8.3 | U H | 0.28 | 8.3 |
| Chloroethane | | 8.3 | U H | 0.48 | 8.3 |
| Trichlorofluoromethane | | 8.3 | U H | 0.11 | 8.3 |
| 1,1-Dichloroethene | | 8.3 | U H | 0.11 | 8.3 |
| Freon TF | | 8.3 | U H | 0.12 | 8.3 |
| Acetone | | 26 | H | 3.3 | 8.3 |
| Methyl iodide | | 8.3 | U H | 1.7 | 8.3 |
| Carbon disulfide | | 0.57 | J H B | 0.080 | 8.3 |
| Methyl acetate | | 8.3 | U H | 0.52 | 8.3 |
| Methylene Chloride | | 8.3 | U H | 0.23 | 8.3 |
| trans-1,2-Dichloroethene | | 8.3 | U H | 0.14 | 8.3 |
| 1,2-Dichloroethene, Total | | 8.3 | U H | 0.67 | 8.3 |
| Methyl t-butyl ether | | 8.3 | U H | 0.13 | 8.3 |
| 1,1-Dichloroethane | | 8.3 | U H | 1.7 | 8.3 |
| Vinyl acetate | | 8.3 | U H | 0.63 | 8.3 |
| 2,2-Dichloropropane | | 8.3 | U H | 1.7 | 8.3 |
| cis-1,2-Dichloroethene | | 8.3 | U H | 0.83 | 8.3 |
| 2-Butanone | | 6.8 | J H | 1.3 | 8.3 |
| Bromochloromethane | | 8.3 | U H | 0.75 | 8.3 |
| Tetrahydrofuran | | 83 | U H | 1.7 | 83 |
| Chloroform | | 8.3 | U H | 0.11 | 8.3 |
| 1,1,1-Trichloroethane | | 8.3 | U H | 0.83 | 8.3 |
| Cyclohexane | | 8.3 | U H | 1.7 | 8.3 |
| 1,1-Dichloropropene | | 8.3 | U H | 0.83 | 8.3 |
| Carbon tetrachloride | | 8.3 | U H | 0.11 | 8.3 |
| Isobutyl alcohol | | 420 | U H | 11 | 420 |
| Benzene | | 8.3 | U H | 0.33 | 8.3 |
| 1,2-Dichloroethane | | 8.3 | U H | 3.3 | 8.3 |
| Trichloroethene | | 8.3 | U H | 0.11 | 8.3 |
| Methylcyclohexane | | 2.1 | J H | 0.20 | 8.3 |
| 1,2-Dichloropropane | | 8.3 | U H | 3.3 | 8.3 |
| Dibromomethane | | 8.3 | U H | 0.23 | 8.3 |
| 1,4-Dioxane | | 420 | U H | 17 | 420 |
| Bromodichloromethane | | 8.3 | U H | 3.3 | 8.3 |
| 2-Chloroethyl vinyl ether | | 8.3 | U H | 0.20 | 8.3 |
| cis-1,3-Dichloropropene | | 8.3 | U H | 0.22 | 8.3 |
| 4-Methyl-2-pentanone | | 8.3 | U H | 0.080 | 8.3 |
| Toluene | | 73 | H B | 0.13 | 8.3 |
| trans-1,3-Dichloropropene | | 8.3 | U H | 0.83 | 8.3 |
| 1,1,2-Trichloroethane | | 8.3 | U H | 0.13 | 8.3 |
| Tetrachloroethene | | 8.3 | U H | 0.55 | 8.3 |
| 1,3-Dichloropropane | | 8.3 | U H | 0.11 | 8.3 |
| 2-Hexanone | | 8.3 | U H | 1.7 | 8.3 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-8**

Lab Sample ID: 200-2983-11
Client Matrix: Sediment
% Moisture: 44.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11588 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndib08.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.414 g |
| Date Analyzed: | 12/23/2010 1127 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 8.3 | U H | 0.65 | 8.3 |
| 1,2-Dibromoethane | | 8.3 | U H | 3.3 | 8.3 |
| Chlorobenzene | | 8.3 | U H | 0.083 | 8.3 |
| 1,1,1,2-Tetrachloroethane | | 8.3 | U H | 0.83 | 8.3 |
| Ethylbenzene | | 0.29 | J H | 0.091 | 8.3 |
| m&p-Xylene | | 8.3 | U H | 0.67 | 8.3 |
| o-Xylene | | 8.3 | U H | 0.14 | 8.3 |
| Xylenes, Total | | 8.3 | U H | 0.25 | 8.3 |
| Styrene | | 8.3 | U H | 0.33 | 8.3 |
| Bromoform | | 8.3 | U H | 3.3 | 8.3 |
| Isopropylbenzene | | 8.3 | U H | 0.18 | 8.3 |
| Bromobenzene | | 8.3 | U H | 0.13 | 8.3 |
| 1,1,2,2-Tetrachloroethane | | 8.3 | U H | 1.7 | 8.3 |
| 1,2,3-Trichloropropane | | 8.3 | U H | 0.35 | 8.3 |
| n-Propylbenzene | | 8.3 | U H | 0.20 | 8.3 |
| 2-Chlorotoluene | | 8.3 | U H | 0.22 | 8.3 |
| 4-Chlorotoluene | | 8.3 | U H | 0.27 | 8.3 |
| 1,3,5-Trimethylbenzene | | 8.3 | U H | 0.18 | 8.3 |
| tert-Butylbenzene | | 8.3 | U H | 0.23 | 8.3 |
| 1,2,4-Trimethylbenzene | | 0.83 | J H B | 0.14 | 8.3 |
| sec-Butylbenzene | | 0.34 | J H | 0.22 | 8.3 |
| 1,3-Dichlorobenzene | | 0.58 | J H B | 0.18 | 8.3 |
| 4-Isopropyltoluene | | 0.51 | J H | 0.18 | 8.3 |
| 1,4-Dichlorobenzene | | 1.0 | J H B | 0.22 | 8.3 |
| 1,2-Dichlorobenzene | | 0.67 | J H B | 0.20 | 8.3 |
| n-Butylbenzene | | 0.86 | J H B | 0.15 | 8.3 |
| 1,2-Dibromo-3-Chloropropane | | 8.3 | U H | 1.7 | 8.3 |
| 1,2,4-Trichlorobenzene | | 1.2 | J H B | 0.11 | 8.3 |
| Hexachlorobutadiene | | 0.48 | J H | 0.33 | 8.3 |
| Naphthalene | | 2.6 | J H B | 0.15 | 8.3 |
| 1,2,3-Trichlorobenzene | | 2.0 | J H B | 0.22 | 8.3 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 78 | | 65 - 155 |
| Toluene-d8 | 145 | X | 80 - 115 |
| Bromofluorobenzene | 170 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 126 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment
% Moisture: 60.7

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw15.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.823 g |
| Date Analyzed: | 12/21/2010 1716 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 260 | U H | 130 | 260 |
| Chloromethane | | 260 | U H | 98 | 260 |
| Vinyl chloride | | 260 | U H | 130 | 260 |
| Bromomethane | | 260 | U H | 92 | 260 |
| Chloroethane | | 260 | U H | 160 | 260 |
| Trichlorofluoromethane | | 260 | U H | 130 | 260 |
| 1,1-Dichloroethene | | 260 | U H | 55 | 260 |
| Freon TF | | 260 | U H | 74 | 260 |
| Acetone | | 1300 | U H | 260 | 1300 |
| Methyl iodide | | 260 | U H * | 130 | 260 |
| Carbon disulfide | | 260 | U H | 50 | 260 |
| Methyl acetate | | 1300 | H | 130 | 260 |
| Methylene Chloride | | 260 | U H | 130 | 260 |
| trans-1,2-Dichloroethene | | 260 | U H | 130 | 260 |
| 1,2-Dichloroethene, Total | | 260 | U H | 90 | 260 |
| Methyl t-butyl ether | | 260 | U H | 130 | 260 |
| 1,1-Dichloroethane | | 260 | U H | 95 | 260 |
| Vinyl acetate | | 260 | U H | 130 | 260 |
| 2,2-Dichloropropane | | 260 | U H | 120 | 260 |
| cis-1,2-Dichloroethene | | 260 | U H | 55 | 260 |
| 2-Butanone | | 1300 | U H | 290 | 1300 |
| Bromochloromethane | | 260 | U H | 140 | 260 |
| Tetrahydrofuran | | 3700 | U H | 1300 | 3700 |
| Chloroform | | 260 | U H | 87 | 260 |
| 1,1,1-Trichloroethane | | 260 | U H | 95 | 260 |
| Cyclohexane | | 260 | U H | 92 | 260 |
| 1,1-Dichloropropene | | 260 | U H | 58 | 260 |
| Carbon tetrachloride | | 260 | U H | 85 | 260 |
| Isobutyl alcohol | | 13000 | U H | 6600 | 13000 |
| Benzene | | 260 | U H | 82 | 260 |
| 1,2-Dichloroethane | | 260 | U H | 87 | 260 |
| Trichloroethene | | 260 | U H | 130 | 260 |
| Methylcyclohexane | | 260 | U H | 130 | 260 |
| 1,2-Dichloropropane | | 260 | U H | 100 | 260 |
| Dibromomethane | | 260 | U H | 66 | 260 |
| 1,4-Dioxane | | 13000 | U H | 7100 | 13000 |
| Bromodichloromethane | | 260 | U H | 98 | 260 |
| 2-Chloroethyl vinyl ether | | 260 | U H | 34 | 260 |
| cis-1,3-Dichloropropene | | 260 | U H | 85 | 260 |
| 4-Methyl-2-pentanone | | 1300 | U H | 55 | 1300 |
| Toluene | | 9600 | H | 130 | 260 |
| trans-1,3-Dichloropropene | | 260 | U H | 130 | 260 |
| 1,1,2-Trichloroethane | | 260 | U H | 110 | 260 |
| Tetrachloroethene | | 260 | U H | 130 | 260 |
| 1,3-Dichloropropane | | 260 | U H | 87 | 260 |
| 2-Hexanone | | 1300 | U H | 260 | 1300 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment
% Moisture: 60.7

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw15.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.823 g |
| Date Analyzed: | 12/21/2010 1716 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 260 | U H | 98 | 260 |
| 1,2-Dibromoethane | | 260 | U H | 130 | 260 |
| Chlorobenzene | | 260 | U H | 61 | 260 |
| 1,1,1,2-Tetrachloroethane | | 260 | U H | 95 | 260 |
| Ethylbenzene | | 260 | U H | 130 | 260 |
| m&p-Xylene | | 260 | U H | 130 | 260 |
| o-Xylene | | 260 | U H | 130 | 260 |
| Xylenes, Total | | 260 | U H | 130 | 260 |
| Styrene | | 260 | U H | 130 | 260 |
| Bromoform | | 260 | U H | 100 | 260 |
| Isopropylbenzene | | 260 | U H | 130 | 260 |
| Bromobenzene | | 260 | U H | 98 | 260 |
| 1,1,2,2-Tetrachloroethane | | 260 | U H | 98 | 260 |
| 1,2,3-Trichloropropane | | 260 | U H | 140 | 260 |
| n-Propylbenzene | | 260 | U H | 130 | 260 |
| 2-Chlorotoluene | | 260 | U H | 87 | 260 |
| 4-Chlorotoluene | | 260 | U H | 90 | 260 |
| 1,3,5-Trimethylbenzene | | 260 | U H | 85 | 260 |
| tert-Butylbenzene | | 260 | U H | 130 | 260 |
| 1,2,4-Trimethylbenzene | | 260 | U H | 90 | 260 |
| sec-Butylbenzene | | 260 | U H | 130 | 260 |
| 1,3-Dichlorobenzene | | 260 | U H | 66 | 260 |
| 4-Isopropyltoluene | | 260 | U H | 48 | 260 |
| 1,4-Dichlorobenzene | | 260 | U H | 61 | 260 |
| 1,2-Dichlorobenzene | | 260 | U H | 74 | 260 |
| n-Butylbenzene | | 260 | U H | 130 | 260 |
| 1,2-Dibromo-3-Chloropropane | | 260 | U H | 120 | 260 |
| 1,2,4-Trichlorobenzene | | 260 | U H | 42 | 260 |
| Hexachlorobutadiene | | 260 | U H | 130 | 260 |
| Naphthalene | | 280 | H | 130 | 260 |
| 1,2,3-Trichlorobenzene | | 260 | U H | 66 | 260 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | | 65 - 155 |
| Toluene-d8 | 107 | | 80 - 115 |
| Bromofluorobenzene | 103 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 107 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment
% Moisture: 46.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw16.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.194 g |
| Date Analyzed: | 12/21/2010 1748 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 180 | U H | 90 | 180 |
| Chloromethane | | 180 | U H | 66 | 180 |
| Vinyl chloride | | 180 | U H | 90 | 180 |
| Bromomethane | | 180 | U H | 63 | 180 |
| Chloroethane | | 180 | U H | 110 | 180 |
| Trichlorofluoromethane | | 180 | U H | 90 | 180 |
| 1,1-Dichloroethene | | 180 | U H | 38 | 180 |
| Freon TF | | 180 | U H | 50 | 180 |
| Acetone | | 900 | U H | 180 | 900 |
| Methyl iodide | | 180 | U H * | 90 | 180 |
| Carbon disulfide | | 180 | U H | 34 | 180 |
| Methyl acetate | | 480 | H | 90 | 180 |
| Methylene Chloride | | 180 | U H | 90 | 180 |
| trans-1,2-Dichloroethene | | 180 | U H | 90 | 180 |
| 1,2-Dichloroethene, Total | | 180 | U H | 61 | 180 |
| Methyl t-butyl ether | | 180 | U H | 90 | 180 |
| 1,1-Dichloroethane | | 180 | U H | 65 | 180 |
| Vinyl acetate | | 180 | U H | 90 | 180 |
| 2,2-Dichloropropane | | 180 | U H | 82 | 180 |
| cis-1,2-Dichloroethene | | 180 | U H | 38 | 180 |
| 2-Butanone | | 900 | U H | 200 | 900 |
| Bromochloromethane | | 180 | U H | 95 | 180 |
| Tetrahydrofuran | | 2500 | U H | 900 | 2500 |
| Chloroform | | 180 | U H | 59 | 180 |
| 1,1,1-Trichloroethane | | 180 | U H | 65 | 180 |
| Cyclohexane | | 180 | U H | 63 | 180 |
| 1,1-Dichloropropene | | 180 | U H | 39 | 180 |
| Carbon tetrachloride | | 180 | U H | 57 | 180 |
| Isobutyl alcohol | | 9000 | U H | 4500 | 9000 |
| Benzene | | 180 | U H | 56 | 180 |
| 1,2-Dichloroethane | | 180 | U H | 59 | 180 |
| Trichloroethene | | 180 | U H | 90 | 180 |
| Methylcyclohexane | | 180 | U H | 90 | 180 |
| 1,2-Dichloropropane | | 180 | U H | 68 | 180 |
| Dibromomethane | | 180 | U H | 45 | 180 |
| 1,4-Dioxane | | 9000 | U H | 4800 | 9000 |
| Bromodichloromethane | | 180 | U H | 66 | 180 |
| 2-Chloroethyl vinyl ether | | 180 | U H | 23 | 180 |
| cis-1,3-Dichloropropene | | 180 | U H | 57 | 180 |
| 4-Methyl-2-pentanone | | 900 | U H | 38 | 900 |
| Toluene | | 4400 | H | 90 | 180 |
| trans-1,3-Dichloropropene | | 180 | U H | 90 | 180 |
| 1,1,2-Trichloroethane | | 180 | U H | 75 | 180 |
| Tetrachloroethene | | 180 | U H | 90 | 180 |
| 1,3-Dichloropropane | | 180 | U H | 59 | 180 |
| 2-Hexanone | | 900 | U H | 180 | 900 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment
% Moisture: 46.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw16.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.194 g |
| Date Analyzed: | 12/21/2010 1748 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 180 | U H | 66 | 180 |
| 1,2-Dibromoethane | | 180 | U H | 90 | 180 |
| Chlorobenzene | | 180 | U H | 41 | 180 |
| 1,1,1,2-Tetrachloroethane | | 180 | U H | 65 | 180 |
| Ethylbenzene | | 180 | U H | 90 | 180 |
| m&p-Xylene | | 180 | U H | 90 | 180 |
| o-Xylene | | 180 | U H | 90 | 180 |
| Xylenes, Total | | 180 | U H | 90 | 180 |
| Styrene | | 180 | U H | 90 | 180 |
| Bromoform | | 180 | U H | 70 | 180 |
| Isopropylbenzene | | 180 | U H | 90 | 180 |
| Bromobenzene | | 180 | U H | 66 | 180 |
| 1,1,2,2-Tetrachloroethane | | 180 | U H | 66 | 180 |
| 1,2,3-Trichloropropane | | 180 | U H | 97 | 180 |
| n-Propylbenzene | | 180 | U H | 90 | 180 |
| 2-Chlorotoluene | | 180 | U H | 59 | 180 |
| 4-Chlorotoluene | | 180 | U H | 61 | 180 |
| 1,3,5-Trimethylbenzene | | 180 | U H | 57 | 180 |
| tert-Butylbenzene | | 180 | U H | 90 | 180 |
| 1,2,4-Trimethylbenzene | | 180 | U H | 61 | 180 |
| sec-Butylbenzene | | 180 | U H | 90 | 180 |
| 1,3-Dichlorobenzene | | 180 | U H | 45 | 180 |
| 4-Isopropyltoluene | | 180 | U H | 32 | 180 |
| 1,4-Dichlorobenzene | | 180 | U H | 41 | 180 |
| 1,2-Dichlorobenzene | | 180 | U H | 50 | 180 |
| n-Butylbenzene | | 180 | U H | 90 | 180 |
| 1,2-Dibromo-3-Chloropropane | | 180 | U H | 82 | 180 |
| 1,2,4-Trichlorobenzene | | 180 | U H | 29 | 180 |
| Hexachlorobutadiene | | 180 | U H | 90 | 180 |
| Naphthalene | | 120 | J H | 90 | 180 |
| 1,2,3-Trichlorobenzene | | 180 | U H | 45 | 180 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | | 65 - 155 |
| Toluene-d8 | 110 | | 80 - 115 |
| Bromofluorobenzene | 105 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 111 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-1**

Lab Sample ID: 200-2983-14
Client Matrix: Sediment
% Moisture: 16.8

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11588 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndib09.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.148 g |
| Date Analyzed: | 12/23/2010 1157 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 5.8 | U H | 0.088 | 5.8 |
| Chloromethane | | 5.8 | U H | 0.58 | 5.8 |
| Vinyl chloride | | 5.8 | U H | 0.58 | 5.8 |
| Bromomethane | | 5.8 | U H | 0.20 | 5.8 |
| Chloroethane | | 5.8 | U H | 0.34 | 5.8 |
| Trichlorofluoromethane | | 5.8 | U H | 0.081 | 5.8 |
| 1,1-Dichloroethene | | 5.8 | U H | 0.075 | 5.8 |
| Freon TF | | 5.8 | U H | 0.084 | 5.8 |
| Acetone | | 5.8 | U H | 2.3 | 5.8 |
| Methyl iodide | | 5.8 | U H | 1.2 | 5.8 |
| Carbon disulfide | | 0.097 | J H B | 0.056 | 5.8 |
| Methyl acetate | | 5.8 | U H | 0.36 | 5.8 |
| Methylene Chloride | | 0.20 | J H B | 0.16 | 5.8 |
| trans-1,2-Dichloroethene | | 5.8 | U H | 0.096 | 5.8 |
| 1,2-Dichloroethene, Total | | 5.8 | U H | 0.47 | 5.8 |
| Methyl t-butyl ether | | 5.8 | U H | 0.089 | 5.8 |
| 1,1-Dichloroethane | | 5.8 | U H | 1.2 | 5.8 |
| Vinyl acetate | | 5.8 | U H | 0.44 | 5.8 |
| 2,2-Dichloropropane | | 5.8 | U H | 1.2 | 5.8 |
| cis-1,2-Dichloroethene | | 5.8 | U H | 0.58 | 5.8 |
| 2-Butanone | | 5.8 | U H | 0.91 | 5.8 |
| Bromochloromethane | | 5.8 | U H | 0.53 | 5.8 |
| Tetrahydrofuran | | 2.3 | J H B | 1.2 | 58 |
| Chloroform | | 5.8 | U H | 0.077 | 5.8 |
| 1,1,1-Trichloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Cyclohexane | | 5.8 | U H | 1.2 | 5.8 |
| 1,1-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| Carbon tetrachloride | | 5.8 | U H | 0.081 | 5.8 |
| Isobutyl alcohol | | 290 | U H | 7.7 | 290 |
| Benzene | | 5.8 | U H | 0.23 | 5.8 |
| 1,2-Dichloroethane | | 5.8 | U H | 2.3 | 5.8 |
| Trichloroethene | | 5.8 | U H | 0.075 | 5.8 |
| Methylcyclohexane | | 5.8 | U H | 0.14 | 5.8 |
| 1,2-Dichloropropane | | 5.8 | U H | 2.3 | 5.8 |
| Dibromomethane | | 5.8 | U H | 0.16 | 5.8 |
| 1,4-Dioxane | | 290 | U H | 12 | 290 |
| Bromodichloromethane | | 5.8 | U H | 2.3 | 5.8 |
| 2-Chloroethyl vinyl ether | | 5.8 | U H | 0.14 | 5.8 |
| cis-1,3-Dichloropropene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Methyl-2-pentanone | | 5.8 | U H | 0.056 | 5.8 |
| Toluene | | 5.8 | U H | 0.093 | 5.8 |
| trans-1,3-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| 1,1,2-Trichloroethane | | 5.8 | U H | 0.093 | 5.8 |
| Tetrachloroethene | | 5.8 | U H | 0.39 | 5.8 |
| 1,3-Dichloropropane | | 5.8 | U H | 0.075 | 5.8 |
| 2-Hexanone | | 5.8 | U H | 1.2 | 5.8 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-1**

Lab Sample ID: 200-2983-14
Client Matrix: Sediment
% Moisture: 16.8

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11588 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndib09.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.148 g |
| Date Analyzed: | 12/23/2010 1157 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 5.8 | U H | 0.46 | 5.8 |
| 1,2-Dibromoethane | | 5.8 | U H | 2.3 | 5.8 |
| Chlorobenzene | | 5.8 | U H | 0.058 | 5.8 |
| 1,1,1,2-Tetrachloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Ethylbenzene | | 5.8 | U H | 0.064 | 5.8 |
| m&p-Xylene | | 5.8 | U H | 0.47 | 5.8 |
| o-Xylene | | 5.8 | U H | 0.098 | 5.8 |
| Xylenes, Total | | 5.8 | U H | 0.18 | 5.8 |
| Styrene | | 5.8 | U H | 0.23 | 5.8 |
| Bromoform | | 5.8 | U H | 2.3 | 5.8 |
| Isopropylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| Bromobenzene | | 5.8 | U H | 0.095 | 5.8 |
| 1,1,2,2-Tetrachloroethane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,3-Trichloropropane | | 5.8 | U H | 0.25 | 5.8 |
| n-Propylbenzene | | 5.8 | U H | 0.14 | 5.8 |
| 2-Chlorotoluene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Chlorotoluene | | 5.8 | U H | 0.19 | 5.8 |
| 1,3,5-Trimethylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| tert-Butylbenzene | | 5.8 | U H | 0.16 | 5.8 |
| 1,2,4-Trimethylbenzene | | 5.8 | U H | 0.10 | 5.8 |
| sec-Butylbenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,3-Dichlorobenzene | | 5.8 | U H | 0.13 | 5.8 |
| 4-Isopropyltoluene | | 5.8 | U H | 0.13 | 5.8 |
| 1,4-Dichlorobenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,2-Dichlorobenzene | | 5.8 | U H | 0.14 | 5.8 |
| n-Butylbenzene | | 5.8 | U H | 0.10 | 5.8 |
| 1,2-Dibromo-3-Chloropropane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,4-Trichlorobenzene | | 0.19 | J H B | 0.081 | 5.8 |
| Hexachlorobutadiene | | 5.8 | U H | 0.23 | 5.8 |
| Naphthalene | | 0.42 | J H B | 0.10 | 5.8 |
| 1,2,3-Trichlorobenzene | | 0.25 | J H B | 0.15 | 5.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | | 65 - 155 |
| Toluene-d8 | 99 | | 80 - 115 |
| Bromofluorobenzene | 107 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 102 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-2**

Lab Sample ID: 200-2983-15
Client Matrix: Sediment
% Moisture: 19.6

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia11.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.228 g |
| Date Analyzed: | 12/22/2010 1658 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 5.9 | U H | 0.089 | 5.9 |
| Chloromethane | | 5.9 | U H | 0.59 | 5.9 |
| Vinyl chloride | | 5.9 | U H | 0.59 | 5.9 |
| Bromomethane | | 5.9 | U H | 0.20 | 5.9 |
| Chloroethane | | 5.9 | U H | 0.34 | 5.9 |
| Trichlorofluoromethane | | 5.9 | U H | 0.082 | 5.9 |
| 1,1-Dichloroethene | | 5.9 | U H | 0.076 | 5.9 |
| Freon TF | | 5.9 | U H | 0.086 | 5.9 |
| Acetone | | 5.9 | U H | 2.4 | 5.9 |
| Methyl iodide | | 5.9 | U H | 1.2 | 5.9 |
| Carbon disulfide | | 0.12 | J H B | 0.057 | 5.9 |
| Methyl acetate | | 5.9 | U H | 0.37 | 5.9 |
| Methylene Chloride | | 0.36 | J H B | 0.17 | 5.9 |
| trans-1,2-Dichloroethene | | 5.9 | U H | 0.098 | 5.9 |
| 1,2-Dichloroethene, Total | | 5.9 | U H | 0.48 | 5.9 |
| Methyl t-butyl ether | | 5.9 | U H | 0.090 | 5.9 |
| 1,1-Dichloroethane | | 5.9 | U H | 1.2 | 5.9 |
| Vinyl acetate | | 5.9 | U H | 0.45 | 5.9 |
| 2,2-Dichloropropane | | 5.9 | U H | 1.2 | 5.9 |
| cis-1,2-Dichloroethene | | 5.9 | U H | 0.59 | 5.9 |
| 2-Butanone | | 5.9 | U H | 0.93 | 5.9 |
| Bromochloromethane | | 5.9 | U H | 0.54 | 5.9 |
| Tetrahydrofuran | | 1.7 | J H B | 1.2 | 59 |
| Chloroform | | 5.9 | U H | 0.079 | 5.9 |
| 1,1,1-Trichloroethane | | 5.9 | U H | 0.59 | 5.9 |
| Cyclohexane | | 5.9 | U H | 1.2 | 5.9 |
| 1,1-Dichloropropene | | 5.9 | U H | 0.59 | 5.9 |
| Carbon tetrachloride | | 5.9 | U H | 0.082 | 5.9 |
| Isobutyl alcohol | | 300 | U H | 7.9 | 300 |
| Benzene | | 5.9 | U H | 0.24 | 5.9 |
| 1,2-Dichloroethane | | 5.9 | U H | 2.4 | 5.9 |
| Trichloroethene | | 5.9 | U H | 0.076 | 5.9 |
| Methylcyclohexane | | 5.9 | U H | 0.14 | 5.9 |
| 1,2-Dichloropropane | | 5.9 | U H | 2.4 | 5.9 |
| Dibromomethane | | 5.9 | U H | 0.17 | 5.9 |
| 1,4-Dioxane | | 300 | U H | 12 | 300 |
| Bromodichloromethane | | 5.9 | U H | 2.4 | 5.9 |
| 2-Chloroethyl vinyl ether | | 5.9 | U H | 0.14 | 5.9 |
| cis-1,3-Dichloropropene | | 5.9 | U H | 0.15 | 5.9 |
| 4-Methyl-2-pentanone | | 5.9 | U H | 0.057 | 5.9 |
| Toluene | | 5.9 | U H | 0.095 | 5.9 |
| trans-1,3-Dichloropropene | | 5.9 | U H | 0.59 | 5.9 |
| 1,1,2-Trichloroethane | | 5.9 | U H | 0.095 | 5.9 |
| Tetrachloroethene | | 5.9 | U H | 0.39 | 5.9 |
| 1,3-Dichloropropane | | 5.9 | U H | 0.076 | 5.9 |
| 2-Hexanone | | 5.9 | U H | 1.2 | 5.9 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-2**

Lab Sample ID: 200-2983-15
Client Matrix: Sediment
% Moisture: 19.6

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia11.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.228 g |
| Date Analyzed: | 12/22/2010 1658 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 5.9 | U H | 0.46 | 5.9 |
| 1,2-Dibromoethane | | 5.9 | U H | 2.4 | 5.9 |
| Chlorobenzene | | 5.9 | U H | 0.059 | 5.9 |
| 1,1,1,2-Tetrachloroethane | | 5.9 | U H | 0.59 | 5.9 |
| Ethylbenzene | | 5.9 | U H | 0.065 | 5.9 |
| m&p-Xylene | | 5.9 | U H | 0.48 | 5.9 |
| o-Xylene | | 5.9 | U H | 0.10 | 5.9 |
| Xylenes, Total | | 5.9 | U H | 0.18 | 5.9 |
| Styrene | | 5.9 | U H | 0.24 | 5.9 |
| Bromoform | | 5.9 | U H | 2.4 | 5.9 |
| Isopropylbenzene | | 5.9 | U H | 0.13 | 5.9 |
| Bromobenzene | | 5.9 | U H | 0.096 | 5.9 |
| 1,1,2,2-Tetrachloroethane | | 5.9 | U H | 1.2 | 5.9 |
| 1,2,3-Trichloropropane | | 5.9 | U H | 0.25 | 5.9 |
| n-Propylbenzene | | 5.9 | U H | 0.14 | 5.9 |
| 2-Chlorotoluene | | 5.9 | U H | 0.15 | 5.9 |
| 4-Chlorotoluene | | 5.9 | U H | 0.19 | 5.9 |
| 1,3,5-Trimethylbenzene | | 5.9 | U H | 0.13 | 5.9 |
| tert-Butylbenzene | | 5.9 | U H | 0.17 | 5.9 |
| 1,2,4-Trimethylbenzene | | 5.9 | U H | 0.10 | 5.9 |
| sec-Butylbenzene | | 5.9 | U H | 0.15 | 5.9 |
| 1,3-Dichlorobenzene | | 5.9 | U H | 0.13 | 5.9 |
| 4-Isopropyltoluene | | 5.9 | U H | 0.13 | 5.9 |
| 1,4-Dichlorobenzene | | 5.9 | U H | 0.15 | 5.9 |
| 1,2-Dichlorobenzene | | 5.9 | U H | 0.14 | 5.9 |
| n-Butylbenzene | | 5.9 | U H | 0.10 | 5.9 |
| 1,2-Dibromo-3-Chloropropane | | 5.9 | U H | 1.2 | 5.9 |
| 1,2,4-Trichlorobenzene | | 0.22 | J H B | 0.082 | 5.9 |
| Hexachlorobutadiene | | 5.9 | U H | 0.24 | 5.9 |
| Naphthalene | | 0.43 | J H B | 0.11 | 5.9 |
| 1,2,3-Trichlorobenzene | | 0.25 | J H B | 0.15 | 5.9 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | | 65 - 155 |
| Toluene-d8 | 98 | | 80 - 115 |
| Bromofluorobenzene | 105 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 101 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-3**

Lab Sample ID: 200-2983-16
Client Matrix: Sediment
% Moisture: 19.1

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia12.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.312 g |
| Date Analyzed: | 12/22/2010 1728 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 5.8 | U H | 0.087 | 5.8 |
| Chloromethane | | 5.8 | U H | 0.58 | 5.8 |
| Vinyl chloride | | 5.8 | U H | 0.58 | 5.8 |
| Bromomethane | | 5.8 | U H | 0.20 | 5.8 |
| Chloroethane | | 5.8 | U H | 0.34 | 5.8 |
| Trichlorofluoromethane | | 5.8 | U H | 0.080 | 5.8 |
| 1,1-Dichloroethene | | 5.8 | U H | 0.074 | 5.8 |
| Freon TF | | 5.8 | U H | 0.084 | 5.8 |
| Acetone | | 5.8 | U H | 2.3 | 5.8 |
| Methyl iodide | | 5.8 | U H | 1.2 | 5.8 |
| Carbon disulfide | | 0.091 | J H B | 0.056 | 5.8 |
| Methyl acetate | | 5.8 | U H | 0.36 | 5.8 |
| Methylene Chloride | | 0.31 | J H B | 0.16 | 5.8 |
| trans-1,2-Dichloroethene | | 5.8 | U H | 0.095 | 5.8 |
| 1,2-Dichloroethene, Total | | 5.8 | U H | 0.47 | 5.8 |
| Methyl t-butyl ether | | 5.8 | U H | 0.088 | 5.8 |
| 1,1-Dichloroethane | | 5.8 | U H | 1.2 | 5.8 |
| Vinyl acetate | | 5.8 | U H | 0.44 | 5.8 |
| 2,2-Dichloropropane | | 5.8 | U H | 1.2 | 5.8 |
| cis-1,2-Dichloroethene | | 5.8 | U H | 0.58 | 5.8 |
| 2-Butanone | | 5.8 | U H | 0.91 | 5.8 |
| Bromochloromethane | | 5.8 | U H | 0.52 | 5.8 |
| Tetrahydrofuran | | 2.0 | J H B | 1.2 | 58 |
| Chloroform | | 5.8 | U H | 0.077 | 5.8 |
| 1,1,1-Trichloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Cyclohexane | | 5.8 | U H | 1.2 | 5.8 |
| 1,1-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| Carbon tetrachloride | | 5.8 | U H | 0.080 | 5.8 |
| Isobutyl alcohol | | 290 | U H | 7.7 | 290 |
| Benzene | | 5.8 | U H | 0.23 | 5.8 |
| 1,2-Dichloroethane | | 5.8 | U H | 2.3 | 5.8 |
| Trichloroethene | | 5.8 | U H | 0.074 | 5.8 |
| Methylcyclohexane | | 5.8 | U H | 0.14 | 5.8 |
| 1,2-Dichloropropane | | 5.8 | U H | 2.3 | 5.8 |
| Dibromomethane | | 5.8 | U H | 0.16 | 5.8 |
| 1,4-Dioxane | | 290 | U H | 12 | 290 |
| Bromodichloromethane | | 5.8 | U H | 2.3 | 5.8 |
| 2-Chloroethyl vinyl ether | | 5.8 | U H | 0.14 | 5.8 |
| cis-1,3-Dichloropropene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Methyl-2-pentanone | | 5.8 | U H | 0.056 | 5.8 |
| Toluene | | 5.8 | U H | 0.093 | 5.8 |
| trans-1,3-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| 1,1,2-Trichloroethane | | 5.8 | U H | 0.093 | 5.8 |
| Tetrachloroethene | | 5.8 | U H | 0.38 | 5.8 |
| 1,3-Dichloropropane | | 5.8 | U H | 0.074 | 5.8 |
| 2-Hexanone | | 5.8 | U H | 1.2 | 5.8 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-3**

Lab Sample ID: 200-2983-16
Client Matrix: Sediment
% Moisture: 19.1

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia12.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.312 g |
| Date Analyzed: | 12/22/2010 1728 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 5.8 | U H | 0.45 | 5.8 |
| 1,2-Dibromoethane | | 5.8 | U H | 2.3 | 5.8 |
| Chlorobenzene | | 5.8 | U H | 0.058 | 5.8 |
| 1,1,1,2-Tetrachloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Ethylbenzene | | 5.8 | U H | 0.064 | 5.8 |
| m&p-Xylene | | 5.8 | U H | 0.47 | 5.8 |
| o-Xylene | | 5.8 | U H | 0.098 | 5.8 |
| Xylenes, Total | | 5.8 | U H | 0.17 | 5.8 |
| Styrene | | 5.8 | U H | 0.23 | 5.8 |
| Bromoform | | 5.8 | U H | 2.3 | 5.8 |
| Isopropylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| Bromobenzene | | 5.8 | U H | 0.094 | 5.8 |
| 1,1,2,2-Tetrachloroethane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,3-Trichloropropane | | 5.8 | U H | 0.24 | 5.8 |
| n-Propylbenzene | | 5.8 | U H | 0.14 | 5.8 |
| 2-Chlorotoluene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Chlorotoluene | | 5.8 | U H | 0.19 | 5.8 |
| 1,3,5-Trimethylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| tert-Butylbenzene | | 5.8 | U H | 0.16 | 5.8 |
| 1,2,4-Trimethylbenzene | | 5.8 | U H | 0.10 | 5.8 |
| sec-Butylbenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,3-Dichlorobenzene | | 5.8 | U H | 0.13 | 5.8 |
| 4-Isopropyltoluene | | 5.8 | U H | 0.13 | 5.8 |
| 1,4-Dichlorobenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,2-Dichlorobenzene | | 5.8 | U H | 0.14 | 5.8 |
| n-Butylbenzene | | 5.8 | U H | 0.10 | 5.8 |
| 1,2-Dibromo-3-Chloropropane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,4-Trichlorobenzene | | 0.18 | J H B | 0.080 | 5.8 |
| Hexachlorobutadiene | | 5.8 | U H | 0.23 | 5.8 |
| Naphthalene | | 0.34 | J H B | 0.10 | 5.8 |
| 1,2,3-Trichlorobenzene | | 0.22 | J H B | 0.15 | 5.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | | 65 - 155 |
| Toluene-d8 | 99 | | 80 - 115 |
| Bromofluorobenzene | 106 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 101 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-4**

Lab Sample ID: 200-2983-17
Client Matrix: Sediment
% Moisture: 18.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia13.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.137 g |
| Date Analyzed: | 12/22/2010 1759 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.0 | U H | 0.090 | 6.0 |
| Chloromethane | | 6.0 | U H | 0.60 | 6.0 |
| Vinyl chloride | | 6.0 | U H | 0.60 | 6.0 |
| Bromomethane | | 6.0 | U H | 0.20 | 6.0 |
| Chloroethane | | 6.0 | U H | 0.35 | 6.0 |
| Trichlorofluoromethane | | 6.0 | U H | 0.082 | 6.0 |
| 1,1-Dichloroethene | | 6.0 | U H | 0.076 | 6.0 |
| Freon TF | | 6.0 | U H | 0.086 | 6.0 |
| Acetone | | 6.0 | U H | 2.4 | 6.0 |
| Methyl iodide | | 6.0 | U H | 1.2 | 6.0 |
| Carbon disulfide | | 0.19 | J H B | 0.057 | 6.0 |
| Methyl acetate | | 6.0 | U H | 0.37 | 6.0 |
| Methylene Chloride | | 0.99 | J H B | 0.17 | 6.0 |
| trans-1,2-Dichloroethene | | 6.0 | U H | 0.098 | 6.0 |
| 1,2-Dichloroethene, Total | | 6.0 | U H | 0.48 | 6.0 |
| Methyl t-butyl ether | | 6.0 | U H | 0.091 | 6.0 |
| 1,1-Dichloroethane | | 6.0 | U H | 1.2 | 6.0 |
| Vinyl acetate | | 6.0 | U H | 0.45 | 6.0 |
| 2,2-Dichloropropane | | 6.0 | U H | 1.2 | 6.0 |
| cis-1,2-Dichloroethene | | 6.0 | U H | 0.60 | 6.0 |
| 2-Butanone | | 6.0 | U H | 0.93 | 6.0 |
| Bromochloromethane | | 6.0 | U H | 0.54 | 6.0 |
| Tetrahydrofuran | | 2.5 | J H B | 1.2 | 60 |
| Chloroform | | 6.0 | U H | 0.079 | 6.0 |
| 1,1,1-Trichloroethane | | 6.0 | U H | 0.60 | 6.0 |
| Cyclohexane | | 6.0 | U H | 1.2 | 6.0 |
| 1,1-Dichloropropene | | 6.0 | U H | 0.60 | 6.0 |
| Carbon tetrachloride | | 6.0 | U H | 0.082 | 6.0 |
| Isobutyl alcohol | | 300 | U H | 7.9 | 300 |
| Benzene | | 6.0 | U H | 0.24 | 6.0 |
| 1,2-Dichloroethane | | 6.0 | U H | 2.4 | 6.0 |
| Trichloroethene | | 6.0 | U H | 0.076 | 6.0 |
| Methylcyclohexane | | 6.0 | U H | 0.14 | 6.0 |
| 1,2-Dichloropropane | | 6.0 | U H | 2.4 | 6.0 |
| Dibromomethane | | 6.0 | U H | 0.17 | 6.0 |
| 1,4-Dioxane | | 300 | U H | 12 | 300 |
| Bromodichloromethane | | 6.0 | U H | 2.4 | 6.0 |
| 2-Chloroethyl vinyl ether | | 6.0 | U H | 0.14 | 6.0 |
| cis-1,3-Dichloropropene | | 6.0 | U H | 0.16 | 6.0 |
| 4-Methyl-2-pentanone | | 6.0 | U H | 0.057 | 6.0 |
| Toluene | | 6.0 | U H | 0.096 | 6.0 |
| trans-1,3-Dichloropropene | | 6.0 | U H | 0.60 | 6.0 |
| 1,1,2-Trichloroethane | | 6.0 | U H | 0.096 | 6.0 |
| Tetrachloroethene | | 6.0 | U H | 0.39 | 6.0 |
| 1,3-Dichloropropane | | 6.0 | U H | 0.076 | 6.0 |
| 2-Hexanone | | 6.0 | U H | 1.2 | 6.0 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-4**

Lab Sample ID: 200-2983-17
Client Matrix: Sediment
% Moisture: 18.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia13.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.137 g |
| Date Analyzed: | 12/22/2010 1759 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.0 | U H | 0.47 | 6.0 |
| 1,2-Dibromoethane | | 6.0 | U H | 2.4 | 6.0 |
| Chlorobenzene | | 6.0 | U H | 0.060 | 6.0 |
| 1,1,1,2-Tetrachloroethane | | 6.0 | U H | 0.60 | 6.0 |
| Ethylbenzene | | 6.0 | U H | 0.066 | 6.0 |
| m&p-Xylene | | 6.0 | U H | 0.48 | 6.0 |
| o-Xylene | | 6.0 | U H | 0.10 | 6.0 |
| Xylenes, Total | | 6.0 | U H | 0.18 | 6.0 |
| Styrene | | 6.0 | U H | 0.24 | 6.0 |
| Bromoform | | 6.0 | U H | 2.4 | 6.0 |
| Isopropylbenzene | | 6.0 | U H | 0.13 | 6.0 |
| Bromobenzene | | 6.0 | U H | 0.097 | 6.0 |
| 1,1,2,2-Tetrachloroethane | | 6.0 | U H | 1.2 | 6.0 |
| 1,2,3-Trichloropropane | | 6.0 | U H | 0.25 | 6.0 |
| n-Propylbenzene | | 6.0 | U H | 0.14 | 6.0 |
| 2-Chlorotoluene | | 6.0 | U H | 0.16 | 6.0 |
| 4-Chlorotoluene | | 6.0 | U H | 0.19 | 6.0 |
| 1,3,5-Trimethylbenzene | | 6.0 | U H | 0.13 | 6.0 |
| tert-Butylbenzene | | 6.0 | U H | 0.17 | 6.0 |
| 1,2,4-Trimethylbenzene | | 6.0 | U H | 0.10 | 6.0 |
| sec-Butylbenzene | | 6.0 | U H | 0.16 | 6.0 |
| 1,3-Dichlorobenzene | | 6.0 | U H | 0.13 | 6.0 |
| 4-Isopropyltoluene | | 6.0 | U H | 0.13 | 6.0 |
| 1,4-Dichlorobenzene | | 6.0 | U H | 0.16 | 6.0 |
| 1,2-Dichlorobenzene | | 6.0 | U H | 0.14 | 6.0 |
| n-Butylbenzene | | 6.0 | U H | 0.11 | 6.0 |
| 1,2-Dibromo-3-Chloropropane | | 6.0 | U H | 1.2 | 6.0 |
| 1,2,4-Trichlorobenzene | | 0.21 | J H B | 0.082 | 6.0 |
| Hexachlorobutadiene | | 6.0 | U H | 0.24 | 6.0 |
| Naphthalene | | 0.48 | J H B | 0.11 | 6.0 |
| 1,2,3-Trichlorobenzene | | 0.26 | J H B | 0.16 | 6.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 85 | | 65 - 155 |
| Toluene-d8 | 103 | | 80 - 115 |
| Bromofluorobenzene | 109 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 102 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB COMPOSITE**

Lab Sample ID: 200-2983-18
Client Matrix: Sediment % Moisture: 19.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia14.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.367 g |
| Date Analyzed: | 12/22/2010 1829 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 5.8 | U H | 0.086 | 5.8 |
| Chloromethane | | 5.8 | U H | 0.58 | 5.8 |
| Vinyl chloride | | 5.8 | U H | 0.58 | 5.8 |
| Bromomethane | | 5.8 | U H | 0.20 | 5.8 |
| Chloroethane | | 5.8 | U H | 0.33 | 5.8 |
| Trichlorofluoromethane | | 5.8 | U H | 0.080 | 5.8 |
| 1,1-Dichloroethene | | 5.8 | U H | 0.074 | 5.8 |
| Freon TF | | 5.8 | U H | 0.083 | 5.8 |
| Acetone | | 5.8 | U H | 2.3 | 5.8 |
| Methyl iodide | | 5.8 | U H | 1.2 | 5.8 |
| Carbon disulfide | | 0.18 | J H B | 0.055 | 5.8 |
| Methyl acetate | | 5.8 | U H | 0.36 | 5.8 |
| Methylene Chloride | | 0.76 | J H B | 0.16 | 5.8 |
| trans-1,2-Dichloroethene | | 5.8 | U H | 0.095 | 5.8 |
| 1,2-Dichloroethene, Total | | 5.8 | U H | 0.46 | 5.8 |
| Methyl t-butyl ether | | 5.8 | U H | 0.088 | 5.8 |
| 1,1-Dichloroethane | | 5.8 | U H | 1.2 | 5.8 |
| Vinyl acetate | | 5.8 | U H | 0.44 | 5.8 |
| 2,2-Dichloropropane | | 5.8 | U H | 1.2 | 5.8 |
| cis-1,2-Dichloroethene | | 5.8 | U H | 0.58 | 5.8 |
| 2-Butanone | | 5.8 | U H | 0.90 | 5.8 |
| Bromochloromethane | | 5.8 | U H | 0.52 | 5.8 |
| Tetrahydrofuran | | 4.3 | J H B | 1.2 | 58 |
| Chloroform | | 5.8 | U H | 0.076 | 5.8 |
| 1,1,1-Trichloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Cyclohexane | | 5.8 | U H | 1.2 | 5.8 |
| 1,1-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| Carbon tetrachloride | | 5.8 | U H | 0.080 | 5.8 |
| Isobutyl alcohol | | 290 | U H | 7.6 | 290 |
| Benzene | | 5.8 | U H | 0.23 | 5.8 |
| 1,2-Dichloroethane | | 5.8 | U H | 2.3 | 5.8 |
| Trichloroethene | | 5.8 | U H | 0.074 | 5.8 |
| Methylcyclohexane | | 5.8 | U H | 0.14 | 5.8 |
| 1,2-Dichloropropane | | 5.8 | U H | 2.3 | 5.8 |
| Dibromomethane | | 5.8 | U H | 0.16 | 5.8 |
| 1,4-Dioxane | | 290 | U H | 12 | 290 |
| Bromodichloromethane | | 5.8 | U H | 2.3 | 5.8 |
| 2-Chloroethyl vinyl ether | | 5.8 | U H | 0.14 | 5.8 |
| cis-1,3-Dichloropropene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Methyl-2-pentanone | | 5.8 | U H | 0.055 | 5.8 |
| Toluene | | 5.8 | U H | 0.092 | 5.8 |
| trans-1,3-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| 1,1,2-Trichloroethane | | 5.8 | U H | 0.092 | 5.8 |
| Tetrachloroethene | | 5.8 | U H | 0.38 | 5.8 |
| 1,3-Dichloropropane | | 5.8 | U H | 0.074 | 5.8 |
| 2-Hexanone | | 5.8 | U H | 1.2 | 5.8 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB COMPOSITE**

Lab Sample ID: 200-2983-18
Client Matrix: Sediment
% Moisture: 19.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia14.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.367 g |
| Date Analyzed: | 12/22/2010 1829 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 5.8 | U H | 0.45 | 5.8 |
| 1,2-Dibromoethane | | 5.8 | U H | 2.3 | 5.8 |
| Chlorobenzene | | 5.8 | U H | 0.058 | 5.8 |
| 1,1,1,2-Tetrachloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Ethylbenzene | | 5.8 | U H | 0.063 | 5.8 |
| m&p-Xylene | | 5.8 | U H | 0.46 | 5.8 |
| o-Xylene | | 5.8 | U H | 0.097 | 5.8 |
| Xylenes, Total | | 5.8 | U H | 0.17 | 5.8 |
| Styrene | | 5.8 | U H | 0.23 | 5.8 |
| Bromoform | | 5.8 | U H | 2.3 | 5.8 |
| Isopropylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| Bromobenzene | | 5.8 | U H | 0.093 | 5.8 |
| 1,1,2,2-Tetrachloroethane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,3-Trichloropropane | | 5.8 | U H | 0.24 | 5.8 |
| n-Propylbenzene | | 5.8 | U H | 0.14 | 5.8 |
| 2-Chlorotoluene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Chlorotoluene | | 5.8 | U H | 0.18 | 5.8 |
| 1,3,5-Trimethylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| tert-Butylbenzene | | 5.8 | U H | 0.16 | 5.8 |
| 1,2,4-Trimethylbenzene | | 5.8 | U H | 0.099 | 5.8 |
| sec-Butylbenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,3-Dichlorobenzene | | 5.8 | U H | 0.13 | 5.8 |
| 4-Isopropyltoluene | | 5.8 | U H | 0.13 | 5.8 |
| 1,4-Dichlorobenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,2-Dichlorobenzene | | 5.8 | U H | 0.14 | 5.8 |
| n-Butylbenzene | | 5.8 | U H | 0.10 | 5.8 |
| 1,2-Dibromo-3-Chloropropane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,4-Trichlorobenzene | | 0.18 | J H B | 0.080 | 5.8 |
| Hexachlorobutadiene | | 5.8 | U H | 0.23 | 5.8 |
| Naphthalene | | 0.37 | J H B | 0.10 | 5.8 |
| 1,2,3-Trichlorobenzene | | 0.24 | J H B | 0.15 | 5.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 107 | | 65 - 155 |
| Toluene-d8 | 105 | | 80 - 115 |
| Bromofluorobenzene | 114 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 108 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-1**

Lab Sample ID: 200-2983-19
Client Matrix: Sediment
% Moisture: 24.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia15.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.164 g |
| Date Analyzed: | 12/22/2010 1900 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.4 | U H | 0.096 | 6.4 |
| Chloromethane | | 6.4 | U H | 0.64 | 6.4 |
| Vinyl chloride | | 6.4 | U H | 0.64 | 6.4 |
| Bromomethane | | 6.4 | U H | 0.22 | 6.4 |
| Chloroethane | | 6.4 | U H | 0.37 | 6.4 |
| Trichlorofluoromethane | | 6.4 | U H | 0.088 | 6.4 |
| 1,1-Dichloroethene | | 6.4 | U H | 0.082 | 6.4 |
| Freon TF | | 6.4 | U H | 0.092 | 6.4 |
| Acetone | | 11 | H | 2.6 | 6.4 |
| Methyl iodide | | 6.4 | U H | 1.3 | 6.4 |
| Carbon disulfide | | 0.13 | J H B | 0.061 | 6.4 |
| Methyl acetate | | 2.8 | J H | 0.40 | 6.4 |
| Methylene Chloride | | 6.4 | U H | 0.18 | 6.4 |
| trans-1,2-Dichloroethene | | 6.4 | U H | 0.10 | 6.4 |
| 1,2-Dichloroethene, Total | | 6.4 | U H | 0.51 | 6.4 |
| Methyl t-butyl ether | | 6.4 | U H | 0.097 | 6.4 |
| 1,1-Dichloroethane | | 6.4 | U H | 1.3 | 6.4 |
| Vinyl acetate | | 6.4 | U H | 0.49 | 6.4 |
| 2,2-Dichloropropane | | 6.4 | U H | 1.3 | 6.4 |
| cis-1,2-Dichloroethene | | 6.4 | U H | 0.64 | 6.4 |
| 2-Butanone | | 6.4 | U H | 1.0 | 6.4 |
| Bromochloromethane | | 6.4 | U H | 0.58 | 6.4 |
| Tetrahydrofuran | | 2.4 | J H B | 1.3 | 64 |
| Chloroform | | 6.4 | U H | 0.084 | 6.4 |
| 1,1,1-Trichloroethane | | 6.4 | U H | 0.64 | 6.4 |
| Cyclohexane | | 6.4 | U H | 1.3 | 6.4 |
| 1,1-Dichloropropene | | 6.4 | U H | 0.64 | 6.4 |
| Carbon tetrachloride | | 6.4 | U H | 0.088 | 6.4 |
| Isobutyl alcohol | | 320 | U H | 8.4 | 320 |
| Benzene | | 6.4 | U H | 0.26 | 6.4 |
| 1,2-Dichloroethane | | 6.4 | U H | 2.6 | 6.4 |
| Trichloroethene | | 6.4 | U H | 0.082 | 6.4 |
| Methylcyclohexane | | 6.4 | U H | 0.15 | 6.4 |
| 1,2-Dichloropropane | | 6.4 | U H | 2.6 | 6.4 |
| Dibromomethane | | 6.4 | U H | 0.18 | 6.4 |
| 1,4-Dioxane | | 320 | U H | 13 | 320 |
| Bromodichloromethane | | 6.4 | U H | 2.6 | 6.4 |
| 2-Chloroethyl vinyl ether | | 6.4 | U H | 0.15 | 6.4 |
| cis-1,3-Dichloropropene | | 6.4 | U H | 0.17 | 6.4 |
| 4-Methyl-2-pentanone | | 6.4 | U H | 0.061 | 6.4 |
| Toluene | | 6.4 | U H | 0.10 | 6.4 |
| trans-1,3-Dichloropropene | | 6.4 | U H | 0.64 | 6.4 |
| 1,1,2-Trichloroethane | | 6.4 | U H | 0.10 | 6.4 |
| Tetrachloroethene | | 6.4 | U H | 0.42 | 6.4 |
| 1,3-Dichloropropane | | 6.4 | U H | 0.082 | 6.4 |
| 2-Hexanone | | 6.4 | U H | 1.3 | 6.4 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-1**

Lab Sample ID: 200-2983-19
Client Matrix: Sediment
% Moisture: 24.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia15.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.164 g |
| Date Analyzed: | 12/22/2010 1900 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.4 | U H | 0.50 | 6.4 |
| 1,2-Dibromoethane | | 6.4 | U H | 2.6 | 6.4 |
| Chlorobenzene | | 6.4 | U H | 0.064 | 6.4 |
| 1,1,1,2-Tetrachloroethane | | 6.4 | U H | 0.64 | 6.4 |
| Ethylbenzene | | 6.4 | U H | 0.070 | 6.4 |
| m&p-Xylene | | 6.4 | U H | 0.51 | 6.4 |
| o-Xylene | | 6.4 | U H | 0.11 | 6.4 |
| Xylenes, Total | | 6.4 | U H | 0.19 | 6.4 |
| Styrene | | 6.4 | U H | 0.26 | 6.4 |
| Bromoform | | 6.4 | U H | 2.6 | 6.4 |
| Isopropylbenzene | | 6.4 | U H | 0.14 | 6.4 |
| Bromobenzene | | 6.4 | U H | 0.10 | 6.4 |
| 1,1,2,2-Tetrachloroethane | | 6.4 | U H | 1.3 | 6.4 |
| 1,2,3-Trichloropropane | | 6.4 | U H | 0.27 | 6.4 |
| n-Propylbenzene | | 6.4 | U H | 0.15 | 6.4 |
| 2-Chlorotoluene | | 6.4 | U H | 0.17 | 6.4 |
| 4-Chlorotoluene | | 6.4 | U H | 0.20 | 6.4 |
| 1,3,5-Trimethylbenzene | | 6.4 | U H | 0.14 | 6.4 |
| tert-Butylbenzene | | 6.4 | U H | 0.18 | 6.4 |
| 1,2,4-Trimethylbenzene | | 6.4 | U H | 0.11 | 6.4 |
| sec-Butylbenzene | | 6.4 | U H | 0.17 | 6.4 |
| 1,3-Dichlorobenzene | | 6.4 | U H | 0.14 | 6.4 |
| 4-Isopropyltoluene | | 6.4 | U H | 0.14 | 6.4 |
| 1,4-Dichlorobenzene | | 0.24 | J H B | 0.17 | 6.4 |
| 1,2-Dichlorobenzene | | 0.18 | J H B | 0.15 | 6.4 |
| n-Butylbenzene | | 6.4 | U H | 0.11 | 6.4 |
| 1,2-Dibromo-3-Chloropropane | | 6.4 | U H | 1.3 | 6.4 |
| 1,2,4-Trichlorobenzene | | 0.44 | J H B | 0.088 | 6.4 |
| Hexachlorobutadiene | | 6.4 | U H | 0.26 | 6.4 |
| Naphthalene | | 0.93 | J H B | 0.11 | 6.4 |
| 1,2,3-Trichlorobenzene | | 0.49 | J H B | 0.17 | 6.4 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | | 65 - 155 |
| Toluene-d8 | 109 | | 80 - 115 |
| Bromofluorobenzene | 122 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 83 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-1**

Lab Sample ID: 200-2983-19
Client Matrix: Sediment
% Moisture: 24.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia21.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.658 g |
| Date Analyzed: | 12/22/2010 2202 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 5.8 | U H | 0.088 | 5.8 |
| Chloromethane | | 5.8 | U H | 0.58 | 5.8 |
| Vinyl chloride | | 5.8 | U H | 0.58 | 5.8 |
| Bromomethane | | 5.8 | U H | 0.20 | 5.8 |
| Chloroethane | | 5.8 | U H | 0.34 | 5.8 |
| Trichlorofluoromethane | | 5.8 | U H | 0.081 | 5.8 |
| 1,1-Dichloroethene | | 5.8 | U H | 0.075 | 5.8 |
| Freon TF | | 5.8 | U H | 0.084 | 5.8 |
| Acetone | | 19 | H | 2.3 | 5.8 |
| Methyl iodide | | 5.8 | U H | 1.2 | 5.8 |
| Carbon disulfide | | 0.097 | J H B | 0.056 | 5.8 |
| Methyl acetate | | 1.7 | J H | 0.36 | 5.8 |
| Methylene Chloride | | 5.8 | U H | 0.16 | 5.8 |
| trans-1,2-Dichloroethene | | 5.8 | U H | 0.096 | 5.8 |
| 1,2-Dichloroethene, Total | | 5.8 | U H | 0.47 | 5.8 |
| Methyl t-butyl ether | | 5.8 | U H | 0.089 | 5.8 |
| 1,1-Dichloroethane | | 5.8 | U H | 1.2 | 5.8 |
| Vinyl acetate | | 5.8 | U H | 0.44 | 5.8 |
| 2,2-Dichloropropane | | 5.8 | U H | 1.2 | 5.8 |
| cis-1,2-Dichloroethene | | 5.8 | U H | 0.58 | 5.8 |
| 2-Butanone | | 5.8 | U H | 0.91 | 5.8 |
| Bromochloromethane | | 5.8 | U H | 0.53 | 5.8 |
| Tetrahydrofuran | | 58 | U H | 1.2 | 58 |
| Chloroform | | 5.8 | U H | 0.077 | 5.8 |
| 1,1,1-Trichloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Cyclohexane | | 5.8 | U H | 1.2 | 5.8 |
| 1,1-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| Carbon tetrachloride | | 5.8 | U H | 0.081 | 5.8 |
| Isobutyl alcohol | | 290 | U H | 7.7 | 290 |
| Benzene | | 5.8 | U H | 0.23 | 5.8 |
| 1,2-Dichloroethane | | 5.8 | U H | 2.3 | 5.8 |
| Trichloroethene | | 5.8 | U H | 0.075 | 5.8 |
| Methylcyclohexane | | 5.8 | U H | 0.14 | 5.8 |
| 1,2-Dichloropropane | | 5.8 | U H | 2.3 | 5.8 |
| Dibromomethane | | 5.8 | U H | 0.16 | 5.8 |
| 1,4-Dioxane | | 290 | U H | 12 | 290 |
| Bromodichloromethane | | 5.8 | U H | 2.3 | 5.8 |
| 2-Chloroethyl vinyl ether | | 5.8 | U H | 0.14 | 5.8 |
| cis-1,3-Dichloropropene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Methyl-2-pentanone | | 5.8 | U H | 0.056 | 5.8 |
| Toluene | | 5.8 | U H | 0.093 | 5.8 |
| trans-1,3-Dichloropropene | | 5.8 | U H | 0.58 | 5.8 |
| 1,1,2-Trichloroethane | | 5.8 | U H | 0.093 | 5.8 |
| Tetrachloroethene | | 5.8 | U H | 0.39 | 5.8 |
| 1,3-Dichloropropane | | 5.8 | U H | 0.075 | 5.8 |
| 2-Hexanone | | 5.8 | U H | 1.2 | 5.8 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-1**

Lab Sample ID: 200-2983-19
Client Matrix: Sediment
% Moisture: 24.3

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia21.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.658 g |
| Date Analyzed: | 12/22/2010 2202 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 5.8 | U H | 0.46 | 5.8 |
| 1,2-Dibromoethane | | 5.8 | U H | 2.3 | 5.8 |
| Chlorobenzene | | 5.8 | U H | 0.058 | 5.8 |
| 1,1,1,2-Tetrachloroethane | | 5.8 | U H | 0.58 | 5.8 |
| Ethylbenzene | | 5.8 | U H | 0.064 | 5.8 |
| m&p-Xylene | | 5.8 | U H | 0.47 | 5.8 |
| o-Xylene | | 5.8 | U H | 0.098 | 5.8 |
| Xylenes, Total | | 5.8 | U H | 0.18 | 5.8 |
| Styrene | | 5.8 | U H | 0.23 | 5.8 |
| Bromoform | | 5.8 | U H | 2.3 | 5.8 |
| Isopropylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| Bromobenzene | | 5.8 | U H | 0.095 | 5.8 |
| 1,1,2,2-Tetrachloroethane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,3-Trichloropropane | | 5.8 | U H | 0.25 | 5.8 |
| n-Propylbenzene | | 5.8 | U H | 0.14 | 5.8 |
| 2-Chlorotoluene | | 5.8 | U H | 0.15 | 5.8 |
| 4-Chlorotoluene | | 5.8 | U H | 0.19 | 5.8 |
| 1,3,5-Trimethylbenzene | | 5.8 | U H | 0.13 | 5.8 |
| tert-Butylbenzene | | 5.8 | U H | 0.16 | 5.8 |
| 1,2,4-Trimethylbenzene | | 5.8 | U H | 0.10 | 5.8 |
| sec-Butylbenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,3-Dichlorobenzene | | 5.8 | U H | 0.13 | 5.8 |
| 4-Isopropyltoluene | | 5.8 | U H | 0.13 | 5.8 |
| 1,4-Dichlorobenzene | | 5.8 | U H | 0.15 | 5.8 |
| 1,2-Dichlorobenzene | | 5.8 | U H | 0.14 | 5.8 |
| n-Butylbenzene | | 5.8 | U H | 0.10 | 5.8 |
| 1,2-Dibromo-3-Chloropropane | | 5.8 | U H | 1.2 | 5.8 |
| 1,2,4-Trichlorobenzene | | 0.26 | J H B | 0.081 | 5.8 |
| Hexachlorobutadiene | | 5.8 | U H | 0.23 | 5.8 |
| Naphthalene | | 0.63 | J H B | 0.10 | 5.8 |
| 1,2,3-Trichlorobenzene | | 0.34 | J H B | 0.15 | 5.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | | 65 - 155 |
| Toluene-d8 | 123 | X | 80 - 115 |
| Bromofluorobenzene | 136 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 111 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-2**

Lab Sample ID: 200-2983-20
Client Matrix: Sediment
% Moisture: 19.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia16.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.185 g |
| Date Analyzed: | 12/22/2010 1930 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.0 | U H | 0.090 | 6.0 |
| Chloromethane | | 6.0 | U H | 0.60 | 6.0 |
| Vinyl chloride | | 6.0 | U H | 0.60 | 6.0 |
| Bromomethane | | 6.0 | U H | 0.20 | 6.0 |
| Chloroethane | | 6.0 | U H | 0.35 | 6.0 |
| Trichlorofluoromethane | | 6.0 | U H | 0.083 | 6.0 |
| 1,1-Dichloroethene | | 6.0 | U H | 0.077 | 6.0 |
| Freon TF | | 6.0 | U H | 0.086 | 6.0 |
| Acetone | | 86 | H | 2.4 | 6.0 |
| Methyl iodide | | 6.0 | U H | 1.2 | 6.0 |
| Carbon disulfide | | 0.11 | J H B | 0.058 | 6.0 |
| Methyl acetate | | 4.6 | J H | 0.37 | 6.0 |
| Methylene Chloride | | 6.0 | U H | 0.17 | 6.0 |
| trans-1,2-Dichloroethene | | 6.0 | U H | 0.098 | 6.0 |
| 1,2-Dichloroethene, Total | | 6.0 | U H | 0.48 | 6.0 |
| Methyl t-butyl ether | | 6.0 | U H | 0.091 | 6.0 |
| 1,1-Dichloroethane | | 6.0 | U H | 1.2 | 6.0 |
| Vinyl acetate | | 6.0 | U H | 0.46 | 6.0 |
| 2,2-Dichloropropane | | 6.0 | U H | 1.2 | 6.0 |
| cis-1,2-Dichloroethene | | 6.0 | U H | 0.60 | 6.0 |
| 2-Butanone | | 2.5 | J H | 0.93 | 6.0 |
| Bromochloromethane | | 6.0 | U H | 0.54 | 6.0 |
| Tetrahydrofuran | | 3.5 | J H B | 1.2 | 60 |
| Chloroform | | 0.29 | J H | 0.079 | 6.0 |
| 1,1,1-Trichloroethane | | 6.0 | U H | 0.60 | 6.0 |
| Cyclohexane | | 6.0 | U H | 1.2 | 6.0 |
| 1,1-Dichloropropene | | 6.0 | U H | 0.60 | 6.0 |
| Carbon tetrachloride | | 6.0 | U H | 0.083 | 6.0 |
| Isobutyl alcohol | | 300 | U H | 7.9 | 300 |
| Benzene | | 6.0 | U H | 0.24 | 6.0 |
| 1,2-Dichloroethane | | 6.0 | U H | 2.4 | 6.0 |
| Trichloroethene | | 6.0 | U H | 0.077 | 6.0 |
| Methylcyclohexane | | 6.0 | U H | 0.14 | 6.0 |
| 1,2-Dichloropropane | | 6.0 | U H | 2.4 | 6.0 |
| Dibromomethane | | 6.0 | U H | 0.17 | 6.0 |
| 1,4-Dioxane | | 300 | U H | 12 | 300 |
| Bromodichloromethane | | 6.0 | U H | 2.4 | 6.0 |
| 2-Chloroethyl vinyl ether | | 6.0 | U H | 0.14 | 6.0 |
| cis-1,3-Dichloropropene | | 6.0 | U H | 0.16 | 6.0 |
| 4-Methyl-2-pentanone | | 6.0 | U H | 0.058 | 6.0 |
| Toluene | | 6.0 | U H | 0.096 | 6.0 |
| trans-1,3-Dichloropropene | | 6.0 | U H | 0.60 | 6.0 |
| 1,1,2-Trichloroethane | | 6.0 | U H | 0.096 | 6.0 |
| Tetrachloroethene | | 6.0 | U H | 0.40 | 6.0 |
| 1,3-Dichloropropane | | 6.0 | U H | 0.077 | 6.0 |
| 2-Hexanone | | 6.0 | U H | 1.2 | 6.0 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-2**

Lab Sample ID: 200-2983-20
Client Matrix: Sediment
% Moisture: 19.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia16.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.185 g |
| Date Analyzed: | 12/22/2010 1930 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.0 | U H | 0.47 | 6.0 |
| 1,2-Dibromoethane | | 6.0 | U H | 2.4 | 6.0 |
| Chlorobenzene | | 6.0 | U H | 0.060 | 6.0 |
| 1,1,1,2-Tetrachloroethane | | 6.0 | U H | 0.60 | 6.0 |
| Ethylbenzene | | 6.0 | U H | 0.066 | 6.0 |
| m&p-Xylene | | 6.0 | U H | 0.48 | 6.0 |
| o-Xylene | | 6.0 | U H | 0.10 | 6.0 |
| Xylenes, Total | | 6.0 | U H | 0.18 | 6.0 |
| Styrene | | 6.0 | U H | 0.24 | 6.0 |
| Bromoform | | 6.0 | U H | 2.4 | 6.0 |
| Isopropylbenzene | | 6.0 | U H | 0.13 | 6.0 |
| Bromobenzene | | 6.0 | U H | 0.097 | 6.0 |
| 1,1,2,2-Tetrachloroethane | | 6.0 | U H | 1.2 | 6.0 |
| 1,2,3-Trichloropropane | | 6.0 | U H | 0.25 | 6.0 |
| n-Propylbenzene | | 6.0 | U H | 0.14 | 6.0 |
| 2-Chlorotoluene | | 6.0 | U H | 0.16 | 6.0 |
| 4-Chlorotoluene | | 6.0 | U H | 0.19 | 6.0 |
| 1,3,5-Trimethylbenzene | | 6.0 | U H | 0.13 | 6.0 |
| tert-Butylbenzene | | 6.0 | U H | 0.17 | 6.0 |
| 1,2,4-Trimethylbenzene | | 6.0 | U H | 0.10 | 6.0 |
| sec-Butylbenzene | | 6.0 | U H | 0.16 | 6.0 |
| 1,3-Dichlorobenzene | | 6.0 | U H | 0.13 | 6.0 |
| 4-Isopropyltoluene | | 6.0 | U H | 0.13 | 6.0 |
| 1,4-Dichlorobenzene | | 0.22 | J H B | 0.16 | 6.0 |
| 1,2-Dichlorobenzene | | 6.0 | U H | 0.14 | 6.0 |
| n-Butylbenzene | | 6.0 | U H | 0.11 | 6.0 |
| 1,2-Dibromo-3-Chloropropane | | 6.0 | U H | 1.2 | 6.0 |
| 1,2,4-Trichlorobenzene | | 0.35 | J H B | 0.083 | 6.0 |
| Hexachlorobutadiene | | 6.0 | U H | 0.24 | 6.0 |
| Naphthalene | | 0.68 | J H B | 0.11 | 6.0 |
| 1,2,3-Trichlorobenzene | | 0.40 | J H B | 0.16 | 6.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 108 | | 65 - 155 |
| Toluene-d8 | 116 | X | 80 - 115 |
| Bromofluorobenzene | 127 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 90 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-2**

Lab Sample ID: 200-2983-20
Client Matrix: Sediment
% Moisture: 19.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia22.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.13 g |
| Date Analyzed: | 12/22/2010 2233 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.1 | U H | 0.091 | 6.1 |
| Chloromethane | | 6.1 | U H | 0.61 | 6.1 |
| Vinyl chloride | | 6.1 | U H | 0.61 | 6.1 |
| Bromomethane | | 6.1 | U H | 0.21 | 6.1 |
| Chloroethane | | 6.1 | U H | 0.35 | 6.1 |
| Trichlorofluoromethane | | 6.1 | U H | 0.084 | 6.1 |
| 1,1-Dichloroethene | | 6.1 | U H | 0.078 | 6.1 |
| Freon TF | | 6.1 | U H | 0.087 | 6.1 |
| Acetone | | 130 | H | 2.4 | 6.1 |
| Methyl iodide | | 6.1 | U H | 1.2 | 6.1 |
| Carbon disulfide | | 0.091 | J H B | 0.058 | 6.1 |
| Methyl acetate | | 7.8 | H | 0.38 | 6.1 |
| Methylene Chloride | | 6.1 | U H | 0.17 | 6.1 |
| trans-1,2-Dichloroethene | | 6.1 | U H | 0.099 | 6.1 |
| 1,2-Dichloroethene, Total | | 6.1 | U H | 0.48 | 6.1 |
| Methyl t-butyl ether | | 6.1 | U H | 0.092 | 6.1 |
| 1,1-Dichloroethane | | 6.1 | U H | 1.2 | 6.1 |
| Vinyl acetate | | 6.1 | U H | 0.46 | 6.1 |
| 2,2-Dichloropropane | | 6.1 | U H | 1.2 | 6.1 |
| cis-1,2-Dichloroethene | | 6.1 | U H | 0.61 | 6.1 |
| 2-Butanone | | 4.0 | J H | 0.94 | 6.1 |
| Bromochloromethane | | 6.1 | U H | 0.55 | 6.1 |
| Tetrahydrofuran | | 61 | U H | 1.2 | 61 |
| Chloroform | | 0.43 | J H | 0.080 | 6.1 |
| 1,1,1-Trichloroethane | | 6.1 | U H | 0.61 | 6.1 |
| Cyclohexane | | 6.1 | U H | 1.2 | 6.1 |
| 1,1-Dichloropropene | | 6.1 | U H | 0.61 | 6.1 |
| Carbon tetrachloride | | 6.1 | U H | 0.084 | 6.1 |
| Isobutyl alcohol | | 300 | U H | 8.0 | 300 |
| Benzene | | 6.1 | U H | 0.24 | 6.1 |
| 1,2-Dichloroethane | | 6.1 | U H | 2.4 | 6.1 |
| Trichloroethene | | 6.1 | U H | 0.078 | 6.1 |
| Methylcyclohexane | | 6.1 | U H | 0.15 | 6.1 |
| 1,2-Dichloropropane | | 6.1 | U H | 2.4 | 6.1 |
| Dibromomethane | | 6.1 | U H | 0.17 | 6.1 |
| 1,4-Dioxane | | 300 | U H | 12 | 300 |
| Bromodichloromethane | | 6.1 | U H | 2.4 | 6.1 |
| 2-Chloroethyl vinyl ether | | 6.1 | U H | 0.15 | 6.1 |
| cis-1,3-Dichloropropene | | 6.1 | U H | 0.16 | 6.1 |
| 4-Methyl-2-pentanone | | 6.1 | U H | 0.058 | 6.1 |
| Toluene | | 0.28 | J H | 0.097 | 6.1 |
| trans-1,3-Dichloropropene | | 6.1 | U H | 0.61 | 6.1 |
| 1,1,2-Trichloroethane | | 6.1 | U H | 0.097 | 6.1 |
| Tetrachloroethene | | 6.1 | U H | 0.40 | 6.1 |
| 1,3-Dichloropropane | | 6.1 | U H | 0.078 | 6.1 |
| 2-Hexanone | | 6.1 | U H | 1.2 | 6.1 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-2**

Lab Sample ID: 200-2983-20
Client Matrix: Sediment
% Moisture: 19.5

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia22.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.13 g |
| Date Analyzed: | 12/22/2010 2233 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.1 | U H | 0.47 | 6.1 |
| 1,2-Dibromoethane | | 6.1 | U H | 2.4 | 6.1 |
| Chlorobenzene | | 6.1 | U H | 0.061 | 6.1 |
| 1,1,1,2-Tetrachloroethane | | 6.1 | U H | 0.61 | 6.1 |
| Ethylbenzene | | 6.1 | U H | 0.067 | 6.1 |
| m&p-Xylene | | 6.1 | U H | 0.48 | 6.1 |
| o-Xylene | | 6.1 | U H | 0.10 | 6.1 |
| Xylenes, Total | | 6.1 | U H | 0.18 | 6.1 |
| Styrene | | 6.1 | U H | 0.24 | 6.1 |
| Bromoform | | 6.1 | U H | 2.4 | 6.1 |
| Isopropylbenzene | | 6.1 | U H | 0.13 | 6.1 |
| Bromobenzene | | 6.1 | U H | 0.098 | 6.1 |
| 1,1,2,2-Tetrachloroethane | | 6.1 | U H | 1.2 | 6.1 |
| 1,2,3-Trichloropropane | | 6.1 | U H | 0.25 | 6.1 |
| n-Propylbenzene | | 6.1 | U H | 0.15 | 6.1 |
| 2-Chlorotoluene | | 6.1 | U H | 0.16 | 6.1 |
| 4-Chlorotoluene | | 6.1 | U H | 0.19 | 6.1 |
| 1,3,5-Trimethylbenzene | | 6.1 | U H | 0.13 | 6.1 |
| tert-Butylbenzene | | 6.1 | U H | 0.17 | 6.1 |
| 1,2,4-Trimethylbenzene | | 6.1 | U H | 0.10 | 6.1 |
| sec-Butylbenzene | | 6.1 | U H | 0.16 | 6.1 |
| 1,3-Dichlorobenzene | | 6.1 | U H | 0.13 | 6.1 |
| 4-Isopropyltoluene | | 3.1 | J H B | 0.13 | 6.1 |
| 1,4-Dichlorobenzene | | 0.17 | J H B | 0.16 | 6.1 |
| 1,2-Dichlorobenzene | | 6.1 | U H | 0.15 | 6.1 |
| n-Butylbenzene | | 6.1 | U H | 0.11 | 6.1 |
| 1,2-Dibromo-3-Chloropropane | | 6.1 | U H | 1.2 | 6.1 |
| 1,2,4-Trichlorobenzene | | 0.26 | J H B | 0.084 | 6.1 |
| Hexachlorobutadiene | | 6.1 | U H | 0.24 | 6.1 |
| Naphthalene | | 0.52 | J H B | 0.11 | 6.1 |
| 1,2,3-Trichlorobenzene | | 0.30 | J H B | 0.16 | 6.1 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | | 65 - 155 |
| Toluene-d8 | 124 | X | 80 - 115 |
| Bromofluorobenzene | 141 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 103 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-3**

Lab Sample ID: 200-2983-21
Client Matrix: Sediment
% Moisture: 25.0

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia17.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.149 g |
| Date Analyzed: | 12/22/2010 2001 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.5 | U H | 0.097 | 6.5 |
| Chloromethane | | 6.5 | U H | 0.65 | 6.5 |
| Vinyl chloride | | 6.5 | U H | 0.65 | 6.5 |
| Bromomethane | | 6.5 | U H | 0.22 | 6.5 |
| Chloroethane | | 6.5 | U H | 0.38 | 6.5 |
| Trichlorofluoromethane | | 6.5 | U H | 0.089 | 6.5 |
| 1,1-Dichloroethene | | 6.5 | U H | 0.083 | 6.5 |
| Freon TF | | 6.5 | U H | 0.093 | 6.5 |
| Acetone | | 160 | H | 2.6 | 6.5 |
| Methyl iodide | | 6.5 | U H | 1.3 | 6.5 |
| Carbon disulfide | | 0.091 | J H B | 0.062 | 6.5 |
| Methyl acetate | | 6.1 | J H | 0.40 | 6.5 |
| Methylene Chloride | | 6.5 | U H | 0.18 | 6.5 |
| trans-1,2-Dichloroethene | | 6.5 | U H | 0.11 | 6.5 |
| 1,2-Dichloroethene, Total | | 6.5 | U H | 0.52 | 6.5 |
| Methyl t-butyl ether | | 6.5 | U H | 0.098 | 6.5 |
| 1,1-Dichloroethane | | 6.5 | U H | 1.3 | 6.5 |
| Vinyl acetate | | 6.5 | U H | 0.49 | 6.5 |
| 2,2-Dichloropropane | | 6.5 | U H | 1.3 | 6.5 |
| cis-1,2-Dichloroethene | | 6.5 | U H | 0.65 | 6.5 |
| 2-Butanone | | 4.0 | J H | 1.0 | 6.5 |
| Bromochloromethane | | 6.5 | U H | 0.58 | 6.5 |
| Tetrahydrofuran | | 65 | U H | 1.3 | 65 |
| Chloroform | | 6.5 | U H | 0.085 | 6.5 |
| 1,1,1-Trichloroethane | | 6.5 | U H | 0.65 | 6.5 |
| Cyclohexane | | 6.5 | U H | 1.3 | 6.5 |
| 1,1-Dichloropropene | | 6.5 | U H | 0.65 | 6.5 |
| Carbon tetrachloride | | 6.5 | U H | 0.089 | 6.5 |
| Isobutyl alcohol | | 320 | U H | 8.5 | 320 |
| Benzene | | 6.5 | U H | 0.26 | 6.5 |
| 1,2-Dichloroethane | | 6.5 | U H | 2.6 | 6.5 |
| Trichloroethene | | 6.5 | U H | 0.083 | 6.5 |
| Methylcyclohexane | | 6.5 | U H | 0.16 | 6.5 |
| 1,2-Dichloropropane | | 6.5 | U H | 2.6 | 6.5 |
| Dibromomethane | | 6.5 | U H | 0.18 | 6.5 |
| 1,4-Dioxane | | 320 | U H | 13 | 320 |
| Bromodichloromethane | | 6.5 | U H | 2.6 | 6.5 |
| 2-Chloroethyl vinyl ether | | 6.5 | U H | 0.16 | 6.5 |
| cis-1,3-Dichloropropene | | 6.5 | U H | 0.17 | 6.5 |
| 4-Methyl-2-pentanone | | 6.5 | U H | 0.062 | 6.5 |
| Toluene | | 6.5 | U H | 0.10 | 6.5 |
| trans-1,3-Dichloropropene | | 6.5 | U H | 0.65 | 6.5 |
| 1,1,2-Trichloroethane | | 6.5 | U H | 0.10 | 6.5 |
| Tetrachloroethene | | 6.5 | U H | 0.43 | 6.5 |
| 1,3-Dichloropropane | | 6.5 | U H | 0.083 | 6.5 |
| 2-Hexanone | | 6.5 | U H | 1.3 | 6.5 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-3**

Lab Sample ID: 200-2983-21
Client Matrix: Sediment
% Moisture: 25.0

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia17.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.149 g |
| Date Analyzed: | 12/22/2010 2001 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.5 | U H | 0.50 | 6.5 |
| 1,2-Dibromoethane | | 6.5 | U H | 2.6 | 6.5 |
| Chlorobenzene | | 6.5 | U H | 0.065 | 6.5 |
| 1,1,1,2-Tetrachloroethane | | 6.5 | U H | 0.65 | 6.5 |
| Ethylbenzene | | 6.5 | U H | 0.071 | 6.5 |
| m&p-Xylene | | 6.5 | U H | 0.52 | 6.5 |
| o-Xylene | | 6.5 | U H | 0.11 | 6.5 |
| Xylenes, Total | | 6.5 | U H | 0.19 | 6.5 |
| Styrene | | 6.5 | U H | 0.26 | 6.5 |
| Bromoform | | 6.5 | U H | 2.6 | 6.5 |
| Isopropylbenzene | | 6.5 | U H | 0.14 | 6.5 |
| Bromobenzene | | 6.5 | U H | 0.10 | 6.5 |
| 1,1,2,2-Tetrachloroethane | | 6.5 | U H | 1.3 | 6.5 |
| 1,2,3-Trichloropropane | | 6.5 | U H | 0.27 | 6.5 |
| n-Propylbenzene | | 6.5 | U H | 0.16 | 6.5 |
| 2-Chlorotoluene | | 6.5 | U H | 0.17 | 6.5 |
| 4-Chlorotoluene | | 6.5 | U H | 0.21 | 6.5 |
| 1,3,5-Trimethylbenzene | | 6.5 | U H | 0.14 | 6.5 |
| tert-Butylbenzene | | 6.5 | U H | 0.18 | 6.5 |
| 1,2,4-Trimethylbenzene | | 6.5 | U H | 0.11 | 6.5 |
| sec-Butylbenzene | | 6.5 | U H | 0.17 | 6.5 |
| 1,3-Dichlorobenzene | | 6.5 | U H | 0.14 | 6.5 |
| 4-Isopropyltoluene | | 0.32 | J H B | 0.14 | 6.5 |
| 1,4-Dichlorobenzene | | 0.25 | J H B | 0.17 | 6.5 |
| 1,2-Dichlorobenzene | | 6.5 | U H | 0.16 | 6.5 |
| n-Butylbenzene | | 6.5 | U H | 0.11 | 6.5 |
| 1,2-Dibromo-3-Chloropropane | | 6.5 | U H | 1.3 | 6.5 |
| 1,2,4-Trichlorobenzene | | 0.35 | J H B | 0.089 | 6.5 |
| Hexachlorobutadiene | | 6.5 | U H | 0.26 | 6.5 |
| Naphthalene | | 0.74 | J H B | 0.12 | 6.5 |
| 1,2,3-Trichlorobenzene | | 0.51 | J H B | 0.17 | 6.5 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | | 65 - 155 |
| Toluene-d8 | 120 | X | 80 - 115 |
| Bromofluorobenzene | 123 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 85 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-3**

Lab Sample ID: 200-2983-21
Client Matrix: Sediment
% Moisture: 25.0

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia23.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.089 g |
| Date Analyzed: | 12/22/2010 2303 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.5 | U H | 0.098 | 6.5 |
| Chloromethane | | 6.5 | U H | 0.65 | 6.5 |
| Vinyl chloride | | 6.5 | U H | 0.65 | 6.5 |
| Bromomethane | | 6.5 | U H | 0.22 | 6.5 |
| Chloroethane | | 6.5 | U H | 0.38 | 6.5 |
| Trichlorofluoromethane | | 6.5 | U H | 0.090 | 6.5 |
| 1,1-Dichloroethene | | 6.5 | U H | 0.084 | 6.5 |
| Freon TF | | 6.5 | U H | 0.094 | 6.5 |
| Acetone | | 370 | H | 2.6 | 6.5 |
| Methyl iodide | | 6.5 | U H | 1.3 | 6.5 |
| Carbon disulfide | | 0.27 | J H B | 0.063 | 6.5 |
| Methyl acetate | | 13 | H | 0.41 | 6.5 |
| Methylene Chloride | | 6.5 | U H | 0.18 | 6.5 |
| trans-1,2-Dichloroethene | | 6.5 | U H | 0.11 | 6.5 |
| 1,2-Dichloroethene, Total | | 6.5 | U H | 0.52 | 6.5 |
| Methyl t-butyl ether | | 6.5 | U H | 0.10 | 6.5 |
| 1,1-Dichloroethane | | 6.5 | U H | 1.3 | 6.5 |
| Vinyl acetate | | 6.5 | U H | 0.50 | 6.5 |
| 2,2-Dichloropropane | | 6.5 | U H | 1.3 | 6.5 |
| cis-1,2-Dichloroethene | | 6.5 | U H | 0.65 | 6.5 |
| 2-Butanone | | 13 | H | 1.0 | 6.5 |
| Bromochloromethane | | 6.5 | U H | 0.59 | 6.5 |
| Tetrahydrofuran | | 65 | U H | 1.3 | 65 |
| Chloroform | | 0.52 | J H | 0.086 | 6.5 |
| 1,1,1-Trichloroethane | | 6.5 | U H | 0.65 | 6.5 |
| Cyclohexane | | 6.5 | U H | 1.3 | 6.5 |
| 1,1-Dichloropropene | | 6.5 | U H | 0.65 | 6.5 |
| Carbon tetrachloride | | 6.5 | U H | 0.090 | 6.5 |
| Isobutyl alcohol | | 330 | U H | 8.6 | 330 |
| Benzene | | 6.5 | U H | 0.26 | 6.5 |
| 1,2-Dichloroethane | | 6.5 | U H | 2.6 | 6.5 |
| Trichloroethene | | 6.5 | U H | 0.084 | 6.5 |
| Methylcyclohexane | | 6.5 | U H | 0.16 | 6.5 |
| 1,2-Dichloropropane | | 6.5 | U H | 2.6 | 6.5 |
| Dibromomethane | | 6.5 | U H | 0.18 | 6.5 |
| 1,4-Dioxane | | 330 | U H | 13 | 330 |
| Bromodichloromethane | | 6.5 | U H | 2.6 | 6.5 |
| 2-Chloroethyl vinyl ether | | 6.5 | U H | 0.16 | 6.5 |
| cis-1,3-Dichloropropene | | 6.5 | U H | 0.17 | 6.5 |
| 4-Methyl-2-pentanone | | 6.5 | U H | 0.063 | 6.5 |
| Toluene | | 6.5 | U H | 0.10 | 6.5 |
| trans-1,3-Dichloropropene | | 6.5 | U H | 0.65 | 6.5 |
| 1,1,2-Trichloroethane | | 6.5 | U H | 0.10 | 6.5 |
| Tetrachloroethene | | 6.5 | U H | 0.43 | 6.5 |
| 1,3-Dichloropropane | | 6.5 | U H | 0.084 | 6.5 |
| 2-Hexanone | | 6.5 | U H | 1.3 | 6.5 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-3**

Lab Sample ID: 200-2983-21
Client Matrix: Sediment
% Moisture: 25.0

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia23.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.089 g |
| Date Analyzed: | 12/22/2010 2303 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.5 | U H | 0.51 | 6.5 |
| 1,2-Dibromoethane | | 6.5 | U H | 2.6 | 6.5 |
| Chlorobenzene | | 6.5 | U H | 0.065 | 6.5 |
| 1,1,1,2-Tetrachloroethane | | 6.5 | U H | 0.65 | 6.5 |
| Ethylbenzene | | 6.5 | U H | 0.072 | 6.5 |
| m&p-Xylene | | 6.5 | U H | 0.52 | 6.5 |
| o-Xylene | | 6.5 | U H | 0.11 | 6.5 |
| Xylenes, Total | | 6.5 | U H | 0.20 | 6.5 |
| Styrene | | 6.5 | U H | 0.26 | 6.5 |
| Bromoform | | 6.5 | U H | 2.6 | 6.5 |
| Isopropylbenzene | | 6.5 | U H | 0.14 | 6.5 |
| Bromobenzene | | 6.5 | U H | 0.11 | 6.5 |
| 1,1,2,2-Tetrachloroethane | | 6.5 | U H | 1.3 | 6.5 |
| 1,2,3-Trichloropropane | | 6.5 | U H | 0.27 | 6.5 |
| n-Propylbenzene | | 6.5 | U H | 0.16 | 6.5 |
| 2-Chlorotoluene | | 6.5 | U H | 0.17 | 6.5 |
| 4-Chlorotoluene | | 6.5 | U H | 0.21 | 6.5 |
| 1,3,5-Trimethylbenzene | | 6.5 | U H | 0.14 | 6.5 |
| tert-Butylbenzene | | 6.5 | U H | 0.18 | 6.5 |
| 1,2,4-Trimethylbenzene | | 6.5 | U H | 0.11 | 6.5 |
| sec-Butylbenzene | | 6.5 | U H | 0.17 | 6.5 |
| 1,3-Dichlorobenzene | | 0.17 | J H B | 0.14 | 6.5 |
| 4-Isopropyltoluene | | 3.7 | J H B | 0.14 | 6.5 |
| 1,4-Dichlorobenzene | | 0.36 | J H B | 0.17 | 6.5 |
| 1,2-Dichlorobenzene | | 0.26 | J H B | 0.16 | 6.5 |
| n-Butylbenzene | | 6.5 | U H | 0.12 | 6.5 |
| 1,2-Dibromo-3-Chloropropane | | 6.5 | U H | 1.3 | 6.5 |
| 1,2,4-Trichlorobenzene | | 0.59 | J H B | 0.090 | 6.5 |
| Hexachlorobutadiene | | 6.5 | U H | 0.26 | 6.5 |
| Naphthalene | | 1.2 | J H B | 0.12 | 6.5 |
| 1,2,3-Trichlorobenzene | | 0.75 | J H B | 0.17 | 6.5 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | | 65 - 155 |
| Toluene-d8 | 162 | X | 80 - 115 |
| Bromofluorobenzene | 137 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 104 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS 4**

Lab Sample ID: 200-2983-22
Client Matrix: Sediment
% Moisture: 29.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia18.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.365 g |
| Date Analyzed: | 12/22/2010 2031 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.6 | U H | 0.099 | 6.6 |
| Chloromethane | | 6.6 | U H | 0.66 | 6.6 |
| Vinyl chloride | | 6.6 | U H | 0.66 | 6.6 |
| Bromomethane | | 6.6 | U H | 0.22 | 6.6 |
| Chloroethane | | 6.6 | U H | 0.38 | 6.6 |
| Trichlorofluoromethane | | 6.6 | U H | 0.091 | 6.6 |
| 1,1-Dichloroethene | | 6.6 | U H | 0.084 | 6.6 |
| Freon TF | | 6.6 | U H | 0.095 | 6.6 |
| Acetone | | 6.6 | U H | 2.6 | 6.6 |
| Methyl iodide | | 6.6 | U H | 1.3 | 6.6 |
| Carbon disulfide | | 0.78 | J H B | 0.063 | 6.6 |
| Methyl acetate | | 2.2 | J H | 0.41 | 6.6 |
| Methylene Chloride | | 0.22 | J H B | 0.18 | 6.6 |
| trans-1,2-Dichloroethene | | 6.6 | U H | 0.11 | 6.6 |
| 1,2-Dichloroethene, Total | | 6.6 | U H | 0.53 | 6.6 |
| Methyl t-butyl ether | | 6.6 | U H | 0.10 | 6.6 |
| 1,1-Dichloroethane | | 6.6 | U H | 1.3 | 6.6 |
| Vinyl acetate | | 6.6 | U H | 0.50 | 6.6 |
| 2,2-Dichloropropane | | 6.6 | U H | 1.3 | 6.6 |
| cis-1,2-Dichloroethene | | 6.6 | U H | 0.66 | 6.6 |
| 2-Butanone | | 6.6 | U H | 1.0 | 6.6 |
| Bromochloromethane | | 6.6 | U H | 0.59 | 6.6 |
| Tetrahydrofuran | | 3.5 | J H B | 1.3 | 66 |
| Chloroform | | 6.6 | U H | 0.087 | 6.6 |
| 1,1,1-Trichloroethane | | 6.6 | U H | 0.66 | 6.6 |
| Cyclohexane | | 6.6 | U H | 1.3 | 6.6 |
| 1,1-Dichloropropene | | 6.6 | U H | 0.66 | 6.6 |
| Carbon tetrachloride | | 6.6 | U H | 0.091 | 6.6 |
| Isobutyl alcohol | | 330 | U H | 8.7 | 330 |
| Benzene | | 6.6 | U H | 0.26 | 6.6 |
| 1,2-Dichloroethane | | 6.6 | U H | 2.6 | 6.6 |
| Trichloroethene | | 6.6 | U H | 0.084 | 6.6 |
| Methylcyclohexane | | 6.6 | U H | 0.16 | 6.6 |
| 1,2-Dichloropropane | | 6.6 | U H | 2.6 | 6.6 |
| Dibromomethane | | 6.6 | U H | 0.18 | 6.6 |
| 1,4-Dioxane | | 330 | U H | 13 | 330 |
| Bromodichloromethane | | 6.6 | U H | 2.6 | 6.6 |
| 2-Chloroethyl vinyl ether | | 6.6 | U H | 0.16 | 6.6 |
| cis-1,3-Dichloropropene | | 6.6 | U H | 0.17 | 6.6 |
| 4-Methyl-2-pentanone | | 6.6 | U H | 0.063 | 6.6 |
| Toluene | | 6.6 | U H | 0.11 | 6.6 |
| trans-1,3-Dichloropropene | | 6.6 | U H | 0.66 | 6.6 |
| 1,1,2-Trichloroethane | | 6.6 | U H | 0.11 | 6.6 |
| Tetrachloroethene | | 6.6 | U H | 0.43 | 6.6 |
| 1,3-Dichloropropane | | 6.6 | U H | 0.084 | 6.6 |
| 2-Hexanone | | 6.6 | U H | 1.3 | 6.6 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS 4**

Lab Sample ID: 200-2983-22
Client Matrix: Sediment
% Moisture: 29.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia18.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.365 g |
| Date Analyzed: | 12/22/2010 2031 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.6 | U H | 0.51 | 6.6 |
| 1,2-Dibromoethane | | 6.6 | U H | 2.6 | 6.6 |
| Chlorobenzene | | 6.6 | U H | 0.066 | 6.6 |
| 1,1,1,2-Tetrachloroethane | | 6.6 | U H | 0.66 | 6.6 |
| Ethylbenzene | | 6.6 | U H | 0.072 | 6.6 |
| m&p-Xylene | | 6.6 | U H | 0.53 | 6.6 |
| o-Xylene | | 6.6 | U H | 0.11 | 6.6 |
| Xylenes, Total | | 6.6 | U H | 0.20 | 6.6 |
| Styrene | | 6.6 | U H | 0.26 | 6.6 |
| Bromoform | | 6.6 | U H | 2.6 | 6.6 |
| Isopropylbenzene | | 6.6 | U H | 0.14 | 6.6 |
| Bromobenzene | | 6.6 | U H | 0.11 | 6.6 |
| 1,1,2,2-Tetrachloroethane | | 6.6 | U H | 1.3 | 6.6 |
| 1,2,3-Trichloropropane | | 6.6 | U H | 0.28 | 6.6 |
| n-Propylbenzene | | 6.6 | U H | 0.16 | 6.6 |
| 2-Chlorotoluene | | 6.6 | U H | 0.17 | 6.6 |
| 4-Chlorotoluene | | 6.6 | U H | 0.21 | 6.6 |
| 1,3,5-Trimethylbenzene | | 6.6 | U H | 0.14 | 6.6 |
| tert-Butylbenzene | | 6.6 | U H | 0.18 | 6.6 |
| 1,2,4-Trimethylbenzene | | 6.6 | U H | 0.11 | 6.6 |
| sec-Butylbenzene | | 6.6 | U H | 0.17 | 6.6 |
| 1,3-Dichlorobenzene | | 6.6 | U H | 0.14 | 6.6 |
| 4-Isopropyltoluene | | 6.6 | U H | 0.14 | 6.6 |
| 1,4-Dichlorobenzene | | 0.23 | J H B | 0.17 | 6.6 |
| 1,2-Dichlorobenzene | | 0.19 | J H B | 0.16 | 6.6 |
| n-Butylbenzene | | 6.6 | U H | 0.12 | 6.6 |
| 1,2-Dibromo-3-Chloropropane | | 6.6 | U H | 1.3 | 6.6 |
| 1,2,4-Trichlorobenzene | | 0.49 | J H B | 0.091 | 6.6 |
| Hexachlorobutadiene | | 6.6 | U H | 0.26 | 6.6 |
| Naphthalene | | 0.99 | J H B | 0.12 | 6.6 |
| 1,2,3-Trichlorobenzene | | 0.53 | J H B | 0.17 | 6.6 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | | 65 - 155 |
| Toluene-d8 | 133 | X | 80 - 115 |
| Bromofluorobenzene | 147 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 105 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS 4**

Lab Sample ID: 200-2983-22
Client Matrix: Sediment
% Moisture: 29.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia24.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.366 g |
| Date Analyzed: | 12/22/2010 2334 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.6 | U H | 0.099 | 6.6 |
| Chloromethane | | 6.6 | U H | 0.66 | 6.6 |
| Vinyl chloride | | 6.6 | U H | 0.66 | 6.6 |
| Bromomethane | | 6.6 | U H | 0.22 | 6.6 |
| Chloroethane | | 6.6 | U H | 0.38 | 6.6 |
| Trichlorofluoromethane | | 6.6 | U H | 0.091 | 6.6 |
| 1,1-Dichloroethene | | 6.6 | U H | 0.084 | 6.6 |
| Freon TF | | 6.6 | U H | 0.095 | 6.6 |
| Acetone | | 6.6 | U H | 2.6 | 6.6 |
| Methyl iodide | | 6.6 | U H | 1.3 | 6.6 |
| Carbon disulfide | | 2.4 | J H B | 0.063 | 6.6 |
| Methyl acetate | | 2.6 | J H | 0.41 | 6.6 |
| Methylene Chloride | | 0.30 | J H B | 0.18 | 6.6 |
| trans-1,2-Dichloroethene | | 6.6 | U H | 0.11 | 6.6 |
| 1,2-Dichloroethene, Total | | 6.6 | U H | 0.53 | 6.6 |
| Methyl t-butyl ether | | 6.6 | U H | 0.10 | 6.6 |
| 1,1-Dichloroethane | | 6.6 | U H | 1.3 | 6.6 |
| Vinyl acetate | | 6.6 | U H | 0.50 | 6.6 |
| 2,2-Dichloropropane | | 6.6 | U H | 1.3 | 6.6 |
| cis-1,2-Dichloroethene | | 6.6 | U H | 0.66 | 6.6 |
| 2-Butanone | | 6.6 | U H | 1.0 | 6.6 |
| Bromochloromethane | | 6.6 | U H | 0.59 | 6.6 |
| Tetrahydrofuran | | 3.9 | J H B | 1.3 | 66 |
| Chloroform | | 6.6 | U H | 0.087 | 6.6 |
| 1,1,1-Trichloroethane | | 6.6 | U H | 0.66 | 6.6 |
| Cyclohexane | | 6.6 | U H | 1.3 | 6.6 |
| 1,1-Dichloropropene | | 6.6 | U H | 0.66 | 6.6 |
| Carbon tetrachloride | | 6.6 | U H | 0.091 | 6.6 |
| Isobutyl alcohol | | 330 | U H | 8.7 | 330 |
| Benzene | | 6.6 | U H | 0.26 | 6.6 |
| 1,2-Dichloroethane | | 6.6 | U H | 2.6 | 6.6 |
| Trichloroethene | | 6.6 | U H | 0.084 | 6.6 |
| Methylcyclohexane | | 6.6 | U H | 0.16 | 6.6 |
| 1,2-Dichloropropane | | 6.6 | U H | 2.6 | 6.6 |
| Dibromomethane | | 6.6 | U H | 0.18 | 6.6 |
| 1,4-Dioxane | | 330 | U H | 13 | 330 |
| Bromodichloromethane | | 6.6 | U H | 2.6 | 6.6 |
| 2-Chloroethyl vinyl ether | | 6.6 | U H | 0.16 | 6.6 |
| cis-1,3-Dichloropropene | | 6.6 | U H | 0.17 | 6.6 |
| 4-Methyl-2-pentanone | | 6.6 | U H | 0.063 | 6.6 |
| Toluene | | 6.6 | U H | 0.11 | 6.6 |
| trans-1,3-Dichloropropene | | 6.6 | U H | 0.66 | 6.6 |
| 1,1,2-Trichloroethane | | 6.6 | U H | 0.11 | 6.6 |
| Tetrachloroethene | | 6.6 | U H | 0.43 | 6.6 |
| 1,3-Dichloropropane | | 6.6 | U H | 0.084 | 6.6 |
| 2-Hexanone | | 6.6 | U H | 1.3 | 6.6 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS 4**

Lab Sample ID: 200-2983-22
Client Matrix: Sediment
% Moisture: 29.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia24.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.366 g |
| Date Analyzed: | 12/22/2010 2334 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.6 | U H | 0.51 | 6.6 |
| 1,2-Dibromoethane | | 6.6 | U H | 2.6 | 6.6 |
| Chlorobenzene | | 6.6 | U H | 0.066 | 6.6 |
| 1,1,1,2-Tetrachloroethane | | 6.6 | U H | 0.66 | 6.6 |
| Ethylbenzene | | 6.6 | U H | 0.072 | 6.6 |
| m&p-Xylene | | 6.6 | U H | 0.53 | 6.6 |
| o-Xylene | | 6.6 | U H | 0.11 | 6.6 |
| Xylenes, Total | | 6.6 | U H | 0.20 | 6.6 |
| Styrene | | 6.6 | U H | 0.26 | 6.6 |
| Bromoform | | 6.6 | U H | 2.6 | 6.6 |
| Isopropylbenzene | | 6.6 | U H | 0.14 | 6.6 |
| Bromobenzene | | 6.6 | U H | 0.11 | 6.6 |
| 1,1,2,2-Tetrachloroethane | | 6.6 | U H | 1.3 | 6.6 |
| 1,2,3-Trichloropropane | | 6.6 | U H | 0.28 | 6.6 |
| n-Propylbenzene | | 6.6 | U H | 0.16 | 6.6 |
| 2-Chlorotoluene | | 6.6 | U H | 0.17 | 6.6 |
| 4-Chlorotoluene | | 6.6 | U H | 0.21 | 6.6 |
| 1,3,5-Trimethylbenzene | | 6.6 | U H | 0.14 | 6.6 |
| tert-Butylbenzene | | 6.6 | U H | 0.18 | 6.6 |
| 1,2,4-Trimethylbenzene | | 6.6 | U H | 0.11 | 6.6 |
| sec-Butylbenzene | | 6.6 | U H | 0.17 | 6.6 |
| 1,3-Dichlorobenzene | | 6.6 | U H | 0.14 | 6.6 |
| 4-Isopropyltoluene | | 6.6 | U H | 0.14 | 6.6 |
| 1,4-Dichlorobenzene | | 6.6 | U H | 0.17 | 6.6 |
| 1,2-Dichlorobenzene | | 6.6 | U H | 0.16 | 6.6 |
| n-Butylbenzene | | 6.6 | U H | 0.12 | 6.6 |
| 1,2-Dibromo-3-Chloropropane | | 6.6 | U H | 1.3 | 6.6 |
| 1,2,4-Trichlorobenzene | | 0.35 | J H B | 0.091 | 6.6 |
| Hexachlorobutadiene | | 6.6 | U H | 0.26 | 6.6 |
| Naphthalene | | 0.75 | J H B | 0.12 | 6.6 |
| 1,2,3-Trichlorobenzene | | 0.34 | J H B | 0.17 | 6.6 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | | 65 - 155 |
| Toluene-d8 | 138 | X | 80 - 115 |
| Bromofluorobenzene | 156 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 126 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS COMPOSITE**

Lab Sample ID: 200-2983-23
Client Matrix: Sediment
% Moisture: 25.9

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia19.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.045 g |
| Date Analyzed: | 12/22/2010 2102 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.7 | U H | 0.10 | 6.7 |
| Chloromethane | | 6.7 | U H | 0.67 | 6.7 |
| Vinyl chloride | | 6.7 | U H | 0.67 | 6.7 |
| Bromomethane | | 6.7 | U H | 0.23 | 6.7 |
| Chloroethane | | 6.7 | U H | 0.39 | 6.7 |
| Trichlorofluoromethane | | 6.7 | U H | 0.092 | 6.7 |
| 1,1-Dichloroethene | | 6.7 | U H | 0.086 | 6.7 |
| Freon TF | | 6.7 | U H | 0.096 | 6.7 |
| Acetone | | 76 | H | 2.7 | 6.7 |
| Methyl iodide | | 6.7 | U H | 1.3 | 6.7 |
| Carbon disulfide | | 0.11 | J H B | 0.064 | 6.7 |
| Methyl acetate | | 8.5 | H | 0.41 | 6.7 |
| Methylene Chloride | | 6.7 | U H | 0.19 | 6.7 |
| trans-1,2-Dichloroethene | | 6.7 | U H | 0.11 | 6.7 |
| 1,2-Dichloroethene, Total | | 6.7 | U H | 0.53 | 6.7 |
| Methyl t-butyl ether | | 6.7 | U H | 0.10 | 6.7 |
| 1,1-Dichloroethane | | 6.7 | U H | 1.3 | 6.7 |
| Vinyl acetate | | 6.7 | U H | 0.51 | 6.7 |
| 2,2-Dichloropropane | | 6.7 | U H | 1.3 | 6.7 |
| cis-1,2-Dichloroethene | | 6.7 | U H | 0.67 | 6.7 |
| 2-Butanone | | 2.5 | J H | 1.0 | 6.7 |
| Bromochloromethane | | 6.7 | U H | 0.60 | 6.7 |
| Tetrahydrofuran | | 2.3 | J H B | 1.3 | 67 |
| Chloroform | | 6.7 | U H | 0.088 | 6.7 |
| 1,1,1-Trichloroethane | | 6.7 | U H | 0.67 | 6.7 |
| Cyclohexane | | 6.7 | U H | 1.3 | 6.7 |
| 1,1-Dichloropropene | | 6.7 | U H | 0.67 | 6.7 |
| Carbon tetrachloride | | 6.7 | U H | 0.092 | 6.7 |
| Isobutyl alcohol | | 330 | U H | 8.8 | 330 |
| Benzene | | 6.7 | U H | 0.27 | 6.7 |
| 1,2-Dichloroethane | | 6.7 | U H | 2.7 | 6.7 |
| Trichloroethene | | 6.7 | U H | 0.086 | 6.7 |
| Methylcyclohexane | | 6.7 | U H | 0.16 | 6.7 |
| 1,2-Dichloropropane | | 6.7 | U H | 2.7 | 6.7 |
| Dibromomethane | | 6.7 | U H | 0.19 | 6.7 |
| 1,4-Dioxane | | 330 | U H | 13 | 330 |
| Bromodichloromethane | | 6.7 | U H | 2.7 | 6.7 |
| 2-Chloroethyl vinyl ether | | 6.7 | U H | 0.16 | 6.7 |
| cis-1,3-Dichloropropene | | 6.7 | U H | 0.17 | 6.7 |
| 4-Methyl-2-pentanone | | 6.7 | U H | 0.064 | 6.7 |
| Toluene | | 6.7 | U H | 0.11 | 6.7 |
| trans-1,3-Dichloropropene | | 6.7 | U H | 0.67 | 6.7 |
| 1,1,2-Trichloroethane | | 6.7 | U H | 0.11 | 6.7 |
| Tetrachloroethene | | 6.7 | U H | 0.44 | 6.7 |
| 1,3-Dichloropropane | | 6.7 | U H | 0.086 | 6.7 |
| 2-Hexanone | | 6.7 | U H | 1.3 | 6.7 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS COMPOSITE**

Lab Sample ID: 200-2983-23
Client Matrix: Sediment
% Moisture: 25.9

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11567 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndia19.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.045 g |
| Date Analyzed: | 12/22/2010 2102 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.7 | U H | 0.52 | 6.7 |
| 1,2-Dibromoethane | | 6.7 | U H | 2.7 | 6.7 |
| Chlorobenzene | | 0.22 | J H | 0.067 | 6.7 |
| 1,1,1,2-Tetrachloroethane | | 6.7 | U H | 0.67 | 6.7 |
| Ethylbenzene | | 6.7 | U H | 0.074 | 6.7 |
| m&p-Xylene | | 6.7 | U H | 0.53 | 6.7 |
| o-Xylene | | 6.7 | U H | 0.11 | 6.7 |
| Xylenes, Total | | 6.7 | U H | 0.20 | 6.7 |
| Styrene | | 6.7 | U H | 0.27 | 6.7 |
| Bromoform | | 6.7 | U H | 2.7 | 6.7 |
| Isopropylbenzene | | 6.7 | U H | 0.15 | 6.7 |
| Bromobenzene | | 6.7 | U H | 0.11 | 6.7 |
| 1,1,2,2-Tetrachloroethane | | 6.7 | U H | 1.3 | 6.7 |
| 1,2,3-Trichloropropane | | 6.7 | U H | 0.28 | 6.7 |
| n-Propylbenzene | | 6.7 | U H | 0.16 | 6.7 |
| 2-Chlorotoluene | | 6.7 | U H | 0.17 | 6.7 |
| 4-Chlorotoluene | | 6.7 | U H | 0.21 | 6.7 |
| 1,3,5-Trimethylbenzene | | 6.7 | U H | 0.15 | 6.7 |
| tert-Butylbenzene | | 6.7 | U H | 0.19 | 6.7 |
| 1,2,4-Trimethylbenzene | | 6.7 | U H | 0.11 | 6.7 |
| sec-Butylbenzene | | 6.7 | U H | 0.17 | 6.7 |
| 1,3-Dichlorobenzene | | 6.7 | U H | 0.15 | 6.7 |
| 4-Isopropyltoluene | | 0.52 | J H B | 0.15 | 6.7 |
| 1,4-Dichlorobenzene | | 0.33 | J H B | 0.17 | 6.7 |
| 1,2-Dichlorobenzene | | 0.61 | J H B | 0.16 | 6.7 |
| n-Butylbenzene | | 6.7 | U H | 0.12 | 6.7 |
| 1,2-Dibromo-3-Chloropropane | | 6.7 | U H | 1.3 | 6.7 |
| 1,2,4-Trichlorobenzene | | 0.29 | J H B | 0.092 | 6.7 |
| Hexachlorobutadiene | | 6.7 | U H | 0.27 | 6.7 |
| Naphthalene | | 0.77 | J H B | 0.12 | 6.7 |
| 1,2,3-Trichlorobenzene | | 0.41 | J H B | 0.17 | 6.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 112 | | 65 - 155 |
| Toluene-d8 | 140 | X | 80 - 115 |
| Bromofluorobenzene | 166 | X | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 124 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS COMPOSITE**

Lab Sample ID: 200-2983-23
Client Matrix: Sediment
% Moisture: 25.9

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11588 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndib10.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.063 g |
| Date Analyzed: | 12/23/2010 1228 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 6.7 | U H | 0.10 | 6.7 |
| Chloromethane | | 6.7 | U H | 0.67 | 6.7 |
| Vinyl chloride | | 6.7 | U H | 0.67 | 6.7 |
| Bromomethane | | 6.7 | U H | 0.23 | 6.7 |
| Chloroethane | | 6.7 | U H | 0.39 | 6.7 |
| Trichlorofluoromethane | | 6.7 | U H | 0.092 | 6.7 |
| 1,1-Dichloroethene | | 6.7 | U H | 0.085 | 6.7 |
| Freon TF | | 6.7 | U H | 0.096 | 6.7 |
| Acetone | | 71 | H | 2.7 | 6.7 |
| Methyl iodide | | 6.7 | U H | 1.3 | 6.7 |
| Carbon disulfide | | 0.13 | J H B | 0.064 | 6.7 |
| Methyl acetate | | 3.5 | J H | 0.41 | 6.7 |
| Methylene Chloride | | 6.7 | U H | 0.19 | 6.7 |
| trans-1,2-Dichloroethene | | 6.7 | U H | 0.11 | 6.7 |
| 1,2-Dichloroethene, Total | | 6.7 | U H | 0.53 | 6.7 |
| Methyl t-butyl ether | | 6.7 | U H | 0.10 | 6.7 |
| 1,1-Dichloroethane | | 6.7 | U H | 1.3 | 6.7 |
| Vinyl acetate | | 6.7 | U H | 0.51 | 6.7 |
| 2,2-Dichloropropane | | 6.7 | U H | 1.3 | 6.7 |
| cis-1,2-Dichloroethene | | 6.7 | U H | 0.67 | 6.7 |
| 2-Butanone | | 2.4 | J H | 1.0 | 6.7 |
| Bromochloromethane | | 6.7 | U H | 0.60 | 6.7 |
| Tetrahydrofuran | | 2.4 | J H B | 1.3 | 67 |
| Chloroform | | 6.7 | U H | 0.088 | 6.7 |
| 1,1,1-Trichloroethane | | 6.7 | U H | 0.67 | 6.7 |
| Cyclohexane | | 6.7 | U H | 1.3 | 6.7 |
| 1,1-Dichloropropene | | 6.7 | U H | 0.67 | 6.7 |
| Carbon tetrachloride | | 6.7 | U H | 0.092 | 6.7 |
| Isobutyl alcohol | | 330 | U H | 8.8 | 330 |
| Benzene | | 6.7 | U H | 0.27 | 6.7 |
| 1,2-Dichloroethane | | 6.7 | U H | 2.7 | 6.7 |
| Trichloroethene | | 6.7 | U H | 0.085 | 6.7 |
| Methylcyclohexane | | 6.7 | U H | 0.16 | 6.7 |
| 1,2-Dichloropropane | | 6.7 | U H | 2.7 | 6.7 |
| Dibromomethane | | 6.7 | U H | 0.19 | 6.7 |
| 1,4-Dioxane | | 330 | U H | 13 | 330 |
| Bromodichloromethane | | 6.7 | U H | 2.7 | 6.7 |
| 2-Chloroethyl vinyl ether | | 6.7 | U H | 0.16 | 6.7 |
| cis-1,3-Dichloropropene | | 6.7 | U H | 0.17 | 6.7 |
| 4-Methyl-2-pentanone | | 6.7 | U H | 0.064 | 6.7 |
| Toluene | | 6.7 | U H | 0.11 | 6.7 |
| trans-1,3-Dichloropropene | | 6.7 | U H | 0.67 | 6.7 |
| 1,1,2-Trichloroethane | | 6.7 | U H | 0.11 | 6.7 |
| Tetrachloroethene | | 6.7 | U H | 0.44 | 6.7 |
| 1,3-Dichloropropane | | 6.7 | U H | 0.085 | 6.7 |
| 2-Hexanone | | 6.7 | U H | 1.3 | 6.7 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS COMPOSITE**

Lab Sample ID: 200-2983-23
Client Matrix: Sediment
% Moisture: 25.9

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11588 | | Instrument ID: | N.i |
| Preparation: | 5035 | Prep Batch: 200-11277 | | Lab File ID: | ndib10.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5.063 g |
| Date Analyzed: | 12/23/2010 1228 | Run Type: | RE | Final Weight/Volume: | 5 mL |
| Date Prepared: | 12/17/2010 1130 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 6.7 | U H | 0.52 | 6.7 |
| 1,2-Dibromoethane | | 6.7 | U H | 2.7 | 6.7 |
| Chlorobenzene | | 0.19 | J H | 0.067 | 6.7 |
| 1,1,1,2-Tetrachloroethane | | 6.7 | U H | 0.67 | 6.7 |
| Ethylbenzene | | 6.7 | U H | 0.073 | 6.7 |
| m&p-Xylene | | 6.7 | U H | 0.53 | 6.7 |
| o-Xylene | | 6.7 | U H | 0.11 | 6.7 |
| Xylenes, Total | | 6.7 | U H | 0.20 | 6.7 |
| Styrene | | 6.7 | U H | 0.27 | 6.7 |
| Bromoform | | 6.7 | U H | 2.7 | 6.7 |
| Isopropylbenzene | | 6.7 | U H | 0.15 | 6.7 |
| Bromobenzene | | 6.7 | U H | 0.11 | 6.7 |
| 1,1,2,2-Tetrachloroethane | | 6.7 | U H | 1.3 | 6.7 |
| 1,2,3-Trichloropropane | | 6.7 | U H | 0.28 | 6.7 |
| n-Propylbenzene | | 6.7 | U H | 0.16 | 6.7 |
| 2-Chlorotoluene | | 6.7 | U H | 0.17 | 6.7 |
| 4-Chlorotoluene | | 6.7 | U H | 0.21 | 6.7 |
| 1,3,5-Trimethylbenzene | | 6.7 | U H | 0.15 | 6.7 |
| tert-Butylbenzene | | 6.7 | U H | 0.19 | 6.7 |
| 1,2,4-Trimethylbenzene | | 6.7 | U H | 0.11 | 6.7 |
| sec-Butylbenzene | | 6.7 | U H | 0.17 | 6.7 |
| 1,3-Dichlorobenzene | | 0.29 | J H B | 0.15 | 6.7 |
| 4-Isopropyltoluene | | 0.16 | J H | 0.15 | 6.7 |
| 1,4-Dichlorobenzene | | 0.50 | J H B | 0.17 | 6.7 |
| 1,2-Dichlorobenzene | | 0.84 | J H B | 0.16 | 6.7 |
| n-Butylbenzene | | 6.7 | U H | 0.12 | 6.7 |
| 1,2-Dibromo-3-Chloropropane | | 6.7 | U H | 1.3 | 6.7 |
| 1,2,4-Trichlorobenzene | | 0.72 | J H B | 0.092 | 6.7 |
| Hexachlorobutadiene | | 6.7 | U H | 0.27 | 6.7 |
| Naphthalene | | 1.4 | J H B | 0.12 | 6.7 |
| 1,2,3-Trichlorobenzene | | 0.79 | J H B | 0.17 | 6.7 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 74 | | 65 - 155 |
| Toluene-d8 | 93 | | 80 - 115 |
| Bromofluorobenzene | 106 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 85 | | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU SIEVED COMPOSITE**

Lab Sample ID: 200-2983-24
Client Matrix: Sediment % Moisture: 54.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw17.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.997 g |
| Date Analyzed: | 12/21/2010 1820 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 220 | U H | 110 | 220 |
| Chloromethane | | 220 | U H | 81 | 220 |
| Vinyl chloride | | 220 | U H | 110 | 220 |
| Bromomethane | | 220 | U H | 76 | 220 |
| Chloroethane | | 220 | U H | 130 | 220 |
| Trichlorofluoromethane | | 220 | U H | 110 | 220 |
| 1,1-Dichloroethene | | 220 | U H | 46 | 220 |
| Freon TF | | 220 | U H | 61 | 220 |
| Acetone | | 1100 | U H | 220 | 1100 |
| Methyl iodide | | 220 | U H * | 110 | 220 |
| Carbon disulfide | | 220 | U H | 41 | 220 |
| Methyl acetate | | 630 | H | 110 | 220 |
| Methylene Chloride | | 220 | U H | 110 | 220 |
| trans-1,2-Dichloroethene | | 220 | U H | 110 | 220 |
| 1,2-Dichloroethene, Total | | 220 | U H | 74 | 220 |
| Methyl t-butyl ether | | 220 | U H | 110 | 220 |
| 1,1-Dichloroethane | | 220 | U H | 79 | 220 |
| Vinyl acetate | | 220 | U H | 110 | 220 |
| 2,2-Dichloropropane | | 220 | U H | 100 | 220 |
| cis-1,2-Dichloroethene | | 220 | U H | 46 | 220 |
| 2-Butanone | | 1100 | U H | 240 | 1100 |
| Bromochloromethane | | 220 | U H | 120 | 220 |
| Tetrahydrofuran | | 3100 | U H | 1100 | 3100 |
| Chloroform | | 220 | U H | 72 | 220 |
| 1,1,1-Trichloroethane | | 220 | U H | 79 | 220 |
| Cyclohexane | | 220 | U H | 76 | 220 |
| 1,1-Dichloropropene | | 220 | U H | 48 | 220 |
| Carbon tetrachloride | | 220 | U H | 70 | 220 |
| Isobutyl alcohol | | 11000 | U H | 5500 | 11000 |
| Benzene | | 220 | U H | 68 | 220 |
| 1,2-Dichloroethane | | 220 | U H | 72 | 220 |
| Trichloroethene | | 220 | U H | 110 | 220 |
| Methylcyclohexane | | 220 | U H | 110 | 220 |
| 1,2-Dichloropropane | | 220 | U H | 83 | 220 |
| Dibromomethane | | 220 | U H | 55 | 220 |
| 1,4-Dioxane | | 11000 | U H | 5900 | 11000 |
| Bromodichloromethane | | 220 | U H | 81 | 220 |
| 2-Chloroethyl vinyl ether | | 220 | U H | 28 | 220 |
| cis-1,3-Dichloropropene | | 220 | U H | 70 | 220 |
| 4-Methyl-2-pentanone | | 1100 | U H | 46 | 1100 |
| Toluene | | 4300 | H | 110 | 220 |
| trans-1,3-Dichloropropene | | 220 | U H | 110 | 220 |
| 1,1,2-Trichloroethane | | 220 | U H | 92 | 220 |
| Tetrachloroethene | | 220 | U H | 110 | 220 |
| 1,3-Dichloropropane | | 220 | U H | 72 | 220 |
| 2-Hexanone | | 1100 | U H | 220 | 1100 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU SIEVED COMPOSITE**

Lab Sample ID: 200-2983-24
Client Matrix: Sediment
% Moisture: 54.2

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 200-11512 | | Instrument ID: | L.i |
| Preparation: | 5035 | Prep Batch: 200-11275 | | Lab File ID: | lfmw17.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 4.997 g |
| Date Analyzed: | 12/21/2010 1820 | | | Final Weight/Volume: | 10 mL |
| Date Prepared: | 12/17/2010 1126 | | | | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Dibromochloromethane | | 220 | U H | 81 | 220 |
| 1,2-Dibromoethane | | 220 | U H | 110 | 220 |
| Chlorobenzene | | 220 | U H | 50 | 220 |
| 1,1,1,2-Tetrachloroethane | | 220 | U H | 79 | 220 |
| Ethylbenzene | | 220 | U H | 110 | 220 |
| m&p-Xylene | | 220 | U H | 110 | 220 |
| o-Xylene | | 220 | U H | 110 | 220 |
| Xylenes, Total | | 220 | U H | 110 | 220 |
| Styrene | | 220 | U H | 110 | 220 |
| Bromoform | | 220 | U H | 85 | 220 |
| Isopropylbenzene | | 220 | U H | 110 | 220 |
| Bromobenzene | | 220 | U H | 81 | 220 |
| 1,1,2,2-Tetrachloroethane | | 220 | U H | 81 | 220 |
| 1,2,3-Trichloropropane | | 220 | U H | 120 | 220 |
| n-Propylbenzene | | 220 | U H | 110 | 220 |
| 2-Chlorotoluene | | 220 | U H | 72 | 220 |
| 4-Chlorotoluene | | 220 | U H | 74 | 220 |
| 1,3,5-Trimethylbenzene | | 220 | U H | 70 | 220 |
| tert-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,2,4-Trimethylbenzene | | 220 | U H | 74 | 220 |
| sec-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,3-Dichlorobenzene | | 220 | U H | 55 | 220 |
| 4-Isopropyltoluene | | 220 | U H | 39 | 220 |
| 1,4-Dichlorobenzene | | 220 | U H | 50 | 220 |
| 1,2-Dichlorobenzene | | 220 | U H | 61 | 220 |
| n-Butylbenzene | | 220 | U H | 110 | 220 |
| 1,2-Dibromo-3-Chloropropane | | 220 | U H | 100 | 220 |
| 1,2,4-Trichlorobenzene | | 220 | U H | 35 | 220 |
| Hexachlorobutadiene | | 220 | U H | 110 | 220 |
| Naphthalene | | 240 | H | 110 | 220 |
| 1,2,3-Trichlorobenzene | | 220 | U H | 55 | 220 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | | 65 - 155 |
| Toluene-d8 | 108 | | 80 - 115 |
| Bromofluorobenzene | 103 | | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 108 | | 45 - 145 |

**General Chemistry**

**Client Sample ID:** **CH-1**

Lab Sample ID: 200-2983-1
Client Matrix: Sediment
% Moisture: 54.5
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.46 | J H | mg/Kg | 0.13 | 1.0 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1255 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 12.3 | H B | mg/Kg | 0.40 | 0.88 | 4.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 2350 | H | mg/Kg | 439 | 439 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 56.0 | H | mg/Kg | 33.6 | 33.6 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 37400 | H | mg/Kg | 2200 | 2200 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1655 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 54.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 45.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-2**

Lab Sample ID: 200-2983-2
Client Matrix: Sediment
% Moisture: 54.4
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.63 | J H | mg/Kg | 0.13 | 1.0 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1256 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 3.9 | H B | mg/Kg | 0.10 | 0.22 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 2110 | H | mg/Kg | 438 | 438 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 55.4 | H | mg/Kg | 33.3 | 33.3 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 37200 | H | mg/Kg | 2190 | 2190 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1708 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 54.4 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 45.6 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-3**

Lab Sample ID: 200-2983-3
Client Matrix: Sediment
% Moisture: 54.9
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.47 | J H | mg/Kg | 0.13 | 1.1 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1257 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 6.5 | H B | mg/Kg | 0.20 | 0.44 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 2530 | H | mg/Kg | 426 | 426 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 70.6 | H | mg/Kg | 35.4 | 35.4 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 35200 | H | mg/Kg | 2220 | 2220 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1720 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 54.9 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 45.1 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-4**

Lab Sample ID: 200-2983-4
Client Matrix: Sediment
% Moisture: 49.4
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.26 | J H | mg/Kg | 0.12 | 0.96 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1258 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 3.8 | H B | mg/Kg | 0.091 | 0.20 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 1790 | H | mg/Kg | 373 | 373 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 61.7 | H | mg/Kg | 31.2 | 31.2 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 26500 | H | mg/Kg | 1980 | 1980 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1733 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 49.4 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 50.6 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-5**

Lab Sample ID: 200-2983-5
Client Matrix: Sediment
% Moisture: 50.5
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.37 | J H | mg/Kg | 0.12 | 1.0 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1259 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 6.5 | H B | mg/Kg | 0.19 | 0.40 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 2080 | H | mg/Kg | 382 | 382 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 60.8 | H | mg/Kg | 31.4 | 31.4 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 27200 | H | mg/Kg | 2020 | 2020 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1746 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 50.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 49.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-5 DUP**

Lab Sample ID: 200-2983-6
Client Matrix: Sediment
% Moisture: 49.4
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.44 | J H | mg/Kg | 0.12 | 0.95 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1300 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 5.9 | H B | mg/Kg | 0.18 | 0.40 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 1070 | H | mg/Kg | 158 | 158 | 4.0 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 62.0 | H | mg/Kg | 31.3 | 31.3 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 30300 | H | mg/Kg | 1980 | 1980 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1758 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 49.4 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 50.6 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-6A**

Lab Sample ID: 200-2983-7
Client Matrix: Sediment
% Moisture: 52.3
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.56 | J H | mg/Kg | 0.12 | 1.0 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1303 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 8.2 | H B | mg/Kg | 0.19 | 0.42 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 2310 | H | mg/Kg | 388 | 388 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 58.9 | H | mg/Kg | 31.4 | 31.4 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 33200 | H | mg/Kg | 2100 | 2100 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1811 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 52.3 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 47.7 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-6B**

Lab Sample ID: 200-2983-8
Client Matrix: Sediment
% Moisture: 47.6
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.42 | J H | mg/Kg | 0.11 | 0.88 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1305 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 7.1 | H B | mg/Kg | 0.18 | 0.38 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 1130 | H | mg/Kg | 153 | 153 | 4.0 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 58.3 | H | mg/Kg | 29.8 | 29.8 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 28100 | H | mg/Kg | 1910 | 1910 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1824 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 47.6 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 52.4 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-7A**

Lab Sample ID: 200-2983-9
Client Matrix: Sediment
% Moisture: 45.1
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.39 | J H | mg/Kg | 0.11 | 0.88 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1306 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 4.9 | H B | mg/Kg | 0.17 | 0.36 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 1840 | H | mg/Kg | 331 | 331 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 47.1 | H | mg/Kg | 28.0 | 28.0 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 27100 | H | mg/Kg | 1820 | 1820 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1849 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 45.1 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 54.9 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-7B**

Lab Sample ID: 200-2983-10
Client Matrix: Sediment
% Moisture: 41.6
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.38 | J H | mg/Kg | 0.11 | 0.86 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1307 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 4.1 | H B | mg/Kg | 0.16 | 0.34 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 1610 | H | mg/Kg | 342 | 342 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 50.7 | H | mg/Kg | 26.3 | 26.3 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 24000 | H | mg/Kg | 1710 | 1710 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1902 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 41.6 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 58.4 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **CH-8**

Lab Sample ID: 200-2983-11
Client Matrix: Sediment
% Moisture: 44.5
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.45 | J H | mg/Kg | 0.11 | 0.89 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1308 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 3.4 | H B | mg/Kg | 0.083 | 0.18 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 1450 | H | mg/Kg | 340 | 340 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 47.3 | H | mg/Kg | 27.9 | 27.9 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 29000 | H | mg/Kg | 1800 | 1800 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1915 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 44.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 55.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment
% Moisture: 60.7
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.54 | J H | mg/Kg | 0.15 | 1.2 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1309 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 6.1 | H B | mg/Kg | 0.23 | 0.51 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 2790 | H | mg/Kg | 490 | 490 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11815 | Date Analyzed: 01/05/2011 1427 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11813 | Date Prepared: 01/04/2011 1415 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 80.4 | H | mg/Kg | 40.5 | 40.5 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 39000 | H | mg/Kg | 2550 | 2550 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1927 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 60.7 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 39.3 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment
% Moisture: 46.3
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.42 | J H | mg/Kg | 0.11 | 0.86 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1310 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 5.2 | H B | mg/Kg | 0.17 | 0.37 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11753 | Date Analyzed: 12/22/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11752 | Date Prepared: 12/22/2010 1040 | | | | | | |
| Nitrogen, Kjeldahl | 1200 | H | mg/Kg | 146 | 146 | 4.0 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 58.0 | H | mg/Kg | 27.7 | 27.7 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 25900 | H | mg/Kg | 1860 | 1860 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1940 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 46.3 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 53.7 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **PB-1**

Lab Sample ID: 200-2983-14
Client Matrix: Sediment
% Moisture: 16.8
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.22 | J H | mg/Kg | 0.074 | 0.59 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1311 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 0.084 | J H | mg/Kg | 0.055 | 0.12 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 94.1 | H | mg/Kg | 24.0 | 24.0 | 1.0 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 37.0 | H | mg/Kg | 17.8 | 17.8 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 9710 | H | mg/Kg | 1200 | 1200 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 1953 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 16.8 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 83.2 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **PB-2**

Lab Sample ID: 200-2983-15
Client Matrix: Sediment
% Moisture: 19.6
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.61 | U H | mg/Kg | 0.076 | 0.61 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1312 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 0.095 | J H | mg/Kg | 0.057 | 0.12 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 107 | H | mg/Kg | 23.0 | 23.0 | 1.0 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 35.7 | H | mg/Kg | 18.8 | 18.8 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 6780 | H | mg/Kg | 1240 | 1240 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 2006 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 19.6 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 80.4 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **PB-3**

Lab Sample ID: 200-2983-16
Client Matrix: Sediment
% Moisture: 19.1
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.079 | J H | mg/Kg | 0.074 | 0.60 | 1.0 | 9012A |
| Analysis Batch: 200-11385 | Date Analyzed: 12/20/2010 1313 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11369 | Date Prepared: 12/20/2010 1030 | | | | | | |
| Ammonia | 0.072 | J H | mg/Kg | 0.057 | 0.12 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 93.1 | H | mg/Kg | 24.7 | 24.7 | 1.0 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 36.9 | H | mg/Kg | 18.0 | 18.0 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 7340 | H | mg/Kg | 1240 | 1240 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 2019 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 19.1 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 80.9 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **PB-4**

Lab Sample ID: 200-2983-17
Client Matrix: Sediment
% Moisture: 18.5
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.60 | U H | mg/Kg | 0.074 | 0.60 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1801 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 0.11 | J H | mg/Kg | 0.056 | 0.12 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 102 | H | mg/Kg | 24.6 | 24.6 | 1.0 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 28.2 | H | mg/Kg | 16.6 | 16.6 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 9500 | H | mg/Kg | 1230 | 1230 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 2032 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 18.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 81.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **PB COMPOSITE**

Lab Sample ID: 200-2983-18
Client Matrix: Sediment
% Moisture: 19.2
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.61 | U H | mg/Kg | 0.076 | 0.61 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1803 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 0.098 | J H | mg/Kg | 0.057 | 0.12 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 72.0 | H | mg/Kg | 22.9 | 22.9 | 1.0 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 31.6 | H | mg/Kg | 17.7 | 17.7 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 5430 | H | mg/Kg | 1240 | 1240 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11575 | Date Analyzed: 12/22/2010 2045 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 19.2 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 80.8 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **BS-1**

Lab Sample ID: 200-2983-19
Client Matrix: Sediment
% Moisture: 24.3
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.081 | J H | mg/Kg | 0.078 | 0.63 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1804 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 2.0 | H | mg/Kg | 0.061 | 0.13 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 1550 | H | mg/Kg | 254 | 254 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 41.6 | H | mg/Kg | 21.0 | 21.0 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 33200 | H | mg/Kg | 1320 | 1320 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11574 | Date Analyzed: 12/22/2010 1934 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 24.3 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 75.7 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **BS-2**

Lab Sample ID: 200-2983-20
Client Matrix: Sediment
% Moisture: 19.5
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.61 | U H | mg/Kg | 0.076 | 0.61 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1805 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 2.2 | H | mg/Kg | 0.057 | 0.12 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 1070 | H | mg/Kg | 226 | 226 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 36.6 | H | mg/Kg | 19.1 | 19.1 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 18200 | H | mg/Kg | 1240 | 1240 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11574 | Date Analyzed: 12/22/2010 1947 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 19.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 80.5 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **BS-3**

Lab Sample ID: 200-2983-21
Client Matrix: Sediment
% Moisture: 25.0
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.21 | J H | mg/Kg | 0.081 | 0.65 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1806 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 4.3 | H | mg/Kg | 0.12 | 0.27 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 2640 | H | mg/Kg | 267 | 267 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 35.0 | H | mg/Kg | 20.6 | 20.6 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 96200 | H | mg/Kg | 1330 | 1330 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11574 | Date Analyzed: 12/22/2010 2000 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 25.0 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 75.0 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **BS 4**

Lab Sample ID: 200-2983-22
Client Matrix: Sediment
% Moisture: 29.2
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.19 | J H | mg/Kg | 0.088 | 0.71 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1807 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 4.2 | H | mg/Kg | 0.13 | 0.28 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 1810 | H | mg/Kg | 282 | 282 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 38.4 | H | mg/Kg | 22.3 | 22.3 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 103000 | H | mg/Kg | 1410 | 1410 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11574 | Date Analyzed: 12/22/2010 2013 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 29.2 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 70.8 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **BS COMPOSITE**

Lab Sample ID: 200-2983-23
Client Matrix: Sediment
% Moisture: 25.9
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.15 | J H | mg/Kg | 0.080 | 0.64 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1810 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 3.9 | H | mg/Kg | 0.12 | 0.27 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 1130 | H | mg/Kg | 270 | 270 | 10 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 36.2 | H | mg/Kg | 21.1 | 21.1 | 1.0 | AVS |
| Analysis Batch: 200-11459 | Date Analyzed: 12/20/2010 0800 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11455 | Date Prepared: 12/20/2010 0800 | | | | | | |
| Total Organic Carbon | 65800 | H | mg/Kg | 1350 | 1350 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11574 | Date Analyzed: 12/22/2010 2026 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 25.9 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 74.1 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

**General Chemistry**

**Client Sample ID:** **DMU SIEVED COMPOSITE**

Lab Sample ID: 200-2983-24
Client Matrix: Sediment
% Moisture: 54.2
Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.40 | J H | mg/Kg | 0.12 | 0.99 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Date Analyzed: 12/20/2010 1811 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11398 | Date Prepared: 12/20/2010 1540 | | | | | | |
| Ammonia | 6.8 | H | mg/Kg | 0.20 | 0.44 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11756 | Date Analyzed: 12/23/2010 1600 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11754 | Date Prepared: 12/23/2010 0830 | | | | | | |
| Nitrogen, Kjeldahl | 395 | H | mg/Kg | 43.6 | 43.6 | 1.0 | SM 4500 Norg |
| Analysis Batch: 200-11903 | Date Analyzed: 01/06/2011 0815 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11816 | Date Prepared: 01/05/2011 1200 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 66.9 | H | mg/Kg | 34.2 | 34.2 | 1.0 | AVS |
| Analysis Batch: 200-11464 | Date Analyzed: 12/20/2010 1350 | | | | | | DryWt Corrected: Y |
| Prep Batch: 200-11463 | Date Prepared: 12/20/2010 1350 | | | | | | |
| Total Organic Carbon | 39700 | H | mg/Kg | 2180 | 2180 | 1.0 | Lloyd Kahn |
| Analysis Batch: 200-11574 | Date Analyzed: 12/22/2010 2039 | | | | | | DryWt Corrected: Y |
| Percent Moisture | 54.2 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |
| Percent Solids | 45.8 | H | % | 0.25 | 0.25 | 1.0 | Moisture |
| Analysis Batch: 200-11390 | Date Analyzed: 12/20/2010 1431 | | | | | | DryWt Corrected: N |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D2216-90 Water (Moisture) Content**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D2216-90 | Analysis Batch: 200-11829 | | Instrument ID: | NOEQUIP |
| Preparation: | N/A | | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | |
| Date Analyzed: | 01/05/2011 1812 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Moisture Content | | 136.5 | H | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D2216-90 Water (Moisture) Content**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D2216-90 | Analysis Batch: 200-11829 | | Instrument ID: | NOEQUIP |
| Preparation: | N/A | | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | |
| Date Analyzed: | 01/05/2011 1812 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Moisture Content | | 83.1 | H | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D2974 Moisture, Ash and Organic Matter**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D2974 | Analysis Batch: 200-11830 | | Instrument ID: | NOEQUIP |
| Preparation: | N/A | | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | |
| Date Analyzed: | 01/05/2011 1814 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Total Organic Matter | | 8.6 | | | |
| Moisture Content | | 136.5 | | | |
| Ash Content | | 91.4 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D2974 Moisture, Ash and Organic Matter**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D2974 | Analysis Batch: 200-11830 | | Instrument ID: | NOEQUIP |
| Preparation: | N/A | | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | |
| Date Analyzed: | 01/05/2011 1814 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Total Organic Matter | | 5.4 | | | |
| Moisture Content | | 83.1 | | | |
| Ash Content | | 94.6 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-1**

Lab Sample ID: 200-2983-1
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-1.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 92.11 g |
| Date Analyzed: | 01/05/2011 1738 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 97.3 | | | |
| Sieve Size #4 - Percent Finer | | 96.8 | | | |
| Sieve Size #10 - Percent Finer | | 95.8 | | | |
| Sieve Size #20 - Percent Finer | | 95.3 | | | |
| Sieve Size #40 - Percent Finer | | 94.5 | | | |
| Sieve Size #60 - Percent Finer | | 92.5 | | | |
| Sieve Size #80 - Percent Finer | | 89.3 | | | |
| Sieve Size #100 - Percent Finer | | 87.8 | | | |
| Sieve Size #200 - Percent Finer | | 77.7 | | | |
| Hydrometer Reading 1 - Percent Finer | | 48.4 | | | |
| Hydrometer Reading 2 - Percent Finer | | 41.4 | | | |
| Hydrometer Reading 3 - Percent Finer | | 29.1 | | | |
| Hydrometer Reading 4 - Percent Finer | | 22.2 | | | |
| Hydrometer Reading 5 - Percent Finer | | 16.9 | | | |
| Hydrometer Reading 6 - Percent Finer | | 9.7 | | | |
| Hydrometer Reading 7 - Percent Finer | | 6.2 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-1**

Lab Sample ID: 200-2983-1
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-1.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 92.11 g |
| Date Analyzed: | 01/05/2011 1738 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 3.2 | | | |
| Sand | | 19.1 | | | |
| Coarse Sand | | 1.0 | | | |
| Medium Sand | | 1.3 | | | |
| Fine Sand | | 16.8 | | | |
| Silt | | 60.8 | | | |
| Clay | | 16.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-2**

Lab Sample ID: 200-2983-2
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-2.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 77.1 g |
| Date Analyzed: | 01/05/2011 1740 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 98.9 | | | |
| Sieve Size #4 - Percent Finer | | 97.7 | | | |
| Sieve Size #10 - Percent Finer | | 96.0 | | | |
| Sieve Size #20 - Percent Finer | | 95.4 | | | |
| Sieve Size #40 - Percent Finer | | 94.8 | | | |
| Sieve Size #60 - Percent Finer | | 93.9 | | | |
| Sieve Size #80 - Percent Finer | | 92.5 | | | |
| Sieve Size #100 - Percent Finer | | 91.6 | | | |
| Sieve Size #200 - Percent Finer | | 82.5 | | | |
| Hydrometer Reading 1 - Percent Finer | | 59.8 | | | |
| Hydrometer Reading 2 - Percent Finer | | 49.0 | | | |
| Hydrometer Reading 3 - Percent Finer | | 38.3 | | | |
| Hydrometer Reading 4 - Percent Finer | | 25.4 | | | |
| Hydrometer Reading 5 - Percent Finer | | 19.0 | | | |
| Hydrometer Reading 6 - Percent Finer | | 12.2 | | | |
| Hydrometer Reading 7 - Percent Finer | | 7.7 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-2**

Lab Sample ID: 200-2983-2
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-2.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 77.1 g |
| Date Analyzed: | 01/05/2011 1740 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 2.3 | | | |
| Sand | | 15.2 | | | |
| Coarse Sand | | 1.7 | | | |
| Medium Sand | | 1.2 | | | |
| Fine Sand | | 12.3 | | | |
| Silt | | 63.5 | | | |
| Clay | | 19.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-3**

Lab Sample ID: 200-2983-3
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-3.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 77.98 g |
| Date Analyzed: | 01/05/2011 1741 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 98.6 | | | |
| Sieve Size #4 - Percent Finer | | 98.0 | | | |
| Sieve Size #10 - Percent Finer | | 97.1 | | | |
| Sieve Size #20 - Percent Finer | | 96.6 | | | |
| Sieve Size #40 - Percent Finer | | 95.9 | | | |
| Sieve Size #60 - Percent Finer | | 94.4 | | | |
| Sieve Size #80 - Percent Finer | | 92.1 | | | |
| Sieve Size #100 - Percent Finer | | 90.7 | | | |
| Sieve Size #200 - Percent Finer | | 81.8 | | | |
| Hydrometer Reading 1 - Percent Finer | | 56.7 | | | |
| Hydrometer Reading 2 - Percent Finer | | 45.7 | | | |
| Hydrometer Reading 3 - Percent Finer | | 32.5 | | | |
| Hydrometer Reading 4 - Percent Finer | | 23.8 | | | |
| Hydrometer Reading 5 - Percent Finer | | 21.6 | | | |
| Hydrometer Reading 6 - Percent Finer | | 12.4 | | | |
| Hydrometer Reading 7 - Percent Finer | | 7.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-3**

Lab Sample ID: 200-2983-3
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | | Instrument ID: | D422_import |
| Preparation: | N/A | | | Lab File ID: | 200-2983-A-3.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 77.98 g |
| Date Analyzed: | 01/05/2011 1741 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 2.0 | | | |
| Sand | | 16.2 | | | |
| Coarse Sand | | 0.9 | | | |
| Medium Sand | | 1.2 | | | |
| Fine Sand | | 14.1 | | | |
| Silt | | 60.2 | | | |
| Clay | | 21.6 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-4**

Lab Sample ID: 200-2983-4
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-4.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 92.6 g |
| Date Analyzed: | 01/05/2011 1743 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 99.9 | | | |
| Sieve Size #20 - Percent Finer | | 99.7 | | | |
| Sieve Size #40 - Percent Finer | | 99.5 | | | |
| Sieve Size #60 - Percent Finer | | 99.1 | | | |
| Sieve Size #80 - Percent Finer | | 98.4 | | | |
| Sieve Size #100 - Percent Finer | | 97.9 | | | |
| Sieve Size #200 - Percent Finer | | 93.1 | | | |
| Hydrometer Reading 1 - Percent Finer | | 74.2 | | | |
| Hydrometer Reading 2 - Percent Finer | | 61.3 | | | |
| Hydrometer Reading 3 - Percent Finer | | 43.4 | | | |
| Hydrometer Reading 4 - Percent Finer | | 35.3 | | | |
| Hydrometer Reading 5 - Percent Finer | | 28.9 | | | |
| Hydrometer Reading 6 - Percent Finer | | 18.9 | | | |
| Hydrometer Reading 7 - Percent Finer | | 12.3 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-4**

Lab Sample ID: 200-2983-4
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-4.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 92.6 g |
| Date Analyzed: | 01/05/2011 1743 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 6.9 | | | |
| Coarse Sand | | 0.1 | | | |
| Medium Sand | | 0.4 | | | |
| Fine Sand | | 6.4 | | | |
| Silt | | 64.2 | | | |
| Clay | | 28.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5**

Lab Sample ID: 200-2983-5
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-5.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 90.7 g |
| Date Analyzed: | 01/05/2011 1746 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.8 | | | |
| Sieve Size #10 - Percent Finer | | 99.7 | | | |
| Sieve Size #20 - Percent Finer | | 99.7 | | | |
| Sieve Size #40 - Percent Finer | | 99.6 | | | |
| Sieve Size #60 - Percent Finer | | 99.1 | | | |
| Sieve Size #80 - Percent Finer | | 98.5 | | | |
| Sieve Size #100 - Percent Finer | | 98.1 | | | |
| Sieve Size #200 - Percent Finer | | 94.1 | | | |
| Hydrometer Reading 1 - Percent Finer | | 76.4 | | | |
| Hydrometer Reading 2 - Percent Finer | | 63.0 | | | |
| Hydrometer Reading 3 - Percent Finer | | 43.0 | | | |
| Hydrometer Reading 4 - Percent Finer | | 33.0 | | | |
| Hydrometer Reading 5 - Percent Finer | | 26.4 | | | |
| Hydrometer Reading 6 - Percent Finer | | 16.1 | | | |
| Hydrometer Reading 7 - Percent Finer | | 11.1 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5**

Lab Sample ID: 200-2983-5
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-5.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 90.7 g |
| Date Analyzed: | 01/05/2011 1746 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.2 | | | |
| Sand | | 5.7 | | | |
| Coarse Sand | | 0.1 | | | |
| Medium Sand | | 0.1 | | | |
| Fine Sand | | 5.5 | | | |
| Silt | | 67.7 | | | |
| Clay | | 26.4 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5 DUP**

Lab Sample ID: 200-2983-6
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-6.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 89.06 g |
| Date Analyzed: | 01/05/2011 1748 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 100.0 | | | |
| Sieve Size #20 - Percent Finer | | 99.9 | | | |
| Sieve Size #40 - Percent Finer | | 99.7 | | | |
| Sieve Size #60 - Percent Finer | | 99.2 | | | |
| Sieve Size #80 - Percent Finer | | 98.5 | | | |
| Sieve Size #100 - Percent Finer | | 98.2 | | | |
| Sieve Size #200 - Percent Finer | | 94.2 | | | |
| Hydrometer Reading 1 - Percent Finer | | 76.0 | | | |
| Hydrometer Reading 2 - Percent Finer | | 62.1 | | | |
| Hydrometer Reading 3 - Percent Finer | | 41.3 | | | |
| Hydrometer Reading 4 - Percent Finer | | 30.9 | | | |
| Hydrometer Reading 5 - Percent Finer | | 25.7 | | | |
| Hydrometer Reading 6 - Percent Finer | | 16.8 | | | |
| Hydrometer Reading 7 - Percent Finer | | 11.6 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-5 DUP**

Lab Sample ID: 200-2983-6
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-6.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 89.06 g |
| Date Analyzed: | 01/05/2011 1748 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 5.8 | | | |
| Coarse Sand | | 0.0 | | | |
| Medium Sand | | 0.3 | | | |
| Fine Sand | | 5.5 | | | |
| Silt | | 68.5 | | | |
| Clay | | 25.7 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6A**

Lab Sample ID: 200-2983-7
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-7.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 76.66 g |
| Date Analyzed: | 01/05/2011 1750 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.9 | | | |
| Sieve Size #10 - Percent Finer | | 99.7 | | | |
| Sieve Size #20 - Percent Finer | | 99.6 | | | |
| Sieve Size #40 - Percent Finer | | 99.4 | | | |
| Sieve Size #60 - Percent Finer | | 99.0 | | | |
| Sieve Size #80 - Percent Finer | | 98.5 | | | |
| Sieve Size #100 - Percent Finer | | 98.3 | | | |
| Sieve Size #200 - Percent Finer | | 94.8 | | | |
| Hydrometer Reading 1 - Percent Finer | | 78.5 | | | |
| Hydrometer Reading 2 - Percent Finer | | 64.4 | | | |
| Hydrometer Reading 3 - Percent Finer | | 44.2 | | | |
| Hydrometer Reading 4 - Percent Finer | | 33.9 | | | |
| Hydrometer Reading 5 - Percent Finer | | 25.8 | | | |
| Hydrometer Reading 6 - Percent Finer | | 17.4 | | | |
| Hydrometer Reading 7 - Percent Finer | | 11.3 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6A**

Lab Sample ID: 200-2983-7
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-7.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 76.66 g |
| Date Analyzed: | 01/05/2011 1750 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.1 | | | |
| Sand | | 5.1 | | | |
| Coarse Sand | | 0.2 | | | |
| Medium Sand | | 0.3 | | | |
| Fine Sand | | 4.6 | | | |
| Silt | | 69.0 | | | |
| Clay | | 25.8 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6B**

Lab Sample ID: 200-2983-8
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-8.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 93.63 g |
| Date Analyzed: | 01/05/2011 1752 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 100.0 | | | |
| Sieve Size #20 - Percent Finer | | 99.9 | | | |
| Sieve Size #40 - Percent Finer | | 99.8 | | | |
| Sieve Size #60 - Percent Finer | | 99.6 | | | |
| Sieve Size #80 - Percent Finer | | 98.9 | | | |
| Sieve Size #100 - Percent Finer | | 98.3 | | | |
| Sieve Size #200 - Percent Finer | | 91.5 | | | |
| Hydrometer Reading 1 - Percent Finer | | 73.9 | | | |
| Hydrometer Reading 2 - Percent Finer | | 61.5 | | | |
| Hydrometer Reading 3 - Percent Finer | | 43.0 | | | |
| Hydrometer Reading 4 - Percent Finer | | 30.5 | | | |
| Hydrometer Reading 5 - Percent Finer | | 24.5 | | | |
| Hydrometer Reading 6 - Percent Finer | | 16.3 | | | |
| Hydrometer Reading 7 - Percent Finer | | 11.7 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-6B**

Lab Sample ID: 200-2983-8
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-8.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 93.63 g |
| Date Analyzed: | 01/05/2011 1752 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 8.5 | | | |
| Coarse Sand | | 0.0 | | | |
| Medium Sand | | 0.2 | | | |
| Fine Sand | | 8.3 | | | |
| Silt | | 67.0 | | | |
| Clay | | 24.5 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7A**

Lab Sample ID: 200-2983-9
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-9.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 89.11 g |
| Date Analyzed: | 01/05/2011 1754 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.3 | | | |
| Sieve Size #10 - Percent Finer | | 99.0 | | | |
| Sieve Size #20 - Percent Finer | | 98.6 | | | |
| Sieve Size #40 - Percent Finer | | 97.9 | | | |
| Sieve Size #60 - Percent Finer | | 96.8 | | | |
| Sieve Size #80 - Percent Finer | | 95.8 | | | |
| Sieve Size #100 - Percent Finer | | 95.1 | | | |
| Sieve Size #200 - Percent Finer | | 88.8 | | | |
| Hydrometer Reading 1 - Percent Finer | | 70.0 | | | |
| Hydrometer Reading 2 - Percent Finer | | 57.8 | | | |
| Hydrometer Reading 3 - Percent Finer | | 42.5 | | | |
| Hydrometer Reading 4 - Percent Finer | | 31.7 | | | |
| Hydrometer Reading 5 - Percent Finer | | 24.0 | | | |
| Hydrometer Reading 6 - Percent Finer | | 16.2 | | | |
| Hydrometer Reading 7 - Percent Finer | | 10.1 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7A**

Lab Sample ID: 200-2983-9
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-9.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 89.11 g |
| Date Analyzed: | 01/05/2011 1754 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.7 | | | |
| Sand | | 10.5 | | | |
| Coarse Sand | | 0.3 | | | |
| Medium Sand | | 1.1 | | | |
| Fine Sand | | 9.1 | | | |
| Silt | | 64.8 | | | |
| Clay | | 24.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7B**

Lab Sample ID: 200-2983-10
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-10.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 92.46 g |
| Date Analyzed: | 01/05/2011 1756 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 99.9 | | | |
| Sieve Size #20 - Percent Finer | | 99.8 | | | |
| Sieve Size #40 - Percent Finer | | 99.8 | | | |
| Sieve Size #60 - Percent Finer | | 99.6 | | | |
| Sieve Size #80 - Percent Finer | | 99.3 | | | |
| Sieve Size #100 - Percent Finer | | 98.9 | | | |
| Sieve Size #200 - Percent Finer | | 92.2 | | | |
| Hydrometer Reading 1 - Percent Finer | | 70.9 | | | |
| Hydrometer Reading 2 - Percent Finer | | 59.0 | | | |
| Hydrometer Reading 3 - Percent Finer | | 41.2 | | | |
| Hydrometer Reading 4 - Percent Finer | | 32.3 | | | |
| Hydrometer Reading 5 - Percent Finer | | 22.0 | | | |
| Hydrometer Reading 6 - Percent Finer | | 15.8 | | | |
| Hydrometer Reading 7 - Percent Finer | | 9.8 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-7B**

Lab Sample ID: 200-2983-10
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-10.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 92.46 g |
| Date Analyzed: | 01/05/2011 1756 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 7.8 | | | |
| Coarse Sand | | 0.1 | | | |
| Medium Sand | | 0.1 | | | |
| Fine Sand | | 7.6 | | | |
| Silt | | 70.2 | | | |
| Clay | | 22.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-8**

Lab Sample ID: 200-2983-11
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-11.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 87.57 g |
| Date Analyzed: | 01/05/2011 1758 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.6 | | | |
| Sieve Size #10 - Percent Finer | | 99.3 | | | |
| Sieve Size #20 - Percent Finer | | 99.1 | | | |
| Sieve Size #40 - Percent Finer | | 98.9 | | | |
| Sieve Size #60 - Percent Finer | | 98.6 | | | |
| Sieve Size #80 - Percent Finer | | 98.2 | | | |
| Sieve Size #100 - Percent Finer | | 97.8 | | | |
| Sieve Size #200 - Percent Finer | | 88.9 | | | |
| Hydrometer Reading 1 - Percent Finer | | 70.0 | | | |
| Hydrometer Reading 2 - Percent Finer | | 57.2 | | | |
| Hydrometer Reading 3 - Percent Finer | | 38.0 | | | |
| Hydrometer Reading 4 - Percent Finer | | 28.5 | | | |
| Hydrometer Reading 5 - Percent Finer | | 22.0 | | | |
| Hydrometer Reading 6 - Percent Finer | | 15.4 | | | |
| Hydrometer Reading 7 - Percent Finer | | 8.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **CH-8**

Lab Sample ID: 200-2983-11
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-11.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 87.57 g |
| Date Analyzed: | 01/05/2011 1758 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.4 | | | |
| Sand | | 10.7 | | | |
| Coarse Sand | | 0.3 | | | |
| Medium Sand | | 0.4 | | | |
| Fine Sand | | 10.0 | | | |
| Silt | | 66.9 | | | |
| Clay | | 22.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | | Instrument ID: | D422_import |
| Preparation: | N/A | | | Lab File ID: | 200-2983-A-12.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 105.25 g |
| Date Analyzed: | 01/05/2011 1801 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.8 | | | |
| Sieve Size #10 - Percent Finer | | 98.4 | | | |
| Sieve Size #20 - Percent Finer | | 97.9 | | | |
| Sieve Size #40 - Percent Finer | | 97.2 | | | |
| Sieve Size #60 - Percent Finer | | 95.8 | | | |
| Sieve Size #80 - Percent Finer | | 93.5 | | | |
| Sieve Size #100 - Percent Finer | | 92.2 | | | |
| Sieve Size #200 - Percent Finer | | 82.3 | | | |
| Hydrometer Reading 1 - Percent Finer | | 59.2 | | | |
| Hydrometer Reading 2 - Percent Finer | | 46.6 | | | |
| Hydrometer Reading 3 - Percent Finer | | 32.2 | | | |
| Hydrometer Reading 4 - Percent Finer | | 25.0 | | | |
| Hydrometer Reading 5 - Percent Finer | | 21.2 | | | |
| Hydrometer Reading 6 - Percent Finer | | 15.5 | | | |
| Hydrometer Reading 7 - Percent Finer | | 8.3 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: | D422_import |
| Preparation: | N/A | | Lab File ID: | 200-2983-A-12.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: | 105.25 g |
| Date Analyzed: | 01/05/2011 1801 | | Final Weight/Volume: | |
| Date Prepared: | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.2 | | | |
| Sand | | 17.5 | | | |
| Coarse Sand | | 1.4 | | | |
| Medium Sand | | 1.2 | | | |
| Fine Sand | | 14.9 | | | |
| Silt | | 61.1 | | | |
| Clay | | 21.2 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | | Instrument ID: | D422_import |
| Preparation: | N/A | | | Lab File ID: | 200-2983-A-13.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 86.87 g |
| Date Analyzed: | 01/05/2011 2004 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 99.9 | | | |
| Sieve Size #20 - Percent Finer | | 99.6 | | | |
| Sieve Size #40 - Percent Finer | | 99.4 | | | |
| Sieve Size #60 - Percent Finer | | 99.0 | | | |
| Sieve Size #80 - Percent Finer | | 98.4 | | | |
| Sieve Size #100 - Percent Finer | | 98.0 | | | |
| Sieve Size #200 - Percent Finer | | 92.5 | | | |
| Hydrometer Reading 1 - Percent Finer | | 78.5 | | | |
| Hydrometer Reading 2 - Percent Finer | | 64.9 | | | |
| Hydrometer Reading 3 - Percent Finer | | 46.3 | | | |
| Hydrometer Reading 4 - Percent Finer | | 39.5 | | | |
| Hydrometer Reading 5 - Percent Finer | | 32.8 | | | |
| Hydrometer Reading 6 - Percent Finer | | 22.3 | | | |
| Hydrometer Reading 7 - Percent Finer | | 16.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: | D422_import |
| Preparation: | N/A | | Lab File ID: | 200-2983-A-13.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: | 86.87 g |
| Date Analyzed: | 01/05/2011 2004 | | Final Weight/Volume: | |
| Date Prepared: | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 7.5 | | | |
| Coarse Sand | | 0.1 | | | |
| Medium Sand | | 0.5 | | | |
| Fine Sand | | 6.9 | | | |
| Silt | | 59.7 | | | |
| Clay | | 32.8 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-1**

Lab Sample ID: 200-2983-14
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-14.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 100.45 g |
| Date Analyzed: | 01/05/2011 2014 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.7 | | | |
| Sieve Size #10 - Percent Finer | | 94.9 | | | |
| Sieve Size #20 - Percent Finer | | 88.6 | | | |
| Sieve Size #40 - Percent Finer | | 73.4 | | | |
| Sieve Size #60 - Percent Finer | | 44.5 | | | |
| Sieve Size #80 - Percent Finer | | 22.2 | | | |
| Sieve Size #100 - Percent Finer | | 14.5 | | | |
| Sieve Size #200 - Percent Finer | | 2.3 | | | |
| Hydrometer Reading 1 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 2 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 3 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 4 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 5 - Percent Finer | | 1.1 | | | |
| Hydrometer Reading 6 - Percent Finer | | 1.1 | | | |
| Hydrometer Reading 7 - Percent Finer | | 1.1 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-1**

Lab Sample ID: 200-2983-14
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-14.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 100.45 g |
| Date Analyzed: | 01/05/2011 2014 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.3 | | | |
| Sand | | 97.4 | | | |
| Coarse Sand | | 4.8 | | | |
| Medium Sand | | 21.5 | | | |
| Fine Sand | | 71.1 | | | |
| Silt | | 1.1 | | | |
| Clay | | 1.1 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-2**

Lab Sample ID: 200-2983-15
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-15.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 110.22 g |
| Date Analyzed: | 01/05/2011 2016 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.4 | | | |
| Sieve Size #10 - Percent Finer | | 98.4 | | | |
| Sieve Size #20 - Percent Finer | | 95.4 | | | |
| Sieve Size #40 - Percent Finer | | 86.5 | | | |
| Sieve Size #60 - Percent Finer | | 62.0 | | | |
| Sieve Size #80 - Percent Finer | | 32.7 | | | |
| Sieve Size #100 - Percent Finer | | 21.2 | | | |
| Sieve Size #200 - Percent Finer | | 1.6 | | | |
| Hydrometer Reading 1 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 2 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 3 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 4 - Percent Finer | | 1.3 | | | |
| Hydrometer Reading 5 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 6 - Percent Finer | | 1.0 | | | |
| Hydrometer Reading 7 - Percent Finer | | 1.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-2**

Lab Sample ID: 200-2983-15
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-15.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 110.22 g |
| Date Analyzed: | 01/05/2011 2016 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.6 | | | |
| Sand | | 97.8 | | | |
| Coarse Sand | | 1.0 | | | |
| Medium Sand | | 11.9 | | | |
| Fine Sand | | 84.9 | | | |
| Silt | | 0.4 | | | |
| Clay | | 1.2 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-3**

Lab Sample ID: 200-2983-16
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-16.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 109.07 g |
| Date Analyzed: | 01/05/2011 2017 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.1 | | | |
| Sieve Size #10 - Percent Finer | | 96.3 | | | |
| Sieve Size #20 - Percent Finer | | 91.7 | | | |
| Sieve Size #40 - Percent Finer | | 83.4 | | | |
| Sieve Size #60 - Percent Finer | | 64.4 | | | |
| Sieve Size #80 - Percent Finer | | 41.1 | | | |
| Sieve Size #100 - Percent Finer | | 29.5 | | | |
| Sieve Size #200 - Percent Finer | | 2.4 | | | |
| Hydrometer Reading 1 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 2 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 3 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 4 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 5 - Percent Finer | | 1.0 | | | |
| Hydrometer Reading 6 - Percent Finer | | 1.0 | | | |
| Hydrometer Reading 7 - Percent Finer | | 1.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-3**

Lab Sample ID: 200-2983-16
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-16.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 109.07 g |
| Date Analyzed: | 01/05/2011 2017 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.9 | | | |
| Sand | | 96.7 | | | |
| Coarse Sand | | 2.8 | | | |
| Medium Sand | | 12.9 | | | |
| Fine Sand | | 81.0 | | | |
| Silt | | 1.3 | | | |
| Clay | | 1.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-4**

Lab Sample ID: 200-2983-17
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-17.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 108.37 g |
| Date Analyzed: | 01/05/2011 2019 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 99.6 | | | |
| Sieve Size #20 - Percent Finer | | 99.0 | | | |
| Sieve Size #40 - Percent Finer | | 97.5 | | | |
| Sieve Size #60 - Percent Finer | | 90.6 | | | |
| Sieve Size #80 - Percent Finer | | 72.4 | | | |
| Sieve Size #100 - Percent Finer | | 57.6 | | | |
| Sieve Size #200 - Percent Finer | | 5.3 | | | |
| Hydrometer Reading 1 - Percent Finer | | 3.1 | | | |
| Hydrometer Reading 2 - Percent Finer | | 3.1 | | | |
| Hydrometer Reading 3 - Percent Finer | | 2.1 | | | |
| Hydrometer Reading 4 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 5 - Percent Finer | | 1.1 | | | |
| Hydrometer Reading 6 - Percent Finer | | 0.9 | | | |
| Hydrometer Reading 7 - Percent Finer | | 0.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB-4**

Lab Sample ID: 200-2983-17
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-17.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 108.37 g |
| Date Analyzed: | 01/05/2011 2019 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 94.7 | | | |
| Coarse Sand | | 0.4 | | | |
| Medium Sand | | 2.1 | | | |
| Fine Sand | | 92.2 | | | |
| Silt | | 4.2 | | | |
| Clay | | 1.1 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB COMPOSITE**

Lab Sample ID: 200-2983-18
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-18.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 107.94 g |
| Date Analyzed: | 01/05/2011 2020 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.7 | | | |
| Sieve Size #10 - Percent Finer | | 96.9 | | | |
| Sieve Size #20 - Percent Finer | | 93.1 | | | |
| Sieve Size #40 - Percent Finer | | 86.2 | | | |
| Sieve Size #60 - Percent Finer | | 70.5 | | | |
| Sieve Size #80 - Percent Finer | | 50.0 | | | |
| Sieve Size #100 - Percent Finer | | 38.3 | | | |
| Sieve Size #200 - Percent Finer | | 1.4 | | | |
| Hydrometer Reading 1 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 2 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 3 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 4 - Percent Finer | | 1.2 | | | |
| Hydrometer Reading 5 - Percent Finer | | 1.1 | | | |
| Hydrometer Reading 6 - Percent Finer | | 0.9 | | | |
| Hydrometer Reading 7 - Percent Finer | | 0.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **PB COMPOSITE**

Lab Sample ID: 200-2983-18
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-18.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 107.94 g |
| Date Analyzed: | 01/05/2011 2020 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.3 | | | |
| Sand | | 98.3 | | | |
| Coarse Sand | | 2.8 | | | |
| Medium Sand | | 10.7 | | | |
| Fine Sand | | 84.8 | | | |
| Silt | | 0.3 | | | |
| Clay | | 1.1 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-1**

Lab Sample ID: 200-2983-19
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-19.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 66.96 g |
| Date Analyzed: | 01/05/2011 2022 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 99.7 | | | |
| Sieve Size #20 - Percent Finer | | 97.2 | | | |
| Sieve Size #40 - Percent Finer | | 94.8 | | | |
| Sieve Size #60 - Percent Finer | | 93.4 | | | |
| Sieve Size #80 - Percent Finer | | 92.0 | | | |
| Sieve Size #100 - Percent Finer | | 91.1 | | | |
| Sieve Size #200 - Percent Finer | | 87.2 | | | |
| Hydrometer Reading 1 - Percent Finer | | 72.5 | | | |
| Hydrometer Reading 2 - Percent Finer | | 66.1 | | | |
| Hydrometer Reading 3 - Percent Finer | | 53.3 | | | |
| Hydrometer Reading 4 - Percent Finer | | 46.9 | | | |
| Hydrometer Reading 5 - Percent Finer | | 38.7 | | | |
| Hydrometer Reading 6 - Percent Finer | | 27.5 | | | |
| Hydrometer Reading 7 - Percent Finer | | 17.9 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-1**

Lab Sample ID: 200-2983-19
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-19.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 66.96 g |
| Date Analyzed: | 01/05/2011 2022 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 12.8 | | | |
| Coarse Sand | | 0.3 | | | |
| Medium Sand | | 4.9 | | | |
| Fine Sand | | 7.6 | | | |
| Silt | | 48.5 | | | |
| Clay | | 38.7 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-2**

Lab Sample ID: 200-2983-20
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-20.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 69.69 g |
| Date Analyzed: | 01/05/2011 2024 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 100.0 | | | |
| Sieve Size #20 - Percent Finer | | 97.4 | | | |
| Sieve Size #40 - Percent Finer | | 94.0 | | | |
| Sieve Size #60 - Percent Finer | | 91.9 | | | |
| Sieve Size #80 - Percent Finer | | 90.2 | | | |
| Sieve Size #100 - Percent Finer | | 89.3 | | | |
| Sieve Size #200 - Percent Finer | | 83.6 | | | |
| Hydrometer Reading 1 - Percent Finer | | 66.2 | | | |
| Hydrometer Reading 2 - Percent Finer | | 60.3 | | | |
| Hydrometer Reading 3 - Percent Finer | | 51.6 | | | |
| Hydrometer Reading 4 - Percent Finer | | 44.3 | | | |
| Hydrometer Reading 5 - Percent Finer | | 37.0 | | | |
| Hydrometer Reading 6 - Percent Finer | | 28.0 | | | |
| Hydrometer Reading 7 - Percent Finer | | 19.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-2**

Lab Sample ID: 200-2983-20
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-20.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 69.69 g |
| Date Analyzed: | 01/05/2011 2024 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 16.4 | | | |
| Coarse Sand | | 0.0 | | | |
| Medium Sand | | 6.0 | | | |
| Fine Sand | | 10.4 | | | |
| Silt | | 46.6 | | | |
| Clay | | 37.0 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-3**

Lab Sample ID: 200-2983-21
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-21.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 42.38 g |
| Date Analyzed: | 01/05/2011 2027 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 99.0 | | | |
| Sieve Size #10 - Percent Finer | | 98.3 | | | |
| Sieve Size #20 - Percent Finer | | 94.1 | | | |
| Sieve Size #40 - Percent Finer | | 86.3 | | | |
| Sieve Size #60 - Percent Finer | | 80.3 | | | |
| Sieve Size #80 - Percent Finer | | 76.8 | | | |
| Sieve Size #100 - Percent Finer | | 75.5 | | | |
| Sieve Size #200 - Percent Finer | | 69.2 | | | |
| Hydrometer Reading 1 - Percent Finer | | 42.7 | | | |
| Hydrometer Reading 2 - Percent Finer | | 40.1 | | | |
| Hydrometer Reading 3 - Percent Finer | | 34.9 | | | |
| Hydrometer Reading 4 - Percent Finer | | 27.0 | | | |
| Hydrometer Reading 5 - Percent Finer | | 21.8 | | | |
| Hydrometer Reading 6 - Percent Finer | | 13.5 | | | |
| Hydrometer Reading 7 - Percent Finer | | 10.5 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS-3**

Lab Sample ID: 200-2983-21
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-21.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 42.38 g |
| Date Analyzed: | 01/05/2011 2027 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 1.0 | | | |
| Sand | | 29.8 | | | |
| Coarse Sand | | 0.7 | | | |
| Medium Sand | | 12.0 | | | |
| Fine Sand | | 17.1 | | | |
| Silt | | 47.4 | | | |
| Clay | | 21.8 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS 4**

Lab Sample ID: 200-2983-22
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | | Instrument ID: | D422_import |
| Preparation: | N/A | | | Lab File ID: | 200-2983-A-22.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 52.34 g |
| Date Analyzed: | 01/05/2011 2029 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 89.2 | | | |
| Sieve Size #10 - Percent Finer | | 72.5 | | | |
| Sieve Size #20 - Percent Finer | | 64.3 | | | |
| Sieve Size #40 - Percent Finer | | 60.0 | | | |
| Sieve Size #60 - Percent Finer | | 56.8 | | | |
| Sieve Size #80 - Percent Finer | | 54.6 | | | |
| Sieve Size #100 - Percent Finer | | 53.7 | | | |
| Sieve Size #200 - Percent Finer | | 48.9 | | | |
| Hydrometer Reading 1 - Percent Finer | | 36.2 | | | |
| Hydrometer Reading 2 - Percent Finer | | 34.2 | | | |
| Hydrometer Reading 3 - Percent Finer | | 30.0 | | | |
| Hydrometer Reading 4 - Percent Finer | | 25.8 | | | |
| Hydrometer Reading 5 - Percent Finer | | 23.7 | | | |
| Hydrometer Reading 6 - Percent Finer | | 17.1 | | | |
| Hydrometer Reading 7 - Percent Finer | | 10.5 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS 4**

Lab Sample ID: 200-2983-22
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-22.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 52.34 g |
| Date Analyzed: | 01/05/2011 2029 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 10.8 | | | |
| Sand | | 40.3 | | | |
| Coarse Sand | | 16.7 | | | |
| Medium Sand | | 12.5 | | | |
| Fine Sand | | 11.1 | | | |
| Silt | | 25.2 | | | |
| Clay | | 23.7 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS COMPOSITE**

Lab Sample ID: 200-2983-23
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | | Instrument ID: | D422_import |
| Preparation: | N/A | | | Lab File ID: | 200-2983-A-23.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 63.43 g |
| Date Analyzed: | 01/05/2011 2031 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 94.8 | | | |
| Sieve Size #4 - Percent Finer | | 94.2 | | | |
| Sieve Size #10 - Percent Finer | | 91.9 | | | |
| Sieve Size #20 - Percent Finer | | 88.0 | | | |
| Sieve Size #40 - Percent Finer | | 81.5 | | | |
| Sieve Size #60 - Percent Finer | | 78.1 | | | |
| Sieve Size #80 - Percent Finer | | 76.1 | | | |
| Sieve Size #100 - Percent Finer | | 75.2 | | | |
| Sieve Size #200 - Percent Finer | | 70.7 | | | |
| Hydrometer Reading 1 - Percent Finer | | 52.4 | | | |
| Hydrometer Reading 2 - Percent Finer | | 47.2 | | | |
| Hydrometer Reading 3 - Percent Finer | | 40.3 | | | |
| Hydrometer Reading 4 - Percent Finer | | 33.4 | | | |
| Hydrometer Reading 5 - Percent Finer | | 28.2 | | | |
| Hydrometer Reading 6 - Percent Finer | | 19.0 | | | |
| Hydrometer Reading 7 - Percent Finer | | 12.1 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **BS COMPOSITE**

Lab Sample ID: 200-2983-23
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | |
|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | Instrument ID: D422_import |
| Preparation: | N/A | | Lab File ID: 200-2983-A-23.txt |
| Dilution: | 1.0 | | Initial Weight/Volume: 63.43 g |
| Date Analyzed: | 01/05/2011 2031 | | Final Weight/Volume: |
| Date Prepared: | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 5.8 | | | |
| Sand | | 23.5 | | | |
| Coarse Sand | | 2.3 | | | |
| Medium Sand | | 10.4 | | | |
| Fine Sand | | 10.8 | | | |
| Silt | | 42.5 | | | |
| Clay | | 28.2 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU SIEVED COMPOSITE**

Lab Sample ID: 200-2983-24
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | | Instrument ID: | D422_import |
| Preparation: | N/A | | | Lab File ID: | 200-2983-A-24.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 121.59 g |
| Date Analyzed: | 01/05/2011 2033 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (% Passing) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 2 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1.5 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 1 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.75 inch - Percent Finer | | 100.0 | | | |
| Sieve Size 0.375 inch - Percent Finer | | 100.0 | | | |
| Sieve Size #4 - Percent Finer | | 100.0 | | | |
| Sieve Size #10 - Percent Finer | | 100.0 | | | |
| Sieve Size #20 - Percent Finer | | 99.6 | | | |
| Sieve Size #40 - Percent Finer | | 98.8 | | | |
| Sieve Size #60 - Percent Finer | | 97.0 | | | |
| Sieve Size #80 - Percent Finer | | 94.2 | | | |
| Sieve Size #100 - Percent Finer | | 92.7 | | | |
| Sieve Size #200 - Percent Finer | | 82.2 | | | |
| Hydrometer Reading 1 - Percent Finer | | 57.8 | | | |
| Hydrometer Reading 2 - Percent Finer | | 44.5 | | | |
| Hydrometer Reading 3 - Percent Finer | | 28.5 | | | |
| Hydrometer Reading 4 - Percent Finer | | 21.8 | | | |
| Hydrometer Reading 5 - Percent Finer | | 17.6 | | | |
| Hydrometer Reading 6 - Percent Finer | | 12.2 | | | |
| Hydrometer Reading 7 - Percent Finer | | 9.3 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU SIEVED COMPOSITE**

Lab Sample ID: 200-2983-24
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D422 Grain Size**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D422 | Analysis Batch: 200-11990 | | Instrument ID: | D422_import |
| Preparation: | N/A | | | Lab File ID: | 200-2983-A-24.txt |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 121.59 g |
| Date Analyzed: | 01/05/2011 2033 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (%) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Gravel | | 0.0 | | | |
| Sand | | 17.8 | | | |
| Coarse Sand | | 0.0 | | | |
| Medium Sand | | 1.2 | | | |
| Fine Sand | | 16.6 | | | |
| Silt | | 64.6 | | | |
| Clay | | 17.6 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 1 (COMPOSITE)**

Lab Sample ID: 200-2983-12
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D4318 | Analysis Batch: 200-11831 | | Instrument ID: | NOEQUIP |
| Preparation: | N/A | | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | |
| Date Analyzed: | 01/05/2011 1816 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (NONE) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Liquid Limit | | 75 | | | |
| Plastic Limit | | 40 | | | |
| Plasticity Index | | 35 | | | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Client Sample ID:** **DMU 2 (COMPOSITE)**

Lab Sample ID: 200-2983-13
Client Matrix: Sediment

Date Sampled: 11/09/2010 0000
Date Received: 12/15/2010 1020

**D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils**

| | | | | | |
|---|---|---|---|---|---|
| Method: | D4318 | Analysis Batch: 200-11831 | | Instrument ID: | NOEQUIP |
| Preparation: | N/A | | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | |
| Date Analyzed: | 01/05/2011 1816 | | | Final Weight/Volume: | |
| Date Prepared: | | | | | |

| Analyte | DryWt Corrected: N | Result (NONE) | Qualifier | NONE | NONE |
|---|---|---|---|---|---|
| Liquid Limit | | 60 | | | |
| Plastic Limit | | 33 | | | |
| Plasticity Index | | 27 | | | |

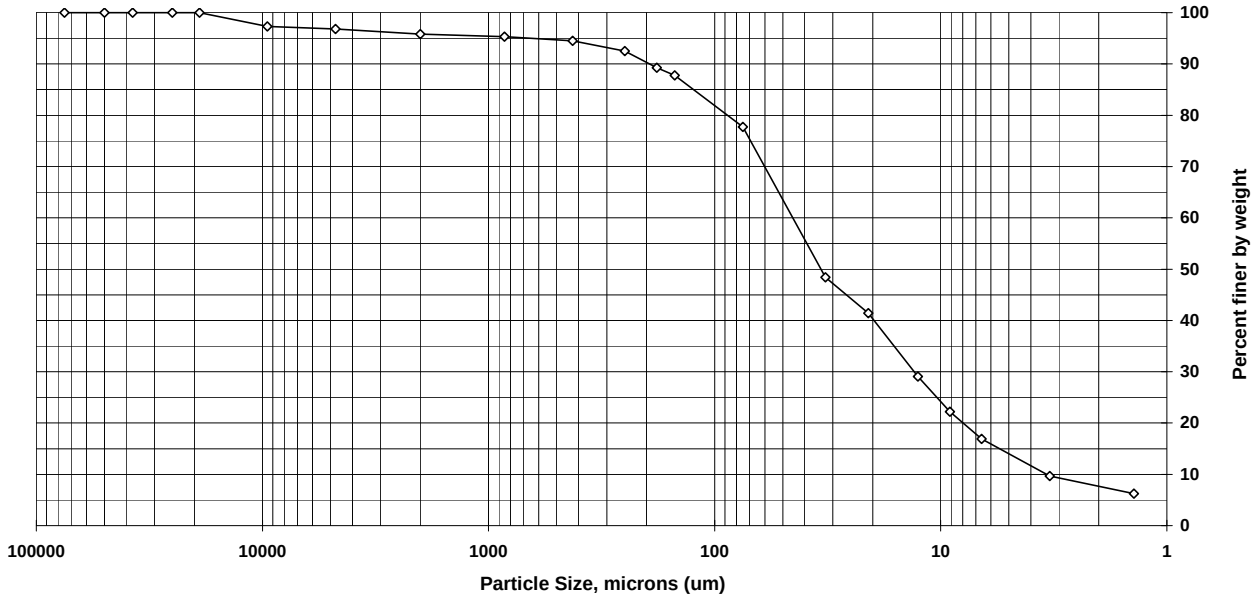
# Particle Size of Soils by ASTM D422

| | | | | | |
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-1 | **Percent Solids:** | 50.2% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-1 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 97.3 | 2.7 |
| #4 | 4750 | 96.8 | 0.5 |
| #10 | 2000 | 95.8 | 1.0 |
| #20 | 850 | 95.3 | 0.5 |
| #40 | 425 | 94.5 | 0.8 |
| #60 | 250 | 92.5 | 2.0 |
| #80 | 180 | 89.3 | 3.2 |
| #100 | 150 | 87.8 | 1.5 |
| #200 | 75 | 77.7 | 10.1 |
| Hyd1 | 32.4 | 48.4 | 29.3 |
| Hyd2 | 20.9 | 41.4 | 7.0 |
| Hyd3 | 12.6 | 29.1 | 12.3 |
| Hyd4 | 9.1 | 22.2 | 6.9 |
| Hyd5 | 6.6 | 16.9 | 5.3 |
| Hyd6 | 3.3 | 9.7 | 7.2 |
| Hyd7 | 1.4 | 6.2 | 3.5 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 3.2 |
| Sand | 19.1 |
| Coarse Sand | 1.0 |
| Medium Sand | 1.3 |
| Fine Sand | 16.8 |
| Silt | 60.8 |
| Clay | 16.9 |
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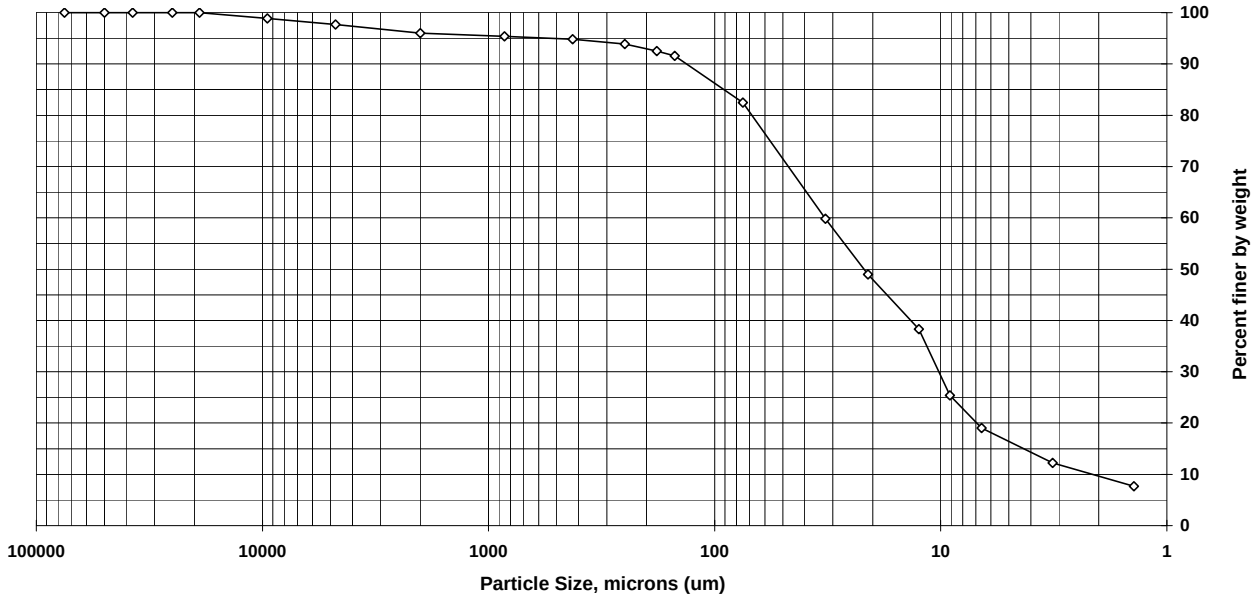
# Particle Size of Soils by ASTM D422

| | | | | | |
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-2 | **Percent Solids:** | 48.5% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-2 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 98.9 | 1.1 |
| #4 | 4750 | 97.7 | 1.2 |
| #10 | 2000 | 96.0 | 1.7 |
| #20 | 850 | 95.4 | 0.6 |
| #40 | 425 | 94.8 | 0.6 |
| #60 | 250 | 93.9 | 0.9 |
| #80 | 180 | 92.5 | 1.4 |
| #100 | 150 | 91.6 | 0.9 |
| #200 | 75 | 82.5 | 9.1 |
| Hyd1 | 32.4 | 59.8 | 22.7 |
| Hyd2 | 21 | 49.0 | 10.8 |
| Hyd3 | 12.5 | 38.3 | 10.7 |
| Hyd4 | 9.1 | 25.4 | 12.9 |
| Hyd5 | 6.6 | 19.0 | 6.4 |
| Hyd6 | 3.2 | 12.2 | 6.8 |
| Hyd7 | 1.4 | 7.7 | 4.5 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 2.3 |
| Sand | 15.2 |
| Coarse Sand | 1.7 |
| Medium Sand | 1.2 |
| Fine Sand | 12.3 |
| Silt | 63.5 |
| Clay | 19.0 |
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# Particle Size of Soils by ASTM D422

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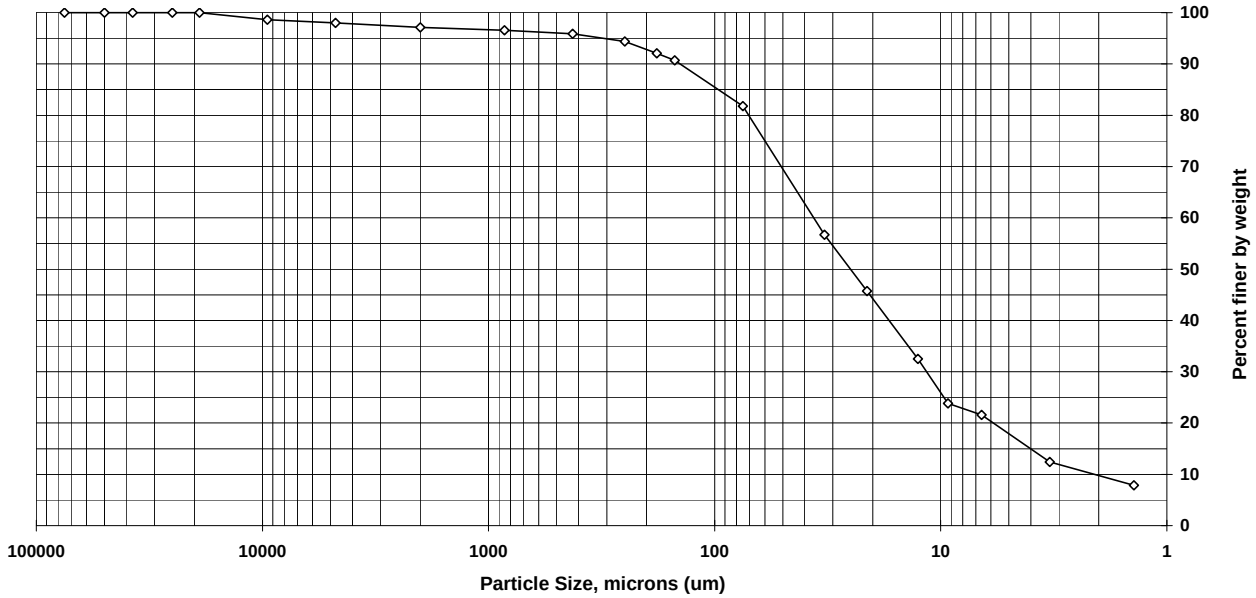
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-3 | **Percent Solids:** | 46.9% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-3 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 98.6 | 1.4 |
| #4 | 4750 | 98.0 | 0.6 |
| #10 | 2000 | 97.1 | 0.9 |
| #20 | 850 | 96.6 | 0.5 |
| #40 | 425 | 95.9 | 0.7 |
| #60 | 250 | 94.4 | 1.5 |
| #80 | 180 | 92.1 | 2.3 |
| #100 | 150 | 90.7 | 1.4 |
| #200 | 75 | 81.8 | 8.9 |
| Hyd1 | 32.7 | 56.7 | 25.1 |
| Hyd2 | 21.2 | 45.7 | 11.0 |
| Hyd3 | 12.6 | 32.5 | 13.2 |
| Hyd4 | 9.3 | 23.8 | 8.7 |
| Hyd5 | 6.6 | 21.6 | 2.2 |
| Hyd6 | 3.3 | 12.4 | 9.2 |
| Hyd7 | 1.4 | 7.9 | 4.5 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 2.0 |
| Sand | 16.2 |
| Coarse Sand | 0.9 |
| Medium Sand | 1.2 |
| Fine Sand | 14.1 |
| Silt | 60.2 |
| Clay | 21.6 |
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# Particle Size of Soils by ASTM D422

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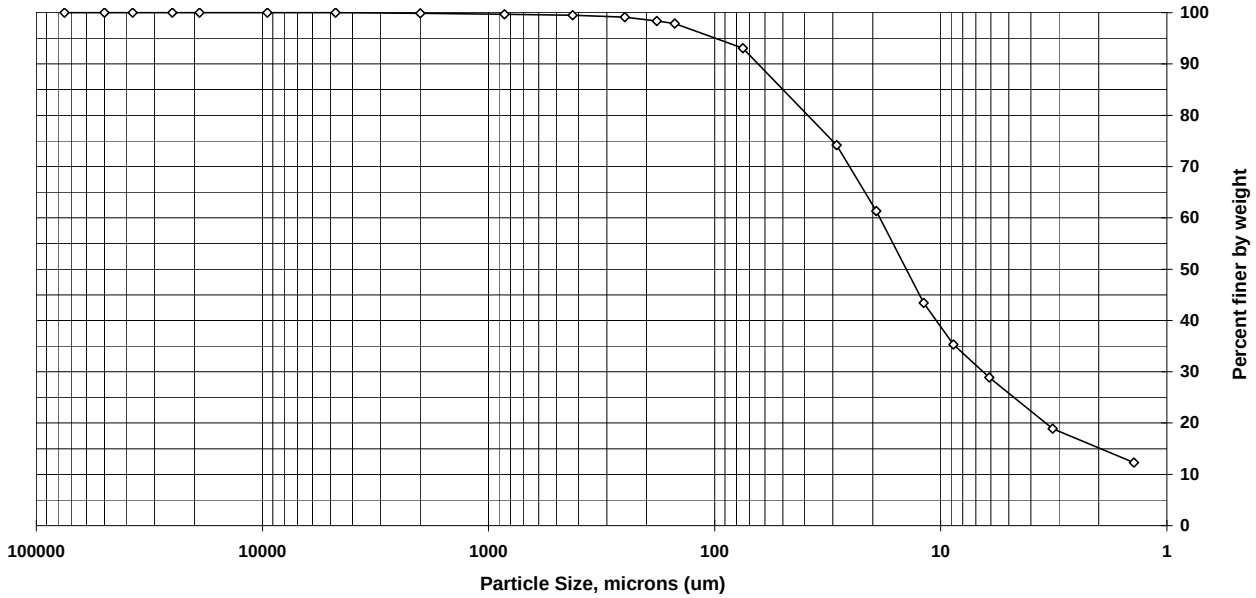
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-4 | **Percent Solids:** | 53.6% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-4 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 99.9 | 0.1 |
| #20 | 850 | 99.7 | 0.2 |
| #40 | 425 | 99.5 | 0.2 |
| #60 | 250 | 99.1 | 0.4 |
| #80 | 180 | 98.4 | 0.7 |
| #100 | 150 | 97.9 | 0.5 |
| #200 | 75 | 93.1 | 4.8 |
| Hyd1 | 28.9 | 74.2 | 18.9 |
| Hyd2 | 19.3 | 61.3 | 12.9 |
| Hyd3 | 11.9 | 43.4 | 17.9 |
| Hyd4 | 8.8 | 35.3 | 8.1 |
| Hyd5 | 6.1 | 28.9 | 6.4 |
| Hyd6 | 3.2 | 18.9 | 10.0 |
| Hyd7 | 1.4 | 12.3 | 6.6 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 6.9 |
| Coarse Sand | 0.1 |
| Medium Sand | 0.4 |
| Fine Sand | 6.4 |
| Silt | 64.2 |
| Clay | 28.9 |
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# Particle Size of Soils by ASTM D422

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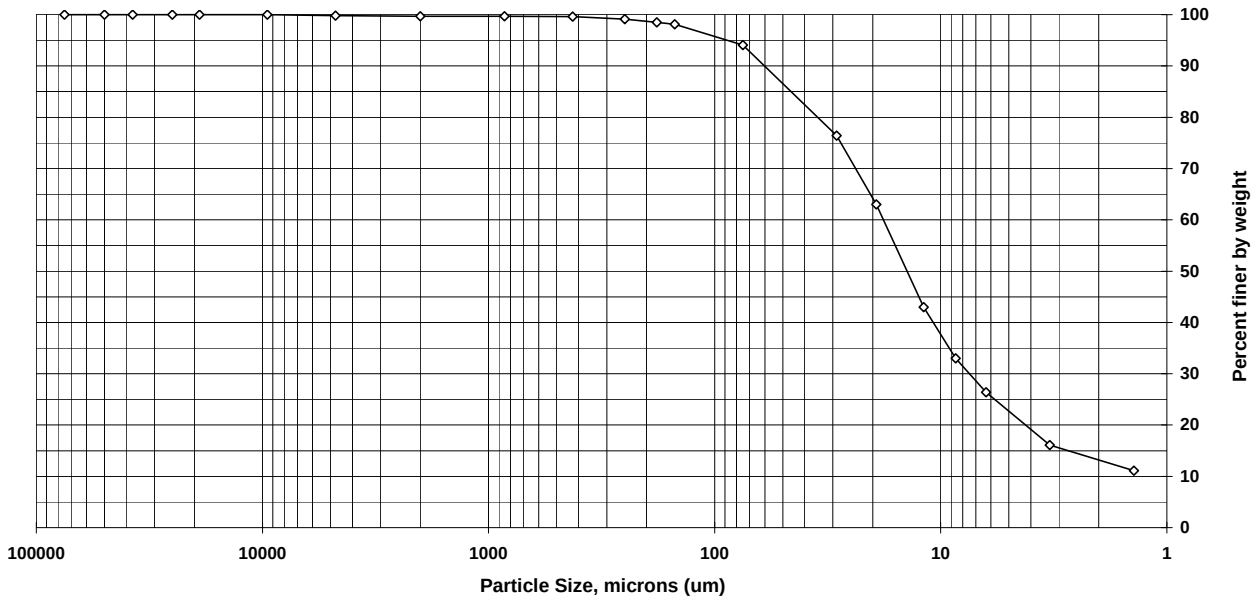
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-5 | **Percent Solids:** | 53.2% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-5 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.8 | 0.2 |
| #10 | 2000 | 99.7 | 0.1 |
| #20 | 850 | 99.7 | 0.0 |
| #40 | 425 | 99.6 | 0.1 |
| #60 | 250 | 99.1 | 0.5 |
| #80 | 180 | 98.5 | 0.6 |
| #100 | 150 | 98.1 | 0.4 |
| #200 | 75 | 94.1 | 4.0 |
| Hyd1 | 28.9 | 76.4 | 17.7 |
| Hyd2 | 19.3 | 63.0 | 13.4 |
| Hyd3 | 11.9 | 43.0 | 20.0 |
| Hyd4 | 8.6 | 33.0 | 10.0 |
| Hyd5 | 6.3 | 26.4 | 6.6 |
| Hyd6 | 3.3 | 16.1 | 10.3 |
| Hyd7 | 1.4 | 11.1 | 5.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.2 |
| Sand | 5.7 |
| Coarse Sand | 0.1 |
| Medium Sand | 0.1 |
| Fine Sand | 5.5 |
| Silt | 67.7 |
| Clay | 26.4 |
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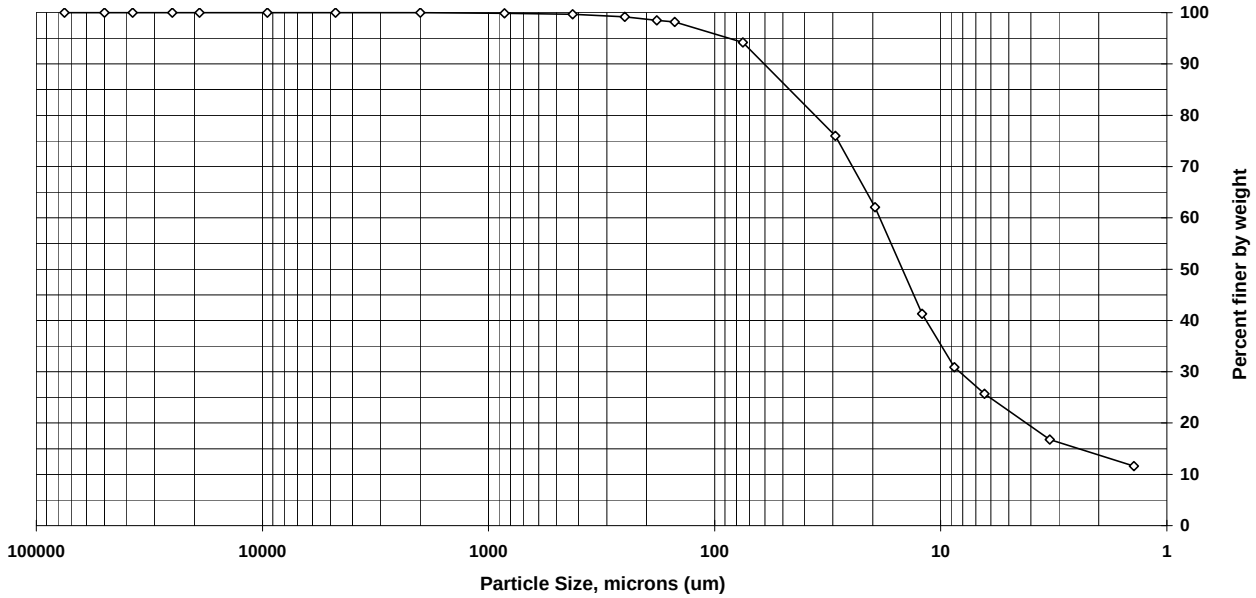
# Particle Size of Soils by ASTM D422

**Sample ID:** CH-5 DUP
**Lab ID:** 200-2983-A-6

**Percent Solids:** 52.0%
**Specific Gravity:** 2.650

**Date Received:** 12/15/10
**Start Date:** 01/05/11
**End Date:** 01/10/11

**Shape (> #10):** na
**Non-soil material:** plant
**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.9 | 0.1 |
| #40 | 425 | 99.7 | 0.2 |
| #60 | 250 | 99.2 | 0.5 |
| #80 | 180 | 98.5 | 0.7 |
| #100 | 150 | 98.2 | 0.3 |
| #200 | 75 | 94.2 | 4.0 |
| Hyd1 | 29.3 | 76.0 | 18.2 |
| Hyd2 | 19.5 | 62.1 | 13.9 |
| Hyd3 | 12.1 | 41.3 | 20.8 |
| Hyd4 | 8.7 | 30.9 | 10.4 |
| Hyd5 | 6.4 | 25.7 | 5.2 |
| Hyd6 | 3.3 | 16.8 | 8.9 |
| Hyd7 | 1.4 | 11.6 | 5.2 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 5.8 |
| Coarse Sand | 0.0 |
| Medium Sand | 0.3 |
| Fine Sand | 5.5 |
| Silt | 68.5 |
| Clay | 25.7 |
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# Particle Size of Soils by ASTM D422

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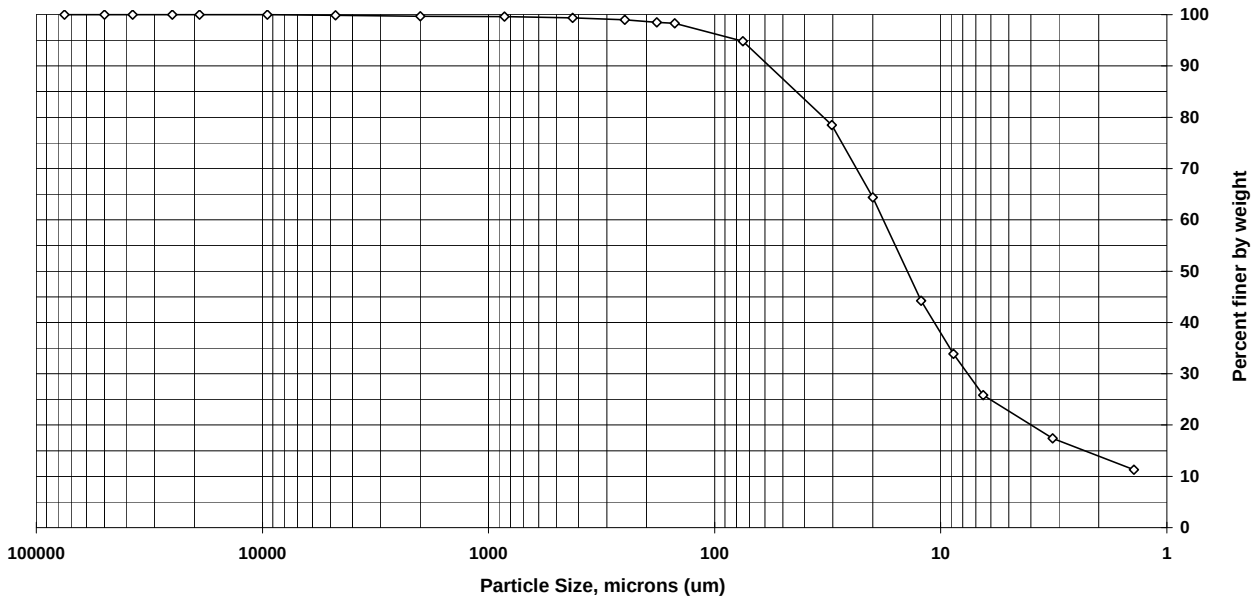
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-6A | **Percent Solids:** | 51.8% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-7 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.9 | 0.1 |
| #10 | 2000 | 99.7 | 0.2 |
| #20 | 850 | 99.6 | 0.1 |
| #40 | 425 | 99.4 | 0.2 |
| #60 | 250 | 99.0 | 0.4 |
| #80 | 180 | 98.5 | 0.5 |
| #100 | 150 | 98.3 | 0.2 |
| #200 | 75 | 94.8 | 3.5 |
| Hyd1 | 30.3 | 78.5 | 16.3 |
| Hyd2 | 20 | 64.4 | 14.1 |
| Hyd3 | 12.2 | 44.2 | 20.2 |
| Hyd4 | 8.8 | 33.9 | 10.3 |
| Hyd5 | 6.5 | 25.8 | 8.1 |
| Hyd6 | 3.2 | 17.4 | 8.4 |
| Hyd7 | 1.4 | 11.3 | 6.1 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.1 |
| Sand | 5.1 |
| Coarse Sand | 0.2 |
| Medium Sand | 0.3 |
| Fine Sand | 4.6 |
| Silt | 69.0 |
| Clay | 25.8 |
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# Particle Size of Soils by ASTM D422

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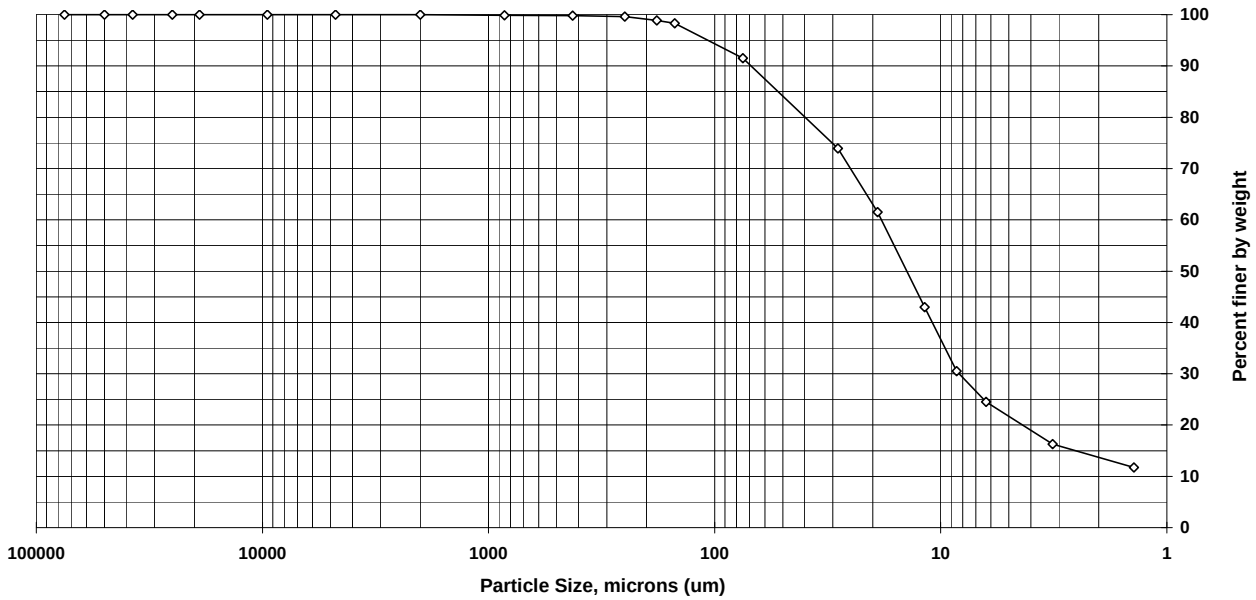
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-6B | **Percent Solids:** | 55.5% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-8 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** na

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.9 | 0.1 |
| #40 | 425 | 99.8 | 0.1 |
| #60 | 250 | 99.6 | 0.2 |
| #80 | 180 | 98.9 | 0.7 |
| #100 | 150 | 98.3 | 0.6 |
| #200 | 75 | 91.5 | 6.8 |
| Hyd1 | 28.5 | 73.9 | 17.6 |
| Hyd2 | 19 | 61.5 | 12.4 |
| Hyd3 | 11.8 | 43.0 | 18.5 |
| Hyd4 | 8.5 | 30.5 | 12.5 |
| Hyd5 | 6.3 | 24.5 | 6.0 |
| Hyd6 | 3.2 | 16.3 | 8.2 |
| Hyd7 | 1.4 | 11.7 | 4.6 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 8.5 |
| Coarse Sand | 0.0 |
| Medium Sand | 0.2 |
| Fine Sand | 8.3 |
| Silt | 67.0 |
| Clay | 24.5 |
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# Particle Size of Soils by ASTM D422

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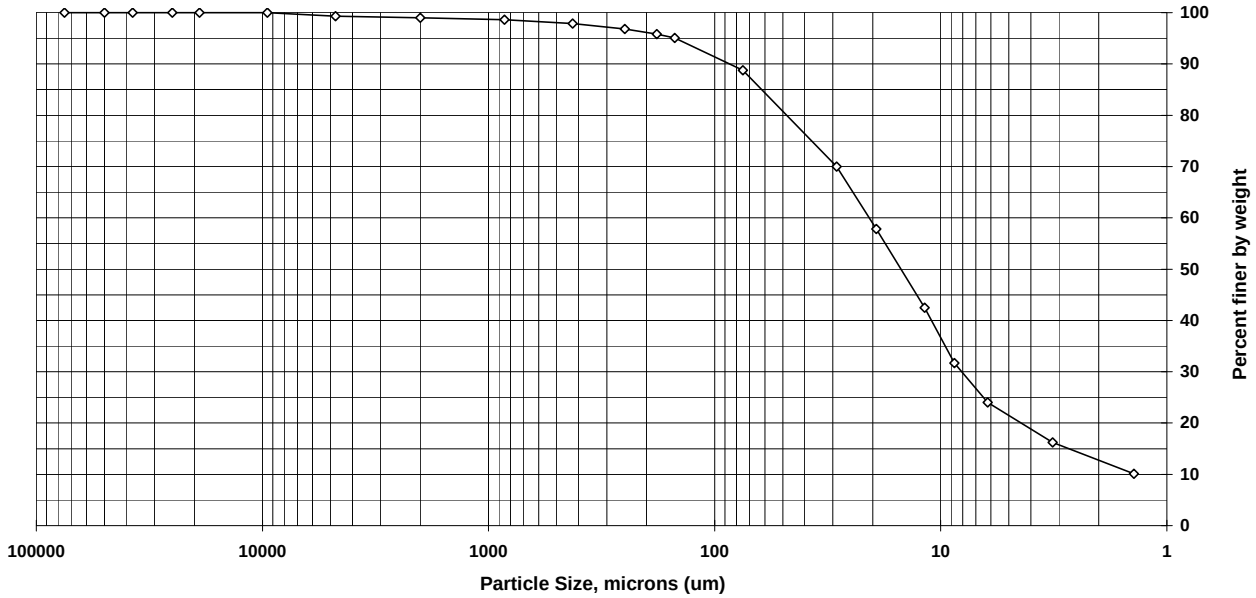
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-7A | **Percent Solids:** | 59.0% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-9 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** subangular

**Non-soil material:** plant

**Hardness (> #10):** brittle




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.3 | 0.7 |
| #10 | 2000 | 99.0 | 0.3 |
| #20 | 850 | 98.6 | 0.4 |
| #40 | 425 | 97.9 | 0.7 |
| #60 | 250 | 96.8 | 1.1 |
| #80 | 180 | 95.8 | 1.0 |
| #100 | 150 | 95.1 | 0.7 |
| #200 | 75 | 88.8 | 6.3 |
| Hyd1 | 28.9 | 70.0 | 18.8 |
| Hyd2 | 19.3 | 57.8 | 12.2 |
| Hyd3 | 11.8 | 42.5 | 15.3 |
| Hyd4 | 8.7 | 31.7 | 10.8 |
| Hyd5 | 6.2 | 24.0 | 7.7 |
| Hyd6 | 3.2 | 16.2 | 7.8 |
| Hyd7 | 1.4 | 10.1 | 6.1 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.7 |
| Sand | 10.5 |
| Coarse Sand | 0.3 |
| Medium Sand | 1.1 |
| Fine Sand | 9.1 |
| Silt | 64.8 |
| Clay | 24.0 |
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# Particle Size of Soils by ASTM D422

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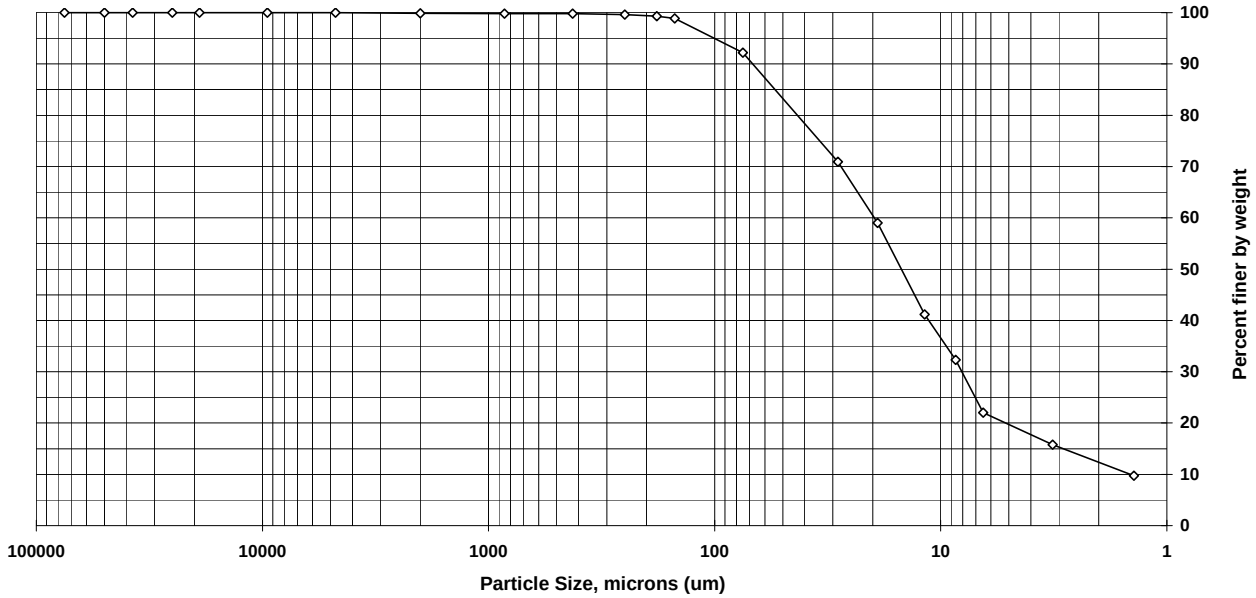
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-7B | **Percent Solids:** | 58.7% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-10 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 99.9 | 0.1 |
| #20 | 850 | 99.8 | 0.1 |
| #40 | 425 | 99.8 | 0.0 |
| #60 | 250 | 99.6 | 0.2 |
| #80 | 180 | 99.3 | 0.3 |
| #100 | 150 | 98.9 | 0.4 |
| #200 | 75 | 92.2 | 6.7 |
| Hyd1 | 28.5 | 70.9 | 21.3 |
| Hyd2 | 19 | 59.0 | 11.9 |
| Hyd3 | 11.8 | 41.2 | 17.8 |
| Hyd4 | 8.6 | 32.3 | 8.9 |
| Hyd5 | 6.5 | 22.0 | 10.3 |
| Hyd6 | 3.2 | 15.8 | 6.2 |
| Hyd7 | 1.4 | 9.8 | 6.1 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 7.8 |
| Coarse Sand | 0.1 |
| Medium Sand | 0.1 |
| Fine Sand | 7.6 |
| Silt | 70.2 |
| Clay | 22.0 |
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# Particle Size of Soils by ASTM D422

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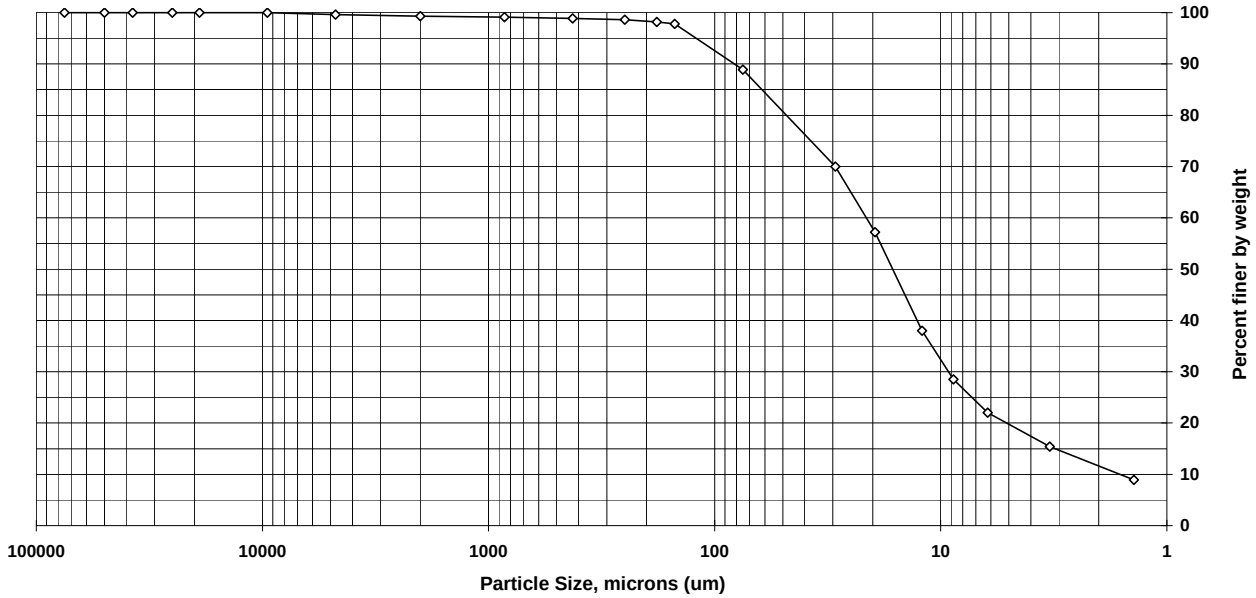
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | CH-8 | **Percent Solids:** | 57.4% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-11 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.6 | 0.4 |
| #10 | 2000 | 99.3 | 0.3 |
| #20 | 850 | 99.1 | 0.2 |
| #40 | 425 | 98.9 | 0.2 |
| #60 | 250 | 98.6 | 0.3 |
| #80 | 180 | 98.2 | 0.4 |
| #100 | 150 | 97.8 | 0.4 |
| #200 | 75 | 88.9 | 8.9 |
| Hyd1 | 29.3 | 70.0 | 18.9 |
| Hyd2 | 19.5 | 57.2 | 12.8 |
| Hyd3 | 12.1 | 38.0 | 19.2 |
| Hyd4 | 8.8 | 28.5 | 9.5 |
| Hyd5 | 6.2 | 22.0 | 6.5 |
| Hyd6 | 3.3 | 15.4 | 6.6 |
| Hyd7 | 1.4 | 8.9 | 6.5 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.4 |
| Sand | 10.7 |
| Coarse Sand | 0.3 |
| Medium Sand | 0.4 |
| Fine Sand | 10.0 |
| Silt | 66.9 |
| Clay | 22.0 |
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# Particle Size of Soils by ASTM D422

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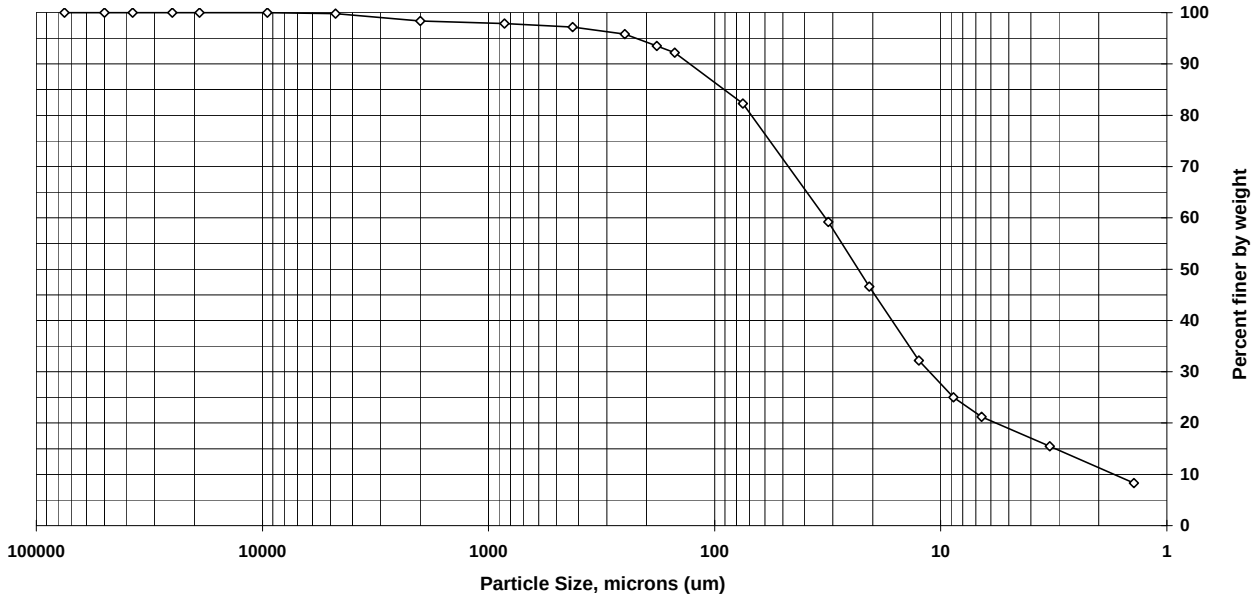
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | DMU 1 (COMPOSITE) | **Percent Solids:** | 42.3% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-12 | **Specific Gravity:** | 2.650 | **End Date:** | 01/10/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.8 | 0.2 |
| #10 | 2000 | 98.4 | 1.4 |
| #20 | 850 | 97.9 | 0.5 |
| #40 | 425 | 97.2 | 0.7 |
| #60 | 250 | 95.8 | 1.4 |
| #80 | 180 | 93.5 | 2.3 |
| #100 | 150 | 92.2 | 1.3 |
| #200 | 75 | 82.3 | 9.9 |
| Hyd1 | 31.4 | 59.2 | 23.1 |
| Hyd2 | 20.7 | 46.6 | 12.6 |
| Hyd3 | 12.5 | 32.2 | 14.4 |
| Hyd4 | 8.8 | 25.0 | 7.2 |
| Hyd5 | 6.6 | 21.2 | 3.8 |
| Hyd6 | 3.3 | 15.5 | 5.7 |
| Hyd7 | 1.4 | 8.3 | 7.2 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.2 |
| Sand | 17.5 |
| Coarse Sand | 1.4 |
| Medium Sand | 1.2 |
| Fine Sand | 14.9 |
| Silt | 61.1 |
| Clay | 21.2 |
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# Particle Size of Soils by ASTM D422

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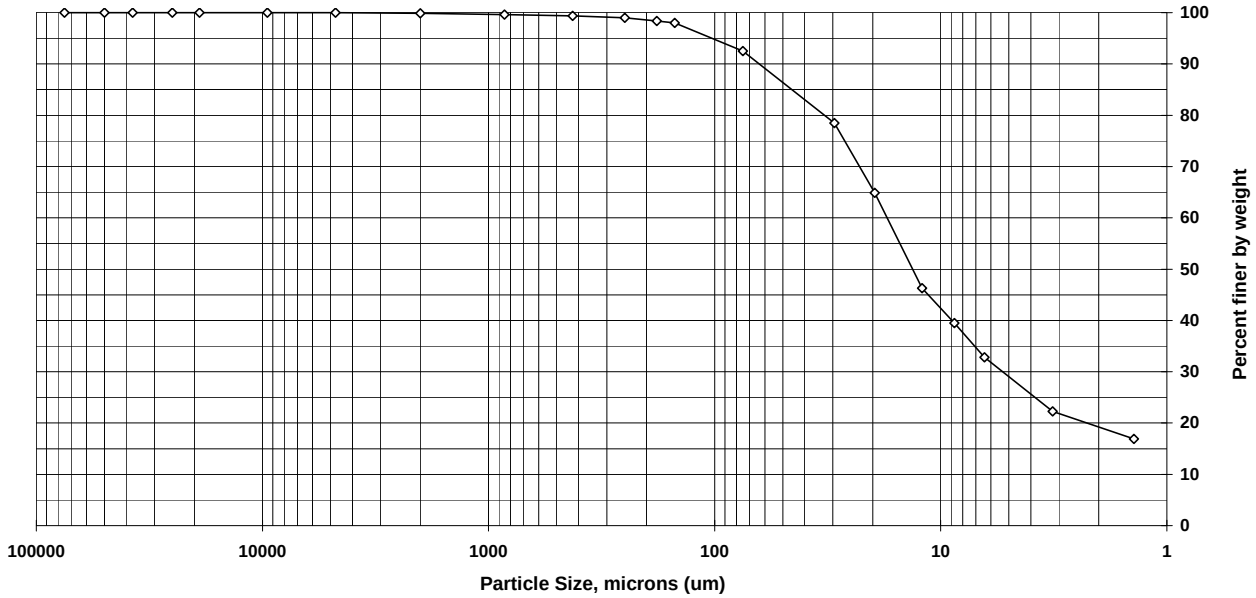
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | DMU 2 (COMPOSITE) | **Percent Solids:** | 54.6% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-13 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 99.9 | 0.1 |
| #20 | 850 | 99.6 | 0.3 |
| #40 | 425 | 99.4 | 0.2 |
| #60 | 250 | 99.0 | 0.4 |
| #80 | 180 | 98.4 | 0.6 |
| #100 | 150 | 98.0 | 0.4 |
| #200 | 75 | 92.5 | 5.5 |
| Hyd1 | 29.5 | 78.5 | 14.0 |
| Hyd2 | 19.6 | 64.9 | 13.6 |
| Hyd3 | 12.1 | 46.3 | 18.6 |
| Hyd4 | 8.7 | 39.5 | 6.8 |
| Hyd5 | 6.4 | 32.8 | 6.7 |
| Hyd6 | 3.2 | 22.3 | 10.5 |
| Hyd7 | 1.4 | 16.9 | 5.4 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 7.5 |
| Coarse Sand | 0.1 |
| Medium Sand | 0.5 |
| Fine Sand | 6.9 |
| Silt | 59.7 |
| Clay | 32.8 |
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# Particle Size of Soils by ASTM D422

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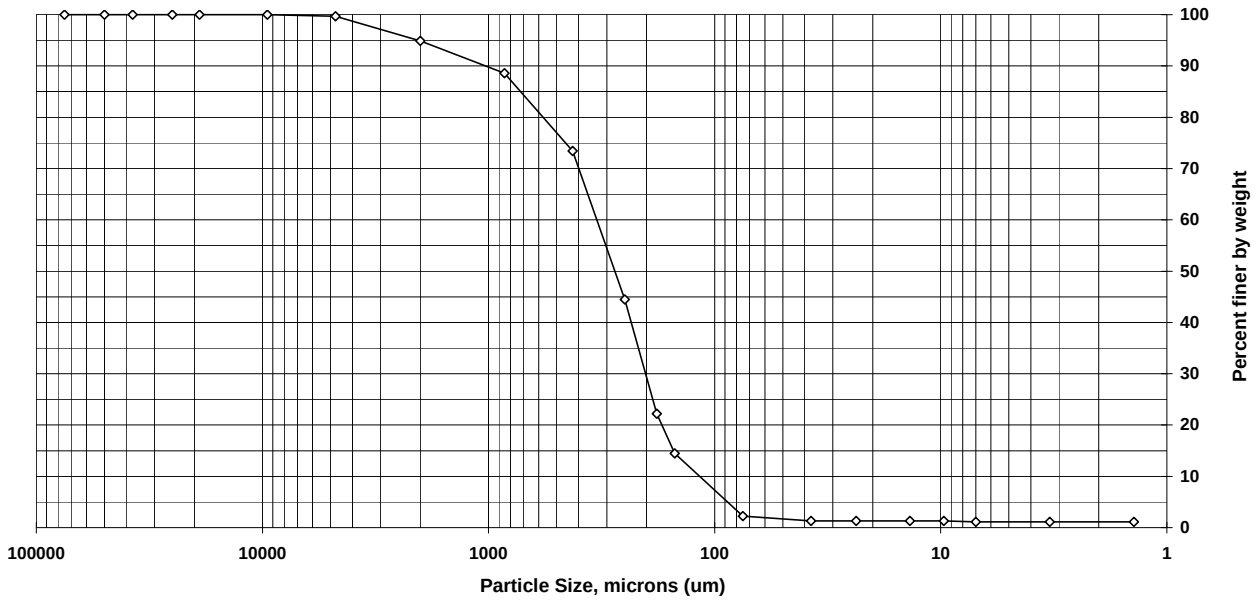
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | PB-1 | **Percent Solids:** | 83.5% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-14 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** na

**Non-soil material:** shell

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.7 | 0.3 |
| #10 | 2000 | 94.9 | 4.8 |
| #20 | 850 | 88.6 | 6.3 |
| #40 | 425 | 73.4 | 15.2 |
| #60 | 250 | 44.5 | 28.9 |
| #80 | 180 | 22.2 | 22.3 |
| #100 | 150 | 14.5 | 7.7 |
| #200 | 75 | 2.3 | 12.2 |
| Hyd1 | 37.5 | 1.3 | 1.0 |
| Hyd2 | 23.7 | 1.3 | 0.0 |
| Hyd3 | 13.7 | 1.3 | 0.0 |
| Hyd4 | 9.7 | 1.3 | 0.0 |
| Hyd5 | 7 | 1.1 | 0.2 |
| Hyd6 | 3.3 | 1.1 | 0.0 |
| Hyd7 | 1.4 | 1.1 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.3 |
| Sand | 97.4 |
| Coarse Sand | 4.8 |
| Medium Sand | 21.5 |
| Fine Sand | 71.1 |
| Silt | 1.1 |
| Clay | 1.1 |
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# Particle Size of Soils by ASTM D422

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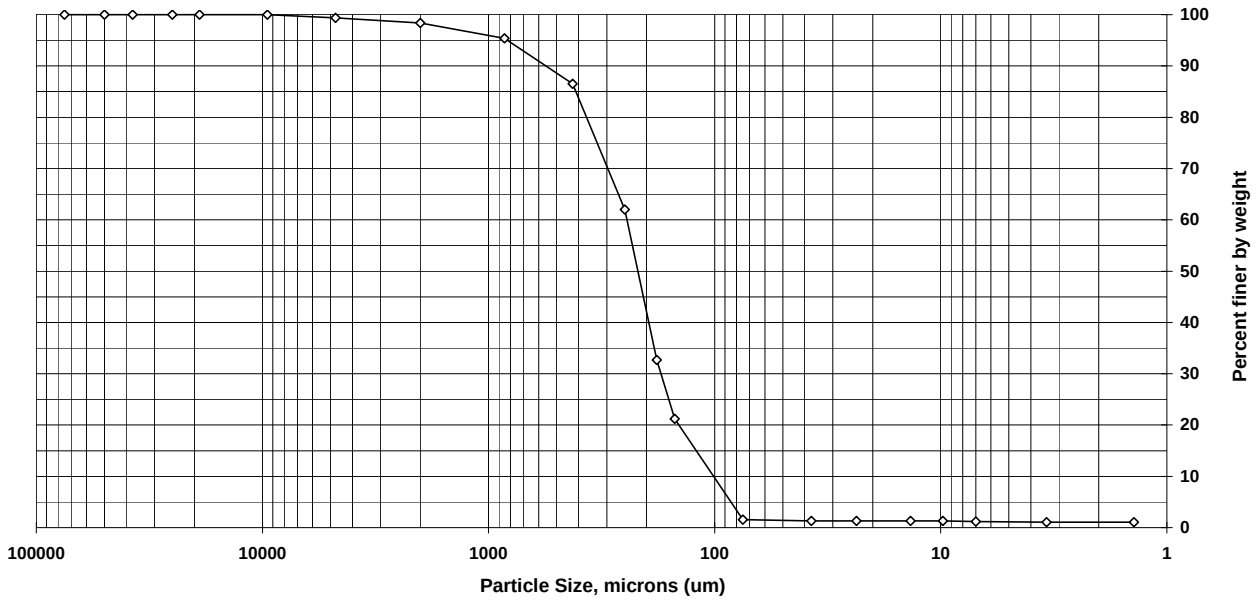
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | PB-2 | **Percent Solids:** | 82.0% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-15 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** na

**Non-soil material:** shelll

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.4 | 0.6 |
| #10 | 2000 | 98.4 | 1.0 |
| #20 | 850 | 95.4 | 3.0 |
| #40 | 425 | 86.5 | 8.9 |
| #60 | 250 | 62.0 | 24.5 |
| #80 | 180 | 32.7 | 29.3 |
| #100 | 150 | 21.2 | 11.5 |
| #200 | 75 | 1.6 | 19.6 |
| Hyd1 | 37.3 | 1.3 | 0.3 |
| Hyd2 | 23.6 | 1.3 | 0.0 |
| Hyd3 | 13.6 | 1.3 | 0.0 |
| Hyd4 | 9.8 | 1.3 | 0.0 |
| Hyd5 | 7 | 1.2 | 0.1 |
| Hyd6 | 3.4 | 1.0 | 0.1 |
| Hyd7 | 1.4 | 1.0 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.6 |
| Sand | 97.8 |
| Coarse Sand | 1.0 |
| Medium Sand | 11.9 |
| Fine Sand | 84.9 |
| Silt | 0.4 |
| Clay | 1.2 |
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# Particle Size of Soils by ASTM D422

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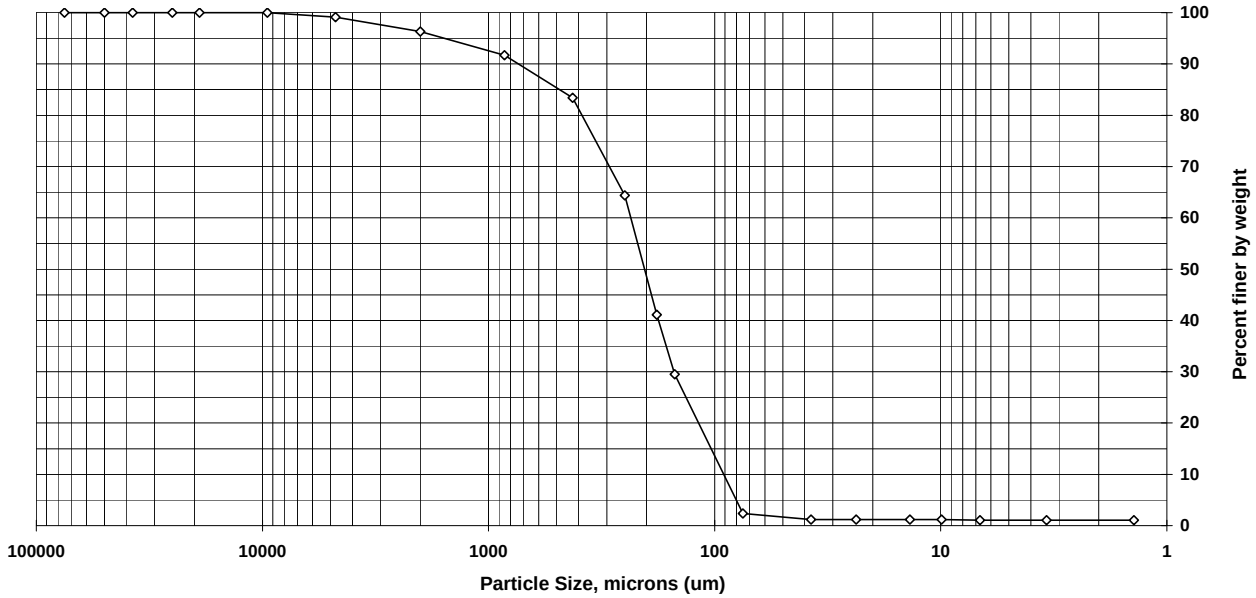
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | PB-3 | **Percent Solids:** | 82.6% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-16 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** rounded

**Non-soil material:** shell

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.1 | 0.9 |
| #10 | 2000 | 96.3 | 2.8 |
| #20 | 850 | 91.7 | 4.6 |
| #40 | 425 | 83.4 | 8.3 |
| #60 | 250 | 64.4 | 19.0 |
| #80 | 180 | 41.1 | 23.3 |
| #100 | 150 | 29.5 | 11.6 |
| #200 | 75 | 2.4 | 27.1 |
| Hyd1 | 37.5 | 1.2 | 1.2 |
| Hyd2 | 23.7 | 1.2 | 0.0 |
| Hyd3 | 13.7 | 1.2 | 0.0 |
| Hyd4 | 9.9 | 1.2 | 0.0 |
| Hyd5 | 6.7 | 1.0 | 0.1 |
| Hyd6 | 3.4 | 1.0 | 0.0 |
| Hyd7 | 1.4 | 1.0 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.9 |
| Sand | 96.7 |
| Coarse Sand | 2.8 |
| Medium Sand | 12.9 |
| Fine Sand | 81.0 |
| Silt | 1.3 |
| Clay | 1.0 |
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# Particle Size of Soils by ASTM D422

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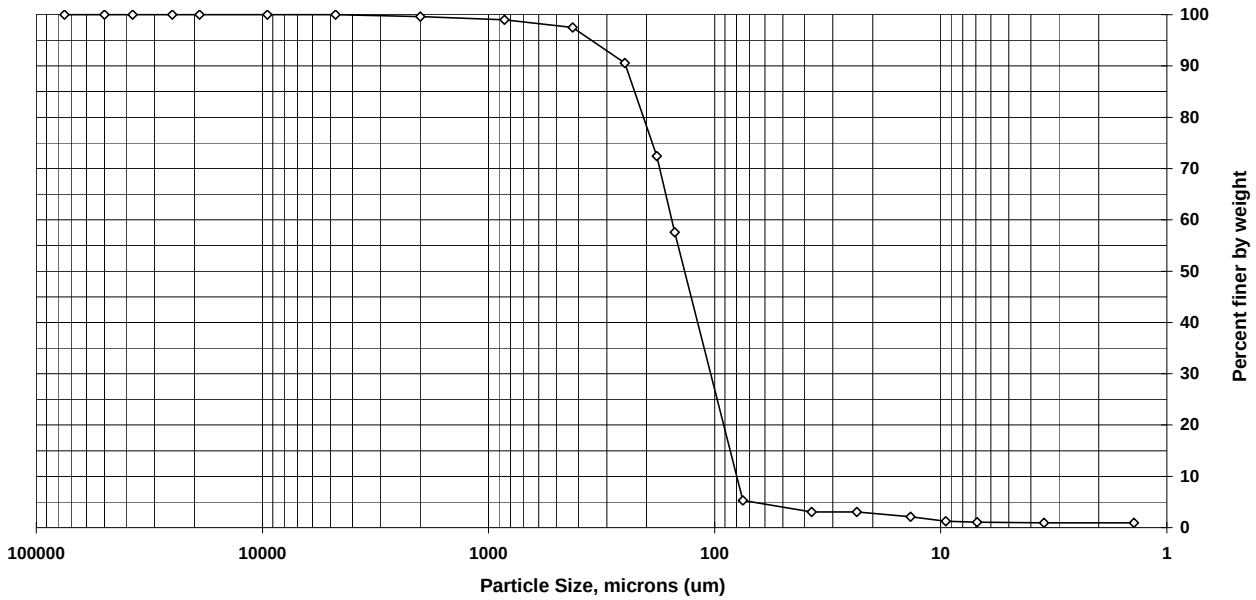
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | PB-4 | **Percent Solids:** | 80.7% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-17 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** subrounded

**Non-soil material:** shell

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 99.6 | 0.4 |
| #20 | 850 | 99.0 | 0.6 |
| #40 | 425 | 97.5 | 1.5 |
| #60 | 250 | 90.6 | 6.9 |
| #80 | 180 | 72.4 | 18.2 |
| #100 | 150 | 57.6 | 14.8 |
| #200 | 75 | 5.3 | 52.3 |
| Hyd1 | 37.2 | 3.1 | 2.3 |
| Hyd2 | 23.5 | 3.1 | 0.0 |
| Hyd3 | 13.6 | 2.1 | 0.9 |
| Hyd4 | 9.5 | 1.2 | 0.9 |
| Hyd5 | 6.9 | 1.1 | 0.2 |
| Hyd6 | 3.5 | 0.9 | 0.2 |
| Hyd7 | 1.4 | 0.9 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 94.7 |
| Coarse Sand | 0.4 |
| Medium Sand | 2.1 |
| Fine Sand | 92.2 |
| Silt | 4.3 |
| Clay | 1.1 |
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# Particle Size of Soils by ASTM D422

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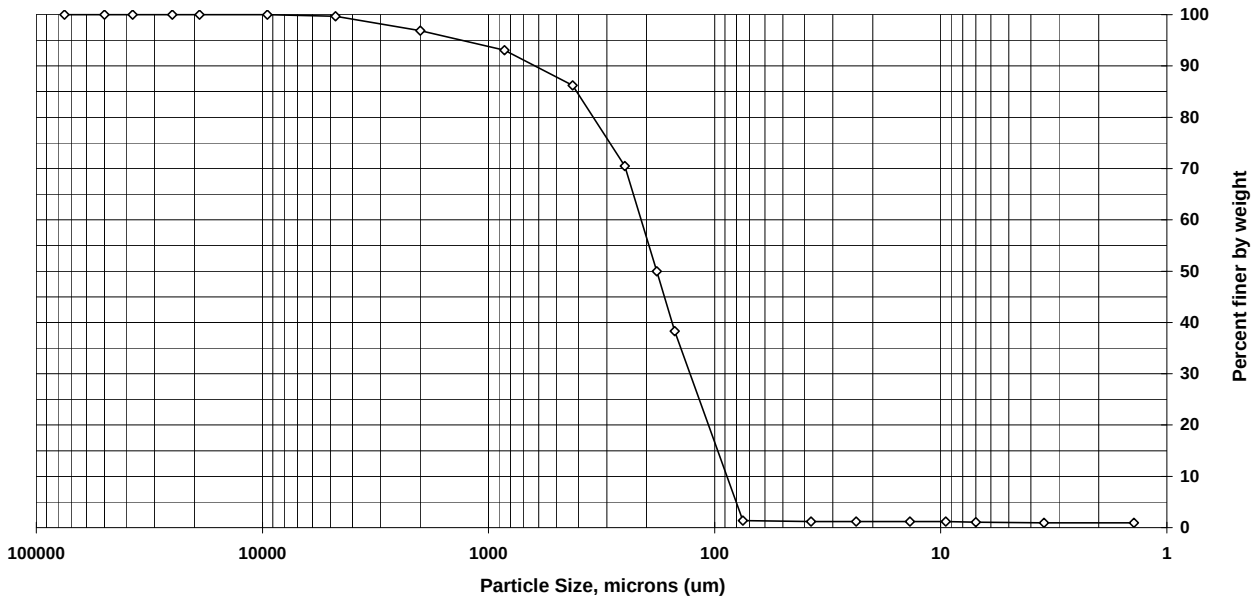
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | PB COMPOSITE | **Percent Solids:** | 81.9% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-18 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** rounded

**Non-soil material:** shell

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.7 | 0.3 |
| #10 | 2000 | 96.9 | 2.8 |
| #20 | 850 | 93.1 | 3.8 |
| #40 | 425 | 86.2 | 6.9 |
| #60 | 250 | 70.5 | 15.7 |
| #80 | 180 | 50.0 | 20.5 |
| #100 | 150 | 38.3 | 11.7 |
| #200 | 75 | 1.4 | 36.9 |
| Hyd1 | 37.5 | 1.2 | 0.2 |
| Hyd2 | 23.7 | 1.2 | 0.0 |
| Hyd3 | 13.7 | 1.2 | 0.0 |
| Hyd4 | 9.5 | 1.2 | 0.0 |
| Hyd5 | 7 | 1.1 | 0.1 |
| Hyd6 | 3.5 | 0.9 | 0.2 |
| Hyd7 | 1.4 | 0.9 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.3 |
| Sand | 98.3 |
| Coarse Sand | 2.8 |
| Medium Sand | 10.7 |
| Fine Sand | 84.8 |
| Silt | 0.3 |
| Clay | 1.1 |
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# Particle Size of Soils by ASTM D422

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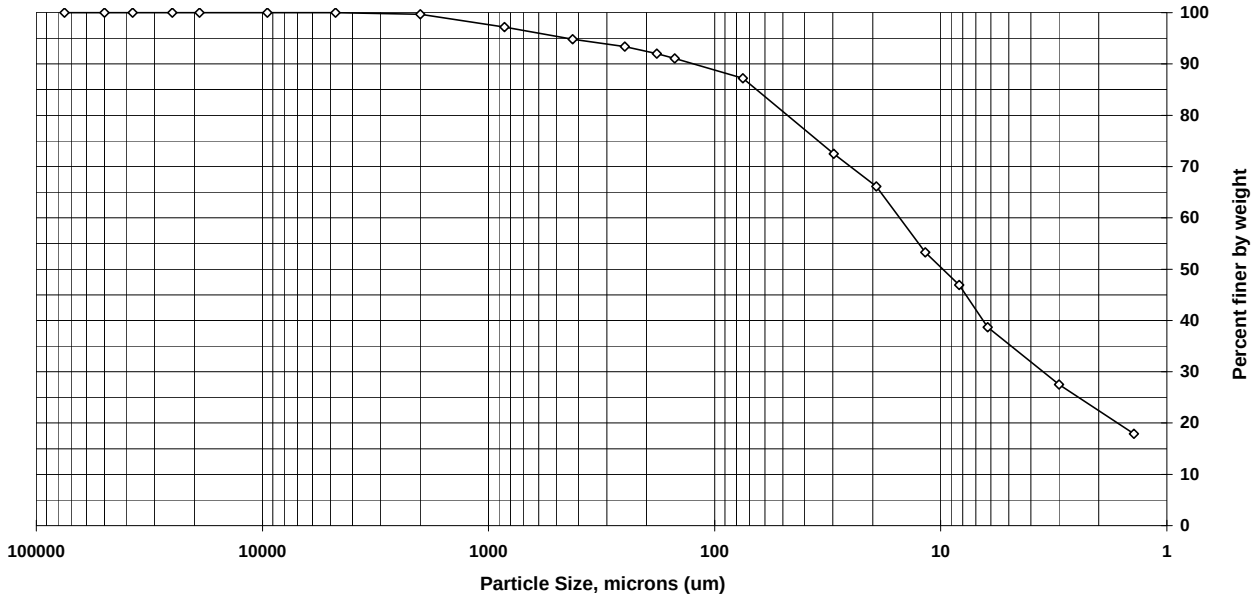
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | BS-1 | **Percent Solids:** | 75.0% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-19 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** subrounded

**Non-soil material:** plant

**Hardness (> #10):** hard




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 99.7 | 0.3 |
| #20 | 850 | 97.2 | 2.5 |
| #40 | 425 | 94.8 | 2.4 |
| #60 | 250 | 93.4 | 1.4 |
| #80 | 180 | 92.0 | 1.4 |
| #100 | 150 | 91.1 | 0.9 |
| #200 | 75 | 87.2 | 3.9 |
| Hyd1 | 29.7 | 72.5 | 14.7 |
| Hyd2 | 19.3 | 66.1 | 6.4 |
| Hyd3 | 11.7 | 53.3 | 12.8 |
| Hyd4 | 8.3 | 46.9 | 6.4 |
| Hyd5 | 6.2 | 38.7 | 8.2 |
| Hyd6 | 3 | 27.5 | 11.2 |
| Hyd7 | 1.4 | 17.9 | 9.6 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 12.8 |
| Coarse Sand | 0.3 |
| Medium Sand | 4.9 |
| Fine Sand | 7.6 |
| Silt | 48.5 |
| Clay | 38.7 |
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# Particle Size of Soils by ASTM D422

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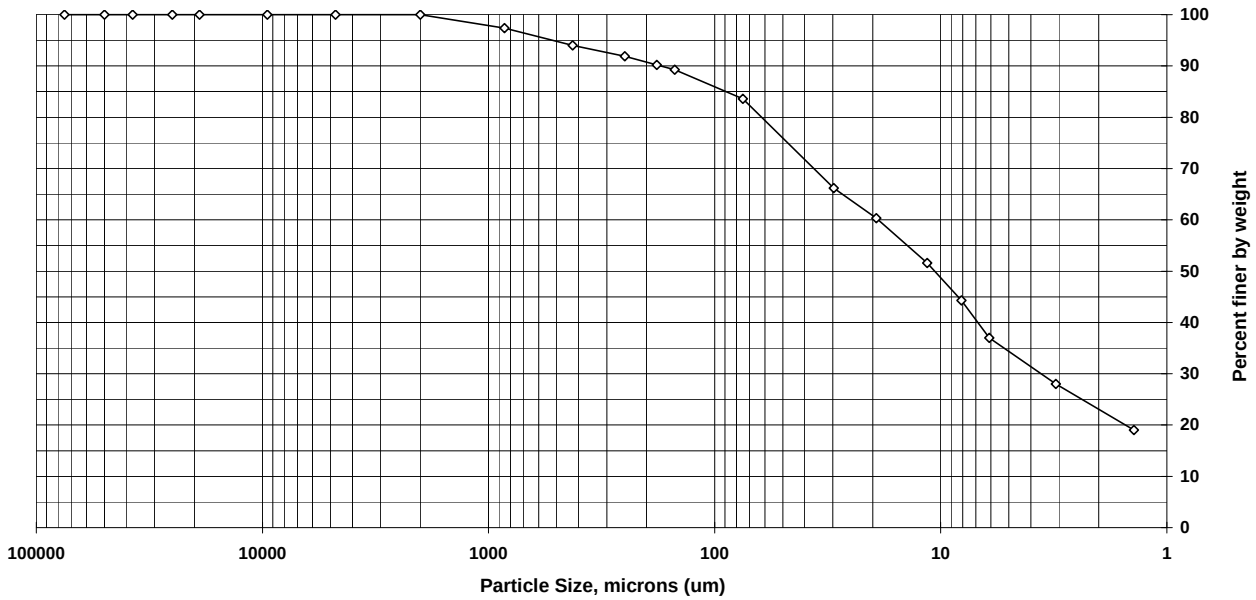
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | BS-2 | **Percent Solids:** | 79.0% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-20 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 97.4 | 2.6 |
| #40 | 425 | 94.0 | 3.4 |
| #60 | 250 | 91.9 | 2.1 |
| #80 | 180 | 90.2 | 1.7 |
| #100 | 150 | 89.3 | 0.9 |
| #200 | 75 | 83.6 | 5.7 |
| Hyd1 | 29.7 | 66.2 | 17.4 |
| Hyd2 | 19.3 | 60.3 | 5.9 |
| Hyd3 | 11.5 | 51.6 | 8.7 |
| Hyd4 | 8.1 | 44.3 | 7.3 |
| Hyd5 | 6.1 | 37.0 | 7.3 |
| Hyd6 | 3.1 | 28.0 | 9.0 |
| Hyd7 | 1.4 | 19.0 | 9.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 16.4 |
| Coarse Sand | 0.0 |
| Medium Sand | 6.0 |
| Fine Sand | 10.4 |
| Silt | 46.6 |
| Clay | 37.0 |
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# Particle Size of Soils by ASTM D422

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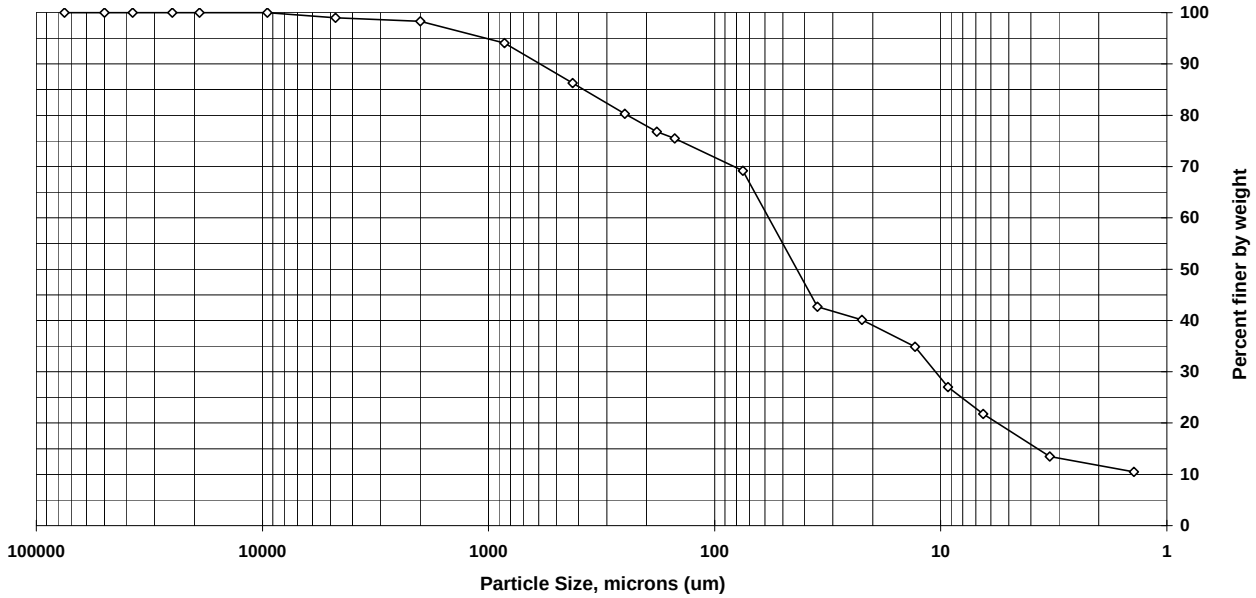
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | BS-3 | **Percent Solids:** | 72.4% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-21 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 99.0 | 1.0 |
| #10 | 2000 | 98.3 | 0.7 |
| #20 | 850 | 94.1 | 4.2 |
| #40 | 425 | 86.3 | 7.8 |
| #60 | 250 | 80.3 | 6.0 |
| #80 | 180 | 76.8 | 3.5 |
| #100 | 150 | 75.5 | 1.3 |
| #200 | 75 | 69.2 | 6.3 |
| Hyd1 | 35.1 | 42.7 | 26.5 |
| Hyd2 | 22.3 | 40.1 | 2.6 |
| Hyd3 | 13 | 34.9 | 5.2 |
| Hyd4 | 9.3 | 27.0 | 7.9 |
| Hyd5 | 6.5 | 21.8 | 5.2 |
| Hyd6 | 3.3 | 13.5 | 8.3 |
| Hyd7 | 1.4 | 10.5 | 3.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 1.0 |
| Sand | 29.8 |
| Coarse Sand | 0.7 |
| Medium Sand | 12.0 |
| Fine Sand | 17.1 |
| Silt | 47.4 |
| Clay | 21.8 |
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# Particle Size of Soils by ASTM D422

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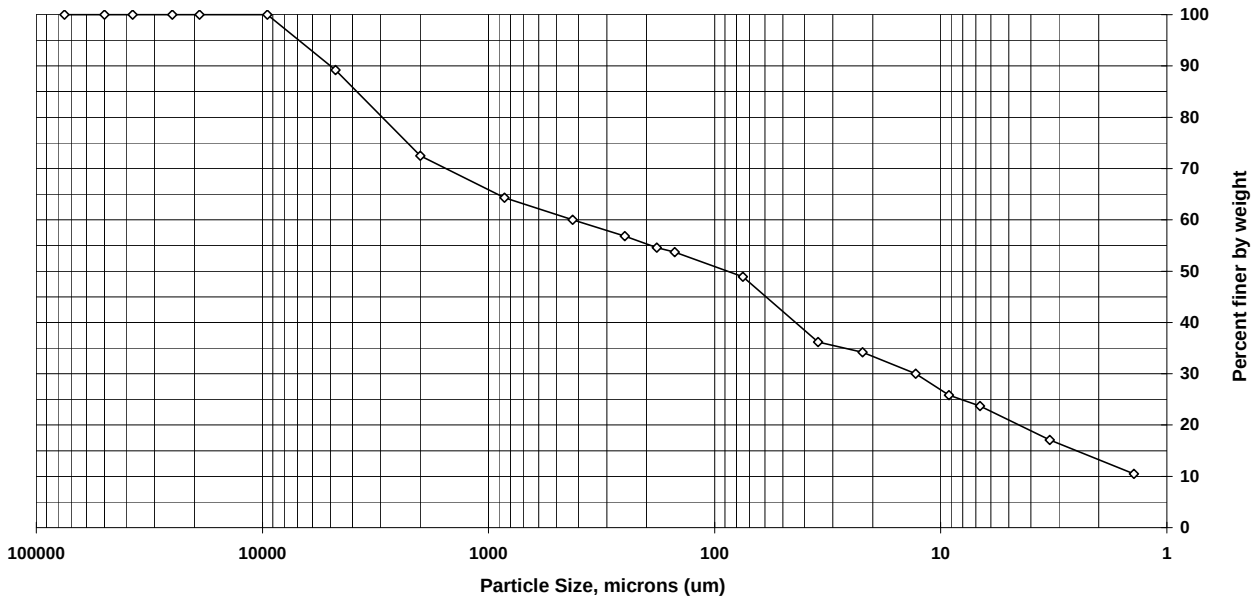
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | BS 4 | **Percent Solids:** | 73.3% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-22 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** subangular

**Non-soil material:** na

**Hardness (> #10):** brittle




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 89.2 | 10.8 |
| #10 | 2000 | 72.5 | 16.7 |
| #20 | 850 | 64.3 | 8.2 |
| #40 | 425 | 60.0 | 4.3 |
| #60 | 250 | 56.8 | 3.2 |
| #80 | 180 | 54.6 | 2.2 |
| #100 | 150 | 53.7 | 0.9 |
| #200 | 75 | 48.9 | 4.8 |
| Hyd1 | 34.9 | 36.2 | 12.7 |
| Hyd2 | 22.2 | 34.2 | 2.0 |
| Hyd3 | 12.9 | 30.0 | 4.2 |
| Hyd4 | 9.2 | 25.8 | 4.2 |
| Hyd5 | 6.7 | 23.7 | 2.1 |
| Hyd6 | 3.3 | 17.1 | 6.6 |
| Hyd7 | 1.4 | 10.5 | 6.6 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 10.8 |
| Sand | 40.3 |
| Coarse Sand | 16.7 |
| Medium Sand | 12.5 |
| Fine Sand | 11.1 |
| Silt | 25.2 |
| Clay | 23.7 |
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# Particle Size of Soils by ASTM D422

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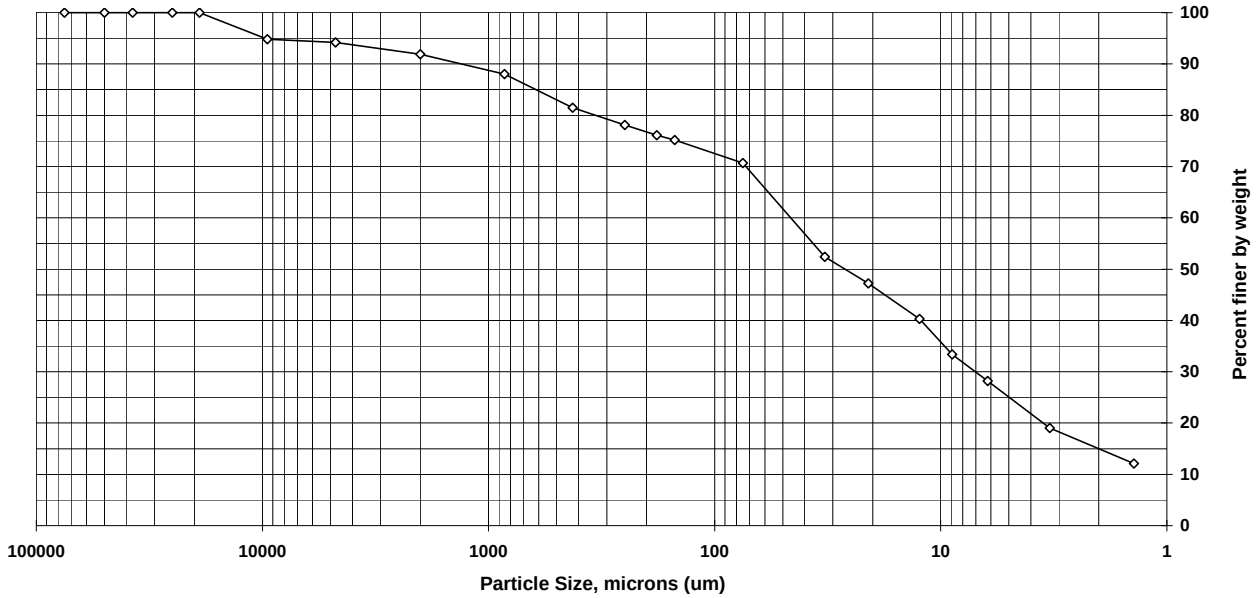
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | BS COMPOSITE | **Percent Solids:** | 73.3% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-23 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** subangular

**Non-soil material:** plant

**Hardness (> #10):** brittle




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 94.8 | 5.2 |
| #4 | 4750 | 94.2 | 0.6 |
| #10 | 2000 | 91.9 | 2.3 |
| #20 | 850 | 88.0 | 3.9 |
| #40 | 425 | 81.5 | 6.5 |
| #60 | 250 | 78.1 | 3.4 |
| #80 | 180 | 76.1 | 2.0 |
| #100 | 150 | 75.2 | 0.9 |
| #200 | 75 | 70.7 | 4.5 |
| Hyd1 | 32.6 | 52.4 | 18.3 |
| Hyd2 | 20.9 | 47.2 | 5.2 |
| Hyd3 | 12.4 | 40.3 | 6.9 |
| Hyd4 | 8.9 | 33.4 | 6.9 |
| Hyd5 | 6.2 | 28.2 | 5.2 |
| Hyd6 | 3.3 | 19.0 | 9.2 |
| Hyd7 | 1.4 | 12.1 | 6.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 5.8 |
| Sand | 23.5 |
| Coarse Sand | 2.3 |
| Medium Sand | 10.4 |
| Fine Sand | 10.8 |
| Silt | 42.5 |
| Clay | 28.2 |
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# Particle Size of Soils by ASTM D422

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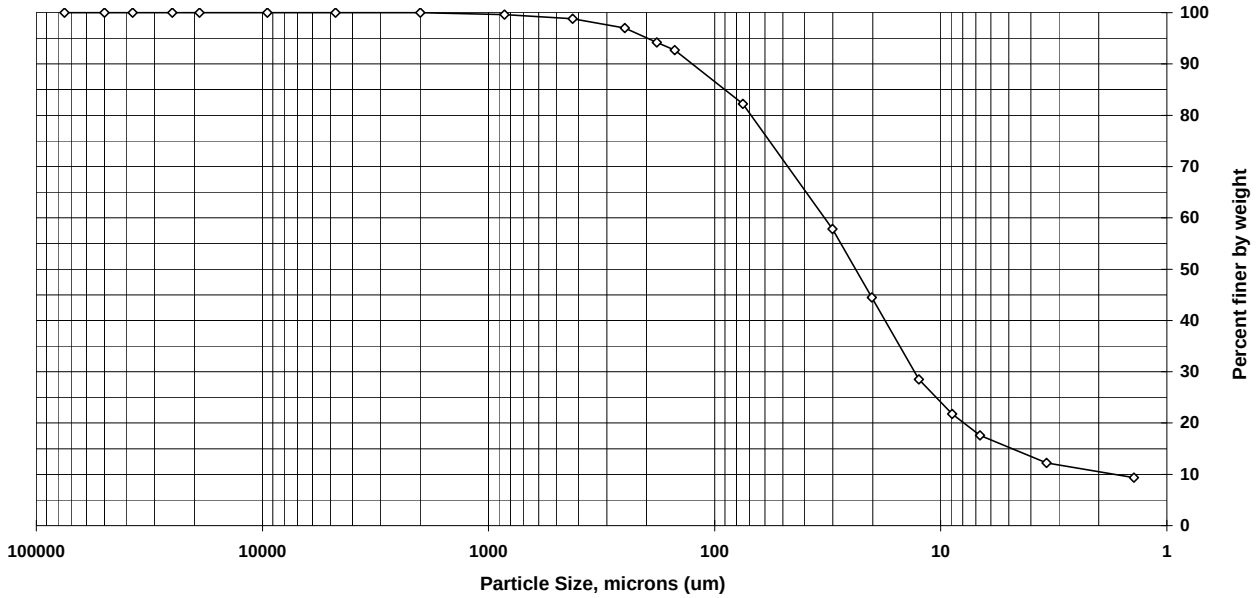
|---|---|---|---|---|---|
| | | | | **Date Received:** | 12/15/10 |
| **Sample ID:** | DMU SIEVED COMPOSITE | **Percent Solids:** | 49.5% | **Start Date:** | 01/05/11 |
| **Lab ID:** | 200-2983-A-24 | **Specific Gravity:** | 2.650 | **End Date:** | 01/11/11 |

**Shape (> #10):** na

**Non-soil material:** plant

**Hardness (> #10):** na




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 100.0 | 0.0 |
| #4 | 4750 | 100.0 | 0.0 |
| #10 | 2000 | 100.0 | 0.0 |
| #20 | 850 | 99.6 | 0.4 |
| #40 | 425 | 98.8 | 0.8 |
| #60 | 250 | 97.0 | 1.8 |
| #80 | 180 | 94.2 | 2.8 |
| #100 | 150 | 92.7 | 1.5 |
| #200 | 75 | 82.2 | 10.5 |
| Hyd1 | 30.1 | 57.8 | 24.4 |
| Hyd2 | 20.2 | 44.5 | 13.3 |
| Hyd3 | 12.5 | 28.5 | 16.0 |
| Hyd4 | 8.9 | 21.8 | 6.7 |
| Hyd5 | 6.7 | 17.6 | 4.2 |
| Hyd6 | 3.4 | 12.2 | 5.4 |
| Hyd7 | 1.4 | 9.3 | 2.9 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 0.0 |
| Sand | 17.8 |
| Coarse Sand | 0.0 |
| Medium Sand | 1.2 |
| Fine Sand | 16.6 |
| Silt | 64.6 |
| Clay | 17.6 |
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# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | CH-1 |
| Lab Sample ID | 200-2983-A-1 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/10/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.01 | g |
| Wet Sample + Tin | 11.12 | g |
| Dry Sample + Tin | 6.08 | g |
| % Moisture | 49.85 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 92.11 | 92.11 |
| Sample Weight (Oven Dried) | | | 46.2 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 1.91 |
| Sample <#10 | | | 44.3 |
| % Passing #10 | | | 48.1 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.48 | 448.71 | 1.23 | g | 97.3 | Gravel | |
| #4 | 4750 | 488.18 | 488.41 | 0.23 | g | 96.8 | Gravel | |
| #10 | 2000 | 462.90 | 463.35 | 0.45 | g | 95.8 | Sand | Coarse |
| #20 | 850 | 390.82 | 391.05 | 0.23 | g | 95.3 | Sand | Medium |
| #40 | 425 | 355.50 | 355.88 | 0.38 | g | 94.5 | Sand | Medium |
| #60 | 250 | 323.26 | 324.18 | 0.92 | g | 92.5 | Sand | Fine |
| #80 | 180 | 313.16 | 314.62 | 1.46 | g | 89.3 | Sand | Fine |
| #100 | 150 | 329.63 | 330.33 | 0.70 | g | 87.8 | Sand | Fine |
| #200 | 75 | 321.03 | 325.71 | 4.68 | g | 77.7 | Sand | Fine |
| | | | | 0.00 | g | 77.7 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 46.2 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0170 | 22.0 | 32.4 | 48.4 | Silt | |
| 5 | 5 | 1.0150 | 22.0 | 20.9 | 41.4 | Silt | |
| 15 | 15 | 1.0115 | 21.5 | 12.6 | 29.1 | Silt | |
| 30 | 30 | 1.0095 | 21.5 | 9.1 | 22.2 | Silt | |
| 60 | 59 | 1.0080 | 21.5 | 6.6 | 16.9 | Silt | |
| 250 | 256 | 1.0060 | 20.5 | 3.3 | 9.7 | Clay | |
| 1440 | 1440 | 1.0050 | 20.5 | 1.4 | 6.23 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | CH-2 |
| Lab Sample ID | 200-2983-A-2 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/10/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.01 | g |
| Wet Sample + Tin | 11.82 | g |
| Dry Sample + Tin | 6.25 | g |
| % Moisture | 51.53 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 77.10 | 77.1 |
| Sample Weight (Oven Dried) | | | 37.4 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 1.48 |
| Sample <#10 | | | 35.9 |
| % Passing #10 | | | 46.6 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.48 | 447.89 | 0.41 | g | 98.9 | Gravel | |
| #4 | 4750 | 488.18 | 488.63 | 0.45 | g | 97.7 | Gravel | |
| #10 | 2000 | 462.90 | 463.52 | 0.62 | g | 96.0 | Sand | Coarse |
| #20 | 850 | 390.82 | 391.04 | 0.22 | g | 95.4 | Sand | Medium |
| #40 | 425 | 355.50 | 355.71 | 0.21 | g | 94.8 | Sand | Medium |
| #60 | 250 | 323.26 | 323.58 | 0.32 | g | 93.9 | Sand | Fine |
| #80 | 180 | 313.16 | 313.70 | 0.54 | g | 92.5 | Sand | Fine |
| #100 | 150 | 329.63 | 329.97 | 0.34 | g | 91.6 | Sand | Fine |
| #200 | 75 | 321.03 | 324.45 | 3.42 | g | 82.5 | Sand | Fine |
| | | | | 0.00 | g | 82.5 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 37.4 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0170 | 22.0 | 32.4 | 59.8 | Silt | |
| 5 | 5 | 1.0145 | 22.0 | 21 | 49 | Silt | |
| 15 | 15 | 1.0120 | 22.0 | 12.5 | 38.3 | Silt | |
| 30 | 30 | 1.0090 | 22.0 | 9.1 | 25.4 | Silt | |
| 60 | 58 | 1.0075 | 22.0 | 6.6 | 19 | Silt | |
| 250 | 256 | 1.0060 | 21.0 | 3.2 | 12.2 | Clay | |
| 1440 | 1440 | 1.0050 | 20.5 | 1.4 | 7.69 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | CH-3 |
| Lab Sample ID | 200-2983-A-3 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/10/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.98 | g |
| Wet Sample + Tin | 11.19 | g |
| Dry Sample + Tin | 5.77 | g |
| % Moisture | 53.09 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 77.98 | 77.98 |
| Sample Weight (Oven Dried) | | | 36.6 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 1.06 |
| Sample <#10 | | | 35.5 |
| % Passing #10 | | | 45.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.48 | 447.99 | 0.51 | g | 98.6 | Gravel | |
| #4 | 4750 | 488.18 | 488.39 | 0.21 | g | 98.0 | Gravel | |
| #10 | 2000 | 462.90 | 463.24 | 0.34 | g | 97.1 | Sand | Coarse |
| #20 | 850 | 390.82 | 391.02 | 0.20 | g | 96.6 | Sand | Medium |
| #40 | 425 | 355.50 | 355.75 | 0.25 | g | 95.9 | Sand | Medium |
| #60 | 250 | 323.26 | 323.80 | 0.54 | g | 94.4 | Sand | Fine |
| #80 | 180 | 313.16 | 313.99 | 0.83 | g | 92.1 | Sand | Fine |
| #100 | 150 | 329.63 | 330.14 | 0.51 | g | 90.7 | Sand | Fine |
| #200 | 75 | 321.03 | 324.30 | 3.27 | g | 81.8 | Sand | Fine |
| | | | | 0.00 | g | 81.8 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 36.6 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0160 | 22.0 | 32.7 | 56.7 | Silt | |
| 5 | 5 | 1.0135 | 22.0 | 21.2 | 45.7 | Silt | |
| 15 | 15 | 1.0105 | 22.0 | 12.6 | 32.5 | Silt | |
| 30 | 29 | 1.0085 | 22.0 | 9.3 | 23.8 | Silt | |
| 60 | 58 | 1.0080 | 22.0 | 6.6 | 21.6 | Silt | |
| 250 | 250 | 1.0060 | 21.0 | 3.3 | 12.4 | Clay | |
| 1440 | 1434 | 1.0050 | 20.5 | 1.4 | 7.86 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | CH-4 |
| Lab Sample ID | 200-2983-A-4 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/10/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.93 | g |
| Wet Sample + Tin | 10.64 | g |
| Dry Sample + Tin | 6.13 | g |
| % Moisture | 46.45 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 92.60 | 92.6 |
| Sample Weight (Oven Dried) | | | 49.6 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.05 |
| Sample <#10 | | | 49.6 |
| % Passing #10 | | | 53.6 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 462.95 | 0.05 | g | 99.9 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.94 | 0.12 | g | 99.7 | Sand | Medium |
| #40 | 425 | 355.50 | 355.61 | 0.11 | g | 99.5 | Sand | Medium |
| #60 | 250 | 323.26 | 323.47 | 0.21 | g | 99.1 | Sand | Fine |
| #80 | 180 | 313.16 | 313.50 | 0.34 | g | 98.4 | Sand | Fine |
| #100 | 150 | 329.63 | 329.87 | 0.24 | g | 97.9 | Sand | Fine |
| #200 | 75 | 321.03 | 323.39 | 2.36 | g | 93.1 | Sand | Fine |
| | | | | 0.00 | g | 93.1 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 49.6 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0260 | 22.0 | 28.9 | 74.2 | Silt | |
| 5 | 5 | 1.0220 | 22.0 | 19.3 | 61.3 | Silt | |
| 15 | 15 | 1.0165 | 22.0 | 11.9 | 43.4 | Silt | |
| 30 | 29 | 1.0140 | 22.0 | 8.8 | 35.3 | Silt | |
| 60 | 63 | 1.0120 | 22.0 | 6.1 | 28.9 | Silt | |
| 250 | 250 | 1.0090 | 21.0 | 3.2 | 18.9 | Clay | |
| 1440 | 1434 | 1.0070 | 20.5 | 1.4 | 12.3 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | CH-5 | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-5 | End Date | 01/10/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 1.01 | g | Non-soil material: | plant |
| Wet Sample + Tin | 11.49 | g | Shape (> #10): | na |
| Dry Sample + Tin | 6.58 | g | Hardness (> #10): | na |
| % Moisture | 46.85 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 90.70 | 90.7 |
| Sample Weight (Oven Dried) | | | 48.2 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.11 |
| Sample <#10 | | | 48.1 |
| % Passing #10 | | | 53 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.26 | 0.08 | g | 99.8 | Gravel | |
| #10 | 2000 | 462.90 | 462.93 | 0.03 | g | 99.7 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.83 | 0.01 | g | 99.7 | Sand | Medium |
| #40 | 425 | 355.50 | 355.55 | 0.05 | g | 99.6 | Sand | Medium |
| #60 | 250 | 323.26 | 323.48 | 0.22 | g | 99.1 | Sand | Fine |
| #80 | 180 | 313.16 | 313.43 | 0.27 | g | 98.5 | Sand | Fine |
| #100 | 150 | 329.63 | 329.80 | 0.17 | g | 98.1 | Sand | Fine |
| #200 | 75 | 321.03 | 322.94 | 1.91 | g | 94.1 | Sand | Fine |
| | | | | 0.00 | g | 94.1 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 48.2 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0260 | 22.0 | 28.9 | 76.4 | Silt | |
| 5 | 5 | 1.0220 | 22.0 | 19.3 | 63 | Silt | |
| 15 | 15 | 1.0160 | 22.0 | 11.9 | 43 | Silt | |
| 30 | 31 | 1.0130 | 22.0 | 8.6 | 33 | Silt | |
| 60 | 60 | 1.0110 | 22.0 | 6.3 | 26.4 | Silt | |
| 250 | 240 | 1.0080 | 21.0 | 3.3 | 16.1 | Clay | |
| 1440 | 1424 | 1.0065 | 21.0 | 1.4 | 11.1 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | CH-5 DUP | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-6 | End Date | 01/10/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 1.01 | g | Non-soil material: | plant |
| Wet Sample + Tin | 15.32 | g | Shape (> #10): | na |
| Dry Sample + Tin | 8.45 | g | Hardness (> #10): | na |
| % Moisture | 48.01 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 89.06 | 89.06 |
| Sample Weight (Oven Dried) | | | 46.3 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.01 |
| Sample <#10 | | | 46.3 |
| % Passing #10 | | | 52 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 462.91 | 0.01 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.88 | 0.06 | g | 99.9 | Sand | Medium |
| #40 | 425 | 355.50 | 355.57 | 0.07 | g | 99.7 | Sand | Medium |
| #60 | 250 | 323.26 | 323.50 | 0.24 | g | 99.2 | Sand | Fine |
| #80 | 180 | 313.16 | 313.47 | 0.31 | g | 98.5 | Sand | Fine |
| #100 | 150 | 329.63 | 329.77 | 0.14 | g | 98.2 | Sand | Fine |
| #200 | 75 | 321.03 | 322.88 | 1.85 | g | 94.2 | Sand | Fine |
| | | | | 0.00 | g | 94.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 46.3 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0250 | 22.0 | 29.3 | 76 | Silt | |
| 5 | 5 | 1.0210 | 22.0 | 19.5 | 62.1 | Silt | |
| 15 | 15 | 1.0150 | 22.0 | 12.1 | 41.3 | Silt | |
| 30 | 31 | 1.0120 | 22.0 | 8.7 | 30.9 | Silt | |
| 60 | 59 | 1.0105 | 22.0 | 6.4 | 25.7 | Silt | |
| 250 | 234 | 1.0080 | 21.0 | 3.3 | 16.8 | Clay | |
| 1440 | 1418 | 1.0065 | 21.0 | 1.4 | 11.6 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | CH-6A |
| Lab Sample ID | 200-2983-A-7 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/10/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.99 | g |
| Wet Sample + Tin | 12.40 | g |
| Dry Sample + Tin | 6.90 | g |
| % Moisture | 48.20 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 76.66 | 76.66 |
| Sample Weight (Oven Dried) | | | 39.7 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.08 |
| Sample <#10 | | | 39.6 |
| % Passing #10 | | | 51.7 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.20 | 0.02 | g | 99.9 | Gravel | |
| #10 | 2000 | 462.90 | 462.96 | 0.06 | g | 99.7 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.86 | 0.04 | g | 99.6 | Sand | Medium |
| #40 | 425 | 355.50 | 355.56 | 0.06 | g | 99.4 | Sand | Medium |
| #60 | 250 | 323.26 | 323.40 | 0.14 | g | 99.0 | Sand | Fine |
| #80 | 180 | 313.16 | 313.35 | 0.19 | g | 98.5 | Sand | Fine |
| #100 | 150 | 329.63 | 329.71 | 0.08 | g | 98.3 | Sand | Fine |
| #200 | 75 | 321.03 | 322.40 | 1.37 | g | 94.8 | Sand | Fine |
| | | | | 0.00 | g | 94.8 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 39.7 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0225 | 22.0 | 30.3 | 78.5 | Silt | |
| 5 | 5 | 1.0190 | 22.0 | 20 | 64.4 | Silt | |
| 15 | 15 | 1.0140 | 22.0 | 12.2 | 44.2 | Silt | |
| 30 | 31 | 1.0115 | 21.5 | 8.8 | 33.9 | Silt | |
| 60 | 59 | 1.0095 | 21.5 | 6.5 | 25.8 | Silt | |
| 250 | 265 | 1.0075 | 20.5 | 3.2 | 17.4 | Clay | |
| 1440 | 1412 | 1.0060 | 20.5 | 1.4 | 11.3 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | CH-6B | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-8 | End Date | 01/10/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 1.03 | g | Non-soil material: | na |
| Wet Sample + Tin | 12.16 | g | Shape (> #10): | na |
| Dry Sample + Tin | 7.21 | g | Hardness (> #10): | na |
| % Moisture | 44.47 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 93.63 | 93.63 |
| Sample Weight (Oven Dried) | | | 52 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0 |
| Sample <#10 | | | 52 |
| % Passing #10 | | | 55.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | | | 0.00 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.85 | 0.03 | g | 99.9 | Sand | Medium |
| #40 | 425 | 355.50 | 355.55 | 0.05 | g | 99.8 | Sand | Medium |
| #60 | 250 | 323.26 | 323.34 | 0.08 | g | 99.6 | Sand | Fine |
| #80 | 180 | 313.16 | 313.50 | 0.34 | g | 98.9 | Sand | Fine |
| #100 | 150 | 329.63 | 329.96 | 0.33 | g | 98.3 | Sand | Fine |
| #200 | 75 | 321.03 | 324.54 | 3.51 | g | 91.5 | Sand | Fine |
| | | | | 0.00 | g | 91.5 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 52 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0270 | 22.0 | 28.5 | 73.9 | Silt | |
| 5 | 5 | 1.0230 | 22.0 | 19 | 61.5 | Silt | |
| 15 | 15 | 1.0170 | 22.0 | 11.8 | 43 | Silt | |
| 30 | 32 | 1.0130 | 21.5 | 8.5 | 30.5 | Silt | |
| 60 | 60 | 1.0110 | 22.0 | 6.3 | 24.5 | Silt | |
| 250 | 259 | 1.0085 | 20.5 | 3.2 | 16.3 | Clay | |
| 1440 | 1406 | 1.0070 | 20.5 | 1.4 | 11.7 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | CH-7A | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-9 | End Date | 01/10/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 0.98 | g | Non-soil material: | plant |
| Wet Sample + Tin | 12.70 | g | Shape (> #10): | subangular |
| Dry Sample + Tin | 7.90 | g | Hardness (> #10): | brittle |
| % Moisture | 40.96 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 89.11 | 89.11 |
| Sample Weight (Oven Dried) | | | 52.6 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.53 |
| Sample <#10 | | | 52.1 |
| % Passing #10 | | | 58.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.55 | 0.37 | g | 99.3 | Gravel | |
| #10 | 2000 | 462.90 | 463.06 | 0.16 | g | 99.0 | Sand | Coarse |
| #20 | 850 | 390.82 | 391.03 | 0.21 | g | 98.6 | Sand | Medium |
| #40 | 425 | 355.50 | 355.85 | 0.35 | g | 97.9 | Sand | Medium |
| #60 | 250 | 323.26 | 323.82 | 0.56 | g | 96.8 | Sand | Fine |
| #80 | 180 | 313.16 | 313.68 | 0.52 | g | 95.8 | Sand | Fine |
| #100 | 150 | 329.63 | 330.00 | 0.37 | g | 95.1 | Sand | Fine |
| #200 | 75 | 321.03 | 324.36 | 3.33 | g | 88.8 | Sand | Fine |
| | | | | 0.00 | g | 88.8 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 52.6 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0260 | 22.0 | 28.9 | 70 | Silt | |
| 5 | 5 | 1.0220 | 22.0 | 19.3 | 57.8 | Silt | |
| 15 | 15 | 1.0170 | 22.0 | 11.8 | 42.5 | Silt | |
| 30 | 30 | 1.0135 | 21.5 | 8.7 | 31.7 | Silt | |
| 60 | 63 | 1.0110 | 21.5 | 6.2 | 24 | Silt | |
| 250 | 253 | 1.0085 | 20.5 | 3.2 | 16.2 | Clay | |
| 1440 | 1400 | 1.0065 | 20.5 | 1.4 | 10.1 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | CH-7B | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-10 | End Date | 01/10/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 0.98 | g | Non-soil material: | plant |
| Wet Sample + Tin | 19.77 | g | Shape (> #10): | na |
| Dry Sample + Tin | 12.00 | g | Hardness (> #10): | na |
| % Moisture | 41.35 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 92.46 | 92.46 |
| Sample Weight (Oven Dried) | | | 54.2 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.06 |
| Sample <#10 | | | 54.1 |
| % Passing #10 | | | 58.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.20 | 0.02 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 462.94 | 0.04 | g | 99.9 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.85 | 0.03 | g | 99.8 | Sand | Medium |
| #40 | 425 | 355.50 | 355.52 | 0.02 | g | 99.8 | Sand | Medium |
| #60 | 250 | 323.26 | 323.35 | 0.09 | g | 99.6 | Sand | Fine |
| #80 | 180 | 313.16 | 313.31 | 0.15 | g | 99.3 | Sand | Fine |
| #100 | 150 | 329.63 | 329.84 | 0.21 | g | 98.9 | Sand | Fine |
| #200 | 75 | 321.03 | 324.64 | 3.61 | g | 92.2 | Sand | Fine |
| | | | | 0.00 | g | 92.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 54.2 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0270 | 22.0 | 28.5 | 70.9 | Silt | |
| 5 | 5 | 1.0230 | 22.0 | 19 | 59 | Silt | |
| 15 | 15 | 1.0170 | 22.0 | 11.8 | 41.2 | Silt | |
| 30 | 30 | 1.0140 | 22.0 | 8.6 | 32.3 | Silt | |
| 60 | 57 | 1.0105 | 22.0 | 6.5 | 22 | Silt | |
| 250 | 247 | 1.0085 | 21.0 | 3.2 | 15.8 | Clay | |
| 1440 | 1394 | 1.0065 | 20.5 | 1.4 | 9.75 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | CH-8 | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-11 | End Date | 01/10/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 0.97 | g | Non-soil material: | plant |
| Wet Sample + Tin | 14.55 | g | Shape (> #10): | na |
| Dry Sample + Tin | 8.77 | g | Hardness (> #10): | na |
| % Moisture | 42.56 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 87.57 | 87.57 |
| Sample Weight (Oven Dried) | | | 50.3 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.35 |
| Sample <#10 | | | 50 |
| % Passing #10 | | | 57.1 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.38 | 0.20 | g | 99.6 | Gravel | |
| #10 | 2000 | 462.90 | 463.05 | 0.15 | g | 99.3 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.91 | 0.09 | g | 99.1 | Sand | Medium |
| #40 | 425 | 355.50 | 355.62 | 0.12 | g | 98.9 | Sand | Medium |
| #60 | 250 | 323.26 | 323.39 | 0.13 | g | 98.6 | Sand | Fine |
| #80 | 180 | 313.16 | 313.35 | 0.19 | g | 98.2 | Sand | Fine |
| #100 | 150 | 329.63 | 329.85 | 0.22 | g | 97.8 | Sand | Fine |
| #200 | 75 | 321.03 | 325.51 | 4.48 | g | 88.9 | Sand | Fine |
| | | | | 0.00 | g | 88.9 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 50.3 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0250 | 22.0 | 29.3 | 70 | Silt | |
| 5 | 5 | 1.0210 | 22.0 | 19.5 | 57.2 | Silt | |
| 15 | 15 | 1.0150 | 22.0 | 12.1 | 38 | Silt | |
| 30 | 30 | 1.0120 | 22.0 | 8.8 | 28.5 | Silt | |
| 60 | 63 | 1.0100 | 21.5 | 6.2 | 22 | Silt | |
| 250 | 241 | 1.0080 | 21.0 | 3.3 | 15.4 | Clay | |
| 1440 | 1388 | 1.0060 | 20.5 | 1.4 | 8.91 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | DMU 1 (COMPOSITE) |
| Lab Sample ID | 200-2983-A-12 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/10/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 3.99 | g |
| Wet Sample + Tin | 62.90 | g |
| Dry Sample + Tin | 28.90 | g |
| % Moisture | 57.72 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 105.25 | 105.25 |
| Sample Weight (Oven Dried) | | | 44.5 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.75 |
| Sample <#10 | | | 43.8 |
| % Passing #10 | | | 41.6 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741402 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0035 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0030 |
| Hydrometer Cal Slope | -8.33333E-05 |
| Hydrometer Cal Intercept | 1.004916667 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.29 | 0.11 | g | 99.8 | Gravel | |
| #10 | 2000 | 462.90 | 463.54 | 0.64 | g | 98.4 | Sand | Coarse |
| #20 | 850 | 390.82 | 391.04 | 0.22 | g | 97.9 | Sand | Medium |
| #40 | 425 | 355.50 | 355.81 | 0.31 | g | 97.2 | Sand | Medium |
| #60 | 250 | 323.26 | 323.89 | 0.63 | g | 95.8 | Sand | Fine |
| #80 | 180 | 313.16 | 314.19 | 1.03 | g | 93.5 | Sand | Fine |
| #100 | 150 | 329.63 | 330.22 | 0.59 | g | 92.2 | Sand | Fine |
| #200 | 75 | 321.03 | 325.43 | 4.40 | g | 82.3 | Sand | Fine |
| | | | | 0.00 | g | 82.3 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 44.5 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0195 | 22.0 | 31.4 | 59.2 | Silt | |
| 5 | 5 | 1.0160 | 22.0 | 20.7 | 46.6 | Silt | |
| 15 | 15 | 1.0120 | 22.0 | 12.5 | 32.2 | Silt | |
| 30 | 31 | 1.0100 | 22.0 | 8.8 | 25 | Silt | |
| 60 | 57 | 1.0090 | 21.5 | 6.6 | 21.2 | Silt | |
| 250 | 235 | 1.0075 | 20.5 | 3.3 | 15.5 | Clay | |
| 1440 | 1382 | 1.0055 | 20.5 | 1.4 | 8.27 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | DMU 2 (COMPOSITE) |
| Lab Sample ID | 200-2983-A-13 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 3.99 | g |
| Wet Sample + Tin | 86.42 | g |
| Dry Sample + Tin | 49.00 | g |
| % Moisture | 45.40 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |

| | |
|---|---|
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 86.87 | 86.87 |
| Sample Weight (Oven Dried) | | | 47.4 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.04 |
| Sample <#10 | | | 47.4 |
| % Passing #10 | | | 54.6 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 462.94 | 0.04 | g | 99.9 | Sand | Coarse |
| #20 | 850 | 390.82 | 390.95 | 0.13 | g | 99.6 | Sand | Medium |
| #40 | 425 | 355.50 | 355.58 | 0.08 | g | 99.4 | Sand | Medium |
| #60 | 250 | 323.26 | 323.45 | 0.19 | g | 99.0 | Sand | Fine |
| #80 | 180 | 313.16 | 313.45 | 0.29 | g | 98.4 | Sand | Fine |
| #100 | 150 | 329.63 | 329.84 | 0.21 | g | 98.0 | Sand | Fine |
| #200 | 75 | 321.03 | 323.64 | 2.61 | g | 92.5 | Sand | Fine |
| | | | | 0.00 | g | 92.5 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 47.4 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0255 | 21.0 | 29.5 | 78.5 | Silt | |
| 5 | 5 | 1.0215 | 21.0 | 19.6 | 64.9 | Silt | |
| 15 | 15 | 1.0160 | 21.0 | 12.1 | 46.3 | Silt | |
| 30 | 30 | 1.0140 | 21.0 | 8.7 | 39.5 | Silt | |
| 60 | 59 | 1.0120 | 21.0 | 6.4 | 32.8 | Silt | |
| 250 | 256 | 1.0090 | 20.5 | 3.2 | 22.3 | Clay | |
| 1440 | 1440 | 1.0075 | 20.0 | 1.4 | 16.9 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | PB-1 |
| Lab Sample ID | 200-2983-A-14 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.99 | g |
| Wet Sample + Tin | 14.11 | g |
| Dry Sample + Tin | 11.95 | g |
| % Moisture | 16.46 | % |

| | |
|---|---|
| Non-soil material: | shell |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 100.45 | 100.45 |
| Sample Weight (Oven Dried) | | | 83.9 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 4.29 |
| Sample <#10 | | | 79.6 |
| % Passing #10 | | | 79.2 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.43 | 0.25 | g | 99.7 | Gravel | |
| #10 | 2000 | 462.90 | 466.94 | 4.04 | g | 94.9 | Sand | Coarse |
| #20 | 850 | 390.82 | 396.10 | 5.28 | g | 88.6 | Sand | Medium |
| #40 | 425 | 355.50 | 368.25 | 12.75 | g | 73.4 | Sand | Medium |
| #60 | 250 | 323.26 | 347.48 | 24.22 | g | 44.5 | Sand | Fine |
| #80 | 180 | 313.16 | 331.89 | 18.73 | g | 22.2 | Sand | Fine |
| #100 | 150 | 329.63 | 336.12 | 6.49 | g | 14.5 | Sand | Fine |
| #200 | 75 | 321.03 | 331.29 | 10.26 | g | 2.3 | Sand | Fine |
| | | | | 0.00 | g | 2.3 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 83.9 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0030 | 21.0 | 37.5 | 1.28 | Silt | |
| 5 | 5 | 1.0030 | 21.0 | 23.7 | 1.28 | Silt | |
| 15 | 15 | 1.0030 | 21.0 | 13.7 | 1.28 | Silt | |
| 30 | 30 | 1.0030 | 21.0 | 9.7 | 1.28 | Silt | |
| 60 | 58 | 1.0030 | 20.5 | 7 | 1.12 | Silt | |
| 250 | 256 | 1.0030 | 20.5 | 3.3 | 1.12 | Clay | |
| 1440 | 1440 | 1.0030 | 20.5 | 1.4 | 1.12 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | | | |
|---|---|---|---|---|---|
| Client | | | | Date Received | 12/15/10 |
| Client Sample ID | PB-2 | | | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-15 | | | End Date | 01/11/11 |
| **Dry Weight Determination** | | | | Non-soil material: | shelll |
| Tin Weight | 1.03 | g | | Shape (> #10): | na |
| Wet Sample + Tin | 16.30 | g | | Hardness (> #10): | na |
| Dry Sample + Tin | 13.55 | g | | | |
| % Moisture | 18.01 | % | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 110.22 | 110.22 |
| Sample Weight (Oven Dried) | | | 90.4 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 1.44 |
| Sample <#10 | | | 89 |
| % Passing #10 | | | 80.7 |

| **Hydrometer Data** | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.69 | 0.51 | g | 99.4 | Gravel | |
| #10 | 2000 | 462.90 | 463.83 | 0.93 | g | 98.4 | Sand | Coarse |
| #20 | 850 | 390.82 | 393.57 | 2.75 | g | 95.4 | Sand | Medium |
| #40 | 425 | 355.50 | 363.51 | 8.01 | g | 86.5 | Sand | Medium |
| #60 | 250 | 323.26 | 345.38 | 22.12 | g | 62.0 | Sand | Fine |
| #80 | 180 | 313.16 | 339.63 | 26.47 | g | 32.7 | Sand | Fine |
| #100 | 150 | 329.63 | 340.07 | 10.44 | g | 21.2 | Sand | Fine |
| #200 | 75 | 321.03 | 338.77 | 17.74 | g | 1.6 | Sand | Fine |
| | | | | 0.00 | g | 1.6 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 90.4 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0030 | 21.5 | 37.3 | 1.33 | Silt | |
| 5 | 5 | 1.0030 | 21.5 | 23.6 | 1.33 | Silt | |
| 15 | 15 | 1.0030 | 21.5 | 13.6 | 1.33 | Silt | |
| 30 | 29 | 1.0030 | 21.5 | 9.8 | 1.33 | Silt | |
| 60 | 58 | 1.0030 | 21.0 | 7 | 1.18 | Silt | |
| 250 | 250 | 1.0030 | 20.5 | 3.4 | 1.04 | Clay | |
| 1440 | 1434 | 1.0030 | 20.5 | 1.4 | 1.04 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | PB-3 |
| Lab Sample ID | 200-2983-A-16 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.98 | g |
| Wet Sample + Tin | 13.13 | g |
| Dry Sample + Tin | 11.01 | g |
| % Moisture | 17.45 | % |

| | |
|---|---|
| Non-soil material: | shell |
| Shape (> #10): | rounded |
| Hardness (> #10): | hard |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 109.07 | 109.07 |
| Sample Weight (Oven Dried) | | | 90 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 3.29 |
| Sample <#10 | | | 86.7 |
| % Passing #10 | | | 79.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.96 | 0.78 | g | 99.1 | Gravel | |
| #10 | 2000 | 462.90 | 465.41 | 2.51 | g | 96.3 | Sand | Coarse |
| #20 | 850 | 390.82 | 394.92 | 4.10 | g | 91.7 | Sand | Medium |
| #40 | 425 | 355.50 | 362.94 | 7.44 | g | 83.4 | Sand | Medium |
| #60 | 250 | 323.26 | 340.39 | 17.13 | g | 64.4 | Sand | Fine |
| #80 | 180 | 313.16 | 334.10 | 20.94 | g | 41.1 | Sand | Fine |
| #100 | 150 | 329.63 | 340.07 | 10.44 | g | 29.5 | Sand | Fine |
| #200 | 75 | 321.03 | 345.44 | 24.41 | g | 2.4 | Sand | Fine |
| | | | | 0.00 | g | 2.4 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 90 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0030 | 21.0 | 37.5 | 1.19 | Silt | |
| 5 | 5 | 1.0030 | 21.0 | 23.7 | 1.19 | Silt | |
| 15 | 15 | 1.0030 | 21.0 | 13.7 | 1.19 | Silt | |
| 30 | 29 | 1.0030 | 21.0 | 9.9 | 1.19 | Silt | |
| 60 | 63 | 1.0030 | 20.5 | 6.7 | 1.04 | Silt | |
| 250 | 250 | 1.0030 | 20.5 | 3.4 | 1.04 | Clay | |
| 1440 | 1434 | 1.0030 | 20.5 | 1.4 | 1.04 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | PB-4 |
| Lab Sample ID | 200-2983-A-17 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.98 | g |
| Wet Sample + Tin | 11.84 | g |
| Dry Sample + Tin | 9.74 | g |
| % Moisture | 19.34 | % |

| | |
|---|---|
| Non-soil material: | shell |
| Shape (> #10): | subrounded |
| Hardness (> #10): | hard |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 108.37 | 108.37 |
| Sample Weight (Oven Dried) | | | 87.4 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.39 |
| Sample <#10 | | | 87 |
| % Passing #10 | | | 80.3 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 463.29 | 0.39 | g | 99.6 | Sand | Coarse |
| #20 | 850 | 390.82 | 391.32 | 0.50 | g | 99.0 | Sand | Medium |
| #40 | 425 | 355.50 | 356.84 | 1.34 | g | 97.5 | Sand | Medium |
| #60 | 250 | 323.26 | 329.26 | 6.00 | g | 90.6 | Sand | Fine |
| #80 | 180 | 313.16 | 329.03 | 15.87 | g | 72.4 | Sand | Fine |
| #100 | 150 | 329.63 | 342.56 | 12.93 | g | 57.6 | Sand | Fine |
| #200 | 75 | 321.03 | 366.72 | 45.69 | g | 5.3 | Sand | Fine |
| | | | | 0.00 | g | 5.3 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 87.4 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0040 | 21.0 | 37.2 | 3.06 | Silt | |
| 5 | 5 | 1.0040 | 21.0 | 23.5 | 3.06 | Silt | |
| 15 | 15 | 1.0035 | 21.0 | 13.6 | 2.14 | Silt | |
| 30 | 31 | 1.0030 | 21.0 | 9.5 | 1.23 | Silt | |
| 60 | 60 | 1.0030 | 20.5 | 6.9 | 1.07 | Silt | |
| 250 | 240 | 1.0030 | 20.0 | 3.5 | 0.919 | Clay | |
| 1440 | 1424 | 1.0030 | 20.0 | 1.4 | 0.919 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | PB COMPOSITE |
| Lab Sample ID | 200-2983-A-18 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.99 | g |
| Wet Sample + Tin | 11.40 | g |
| Dry Sample + Tin | 9.52 | g |
| % Moisture | 18.06 | % |

| | |
|---|---|
| Non-soil material: | shell |
| Shape (> #10): | rounded |
| Hardness (> #10): | hard |

| | |
|---|---|
| Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 107.94 | 107.94 |
| Sample Weight (Oven Dried) | | | 88.4 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 2.73 |
| Sample <#10 | | | 85.7 |
| % Passing #10 | | | 79.4 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.41 | 0.23 | g | 99.7 | Gravel | |
| #10 | 2000 | 462.90 | 465.40 | 2.50 | g | 96.9 | Sand | Coarse |
| #20 | 850 | 390.82 | 394.14 | 3.32 | g | 93.1 | Sand | Medium |
| #40 | 425 | 355.50 | 361.57 | 6.07 | g | 86.2 | Sand | Medium |
| #60 | 250 | 323.26 | 337.18 | 13.92 | g | 70.5 | Sand | Fine |
| #80 | 180 | 313.16 | 331.29 | 18.13 | g | 50.0 | Sand | Fine |
| #100 | 150 | 329.63 | 339.94 | 10.31 | g | 38.3 | Sand | Fine |
| #200 | 75 | 321.03 | 353.67 | 32.64 | g | 1.4 | Sand | Fine |
| | | | | 0.00 | g | 1.4 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 88.4 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0030 | 21.0 | 37.5 | 1.21 | Silt | |
| 5 | 5 | 1.0030 | 21.0 | 23.7 | 1.21 | Silt | |
| 15 | 15 | 1.0030 | 21.0 | 13.7 | 1.21 | Silt | |
| 30 | 31 | 1.0030 | 21.0 | 9.5 | 1.21 | Silt | |
| 60 | 59 | 1.0030 | 20.5 | 7 | 1.06 | Silt | |
| 250 | 234 | 1.0030 | 20.0 | 3.5 | 0.908 | Clay | |
| 1440 | 1418 | 1.0030 | 20.0 | 1.4 | 0.908 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | BS-1 |
| Lab Sample ID | 200-2983-A-19 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.02 | g |
| Wet Sample + Tin | 13.84 | g |
| Dry Sample + Tin | 10.64 | g |
| % Moisture | 24.96 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | subrounded |
| Hardness (> #10): | hard |
| Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 66.96 | 66.96 |
| Sample Weight (Oven Dried) | | | 50.2 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.17 |
| Sample <#10 | | | 50 |
| % Passing #10 | | | 74.7 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 463.07 | 0.17 | g | 99.7 | Sand | Coarse |
| #20 | 850 | 390.82 | 392.10 | 1.28 | g | 97.2 | Sand | Medium |
| #40 | 425 | 355.50 | 356.72 | 1.22 | g | 94.8 | Sand | Medium |
| #60 | 250 | 323.26 | 323.97 | 0.71 | g | 93.4 | Sand | Fine |
| #80 | 180 | 313.16 | 313.86 | 0.70 | g | 92.0 | Sand | Fine |
| #100 | 150 | 329.63 | 330.10 | 0.47 | g | 91.1 | Sand | Fine |
| #200 | 75 | 321.03 | 322.97 | 1.94 | g | 87.2 | Sand | Fine |
| | | | | 0.00 | g | 87.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 50.2 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0250 | 21.0 | 29.7 | 72.5 | Silt | |
| 5 | 5 | 1.0230 | 21.0 | 19.3 | 66.1 | Silt | |
| 15 | 15 | 1.0190 | 21.0 | 11.7 | 53.3 | Silt | |
| 30 | 31 | 1.0170 | 21.0 | 8.3 | 46.9 | Silt | |
| 60 | 59 | 1.0145 | 20.5 | 6.2 | 38.7 | Silt | |
| 250 | 265 | 1.0110 | 20.5 | 3 | 27.5 | Clay | |
| 1440 | 1412 | 1.0080 | 20.5 | 1.4 | 17.9 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | BS-2 | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-20 | End Date | 01/11/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 1.00 | g | Non-soil material: | plant |
| Wet Sample + Tin | 13.56 | g | Shape (> #10): | na |
| Dry Sample + Tin | 10.92 | g | Hardness (> #10): | na |
| % Moisture | 21.02 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 69.69 | 69.69 |
| Sample Weight (Oven Dried) | | | 55 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.02 |
| Sample <#10 | | | 55 |
| % Passing #10 | | | 78.9 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 462.92 | 0.02 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 390.82 | 392.25 | 1.43 | g | 97.4 | Sand | Medium |
| #40 | 425 | 355.50 | 357.36 | 1.86 | g | 94.0 | Sand | Medium |
| #60 | 250 | 323.26 | 324.43 | 1.17 | g | 91.9 | Sand | Fine |
| #80 | 180 | 313.16 | 314.10 | 0.94 | g | 90.2 | Sand | Fine |
| #100 | 150 | 329.63 | 330.10 | 0.47 | g | 89.3 | Sand | Fine |
| #200 | 75 | 321.03 | 324.19 | 3.16 | g | 83.6 | Sand | Fine |
| | | | | 0.00 | g | 83.6 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 55 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0250 | 21.0 | 29.7 | 66.2 | Silt | |
| 5 | 5 | 1.0230 | 21.0 | 19.3 | 60.3 | Silt | |
| 15 | 15 | 1.0200 | 21.0 | 11.5 | 51.6 | Silt | |
| 30 | 32 | 1.0175 | 21.0 | 8.1 | 44.3 | Silt | |
| 60 | 60 | 1.0150 | 21.0 | 6.1 | 37 | Silt | |
| 250 | 259 | 1.0120 | 20.5 | 3.1 | 28 | Clay | |
| 1440 | 1406 | 1.0090 | 20.0 | 1.4 | 19 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | BS-3 |
| Lab Sample ID | 200-2983-A-21 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.00 | g |
| Wet Sample + Tin | 8.82 | g |
| Dry Sample + Tin | 6.66 | g |
| % Moisture | 27.62 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | na |
| Hardness (> #10): | na |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 42.38 | 42.38 |
| Sample Weight (Oven Dried) | | | 30.7 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.52 |
| Sample <#10 | | | 30.2 |
| % Passing #10 | | | 71.3 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 488.48 | 0.30 | g | 99.0 | Gravel | |
| #10 | 2000 | 462.90 | 463.12 | 0.22 | g | 98.3 | Sand | Coarse |
| #20 | 850 | 390.82 | 392.10 | 1.28 | g | 94.1 | Sand | Medium |
| #40 | 425 | 355.50 | 357.90 | 2.40 | g | 86.3 | Sand | Medium |
| #60 | 250 | 323.26 | 325.11 | 1.85 | g | 80.3 | Sand | Fine |
| #80 | 180 | 313.16 | 314.22 | 1.06 | g | 76.8 | Sand | Fine |
| #100 | 150 | 329.63 | 330.03 | 0.40 | g | 75.5 | Sand | Fine |
| #200 | 75 | 321.03 | 322.96 | 1.93 | g | 69.2 | Sand | Fine |
| | | | | 0.00 | g | 69.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 30.7 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0105 | 21.0 | 35.1 | 42.7 | Silt | |
| 5 | 5 | 1.0100 | 21.0 | 22.3 | 40.1 | Silt | |
| 15 | 15 | 1.0090 | 21.0 | 13 | 34.9 | Silt | |
| 30 | 30 | 1.0075 | 21.0 | 9.3 | 27 | Silt | |
| 60 | 63 | 1.0065 | 21.0 | 6.5 | 21.8 | Silt | |
| 250 | 253 | 1.0050 | 20.5 | 3.3 | 13.5 | Clay | |
| 1440 | 1400 | 1.0045 | 20.0 | 1.4 | 10.5 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | BS 4 |
| Lab Sample ID | 200-2983-A-22 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 1.01 | g |
| Wet Sample + Tin | 10.45 | g |
| Dry Sample + Tin | 7.93 | g |
| % Moisture | 26.69 | % |

| | |
|---|---|
| Non-soil material: | na |
| Shape (> #10): | subangular |
| Hardness (> #10): | brittle |
| Default Soil Gravity | 2.6500 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 52.34 | 52.34 |
| Sample Weight (Oven Dried) | | | 38.4 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 10.6 |
| Sample <#10 | | | 27.8 |
| % Passing #10 | | | 53.1 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | 488.18 | 492.33 | 4.15 | g | 89.2 | Gravel | |
| #10 | 2000 | 462.90 | 469.31 | 6.41 | g | 72.5 | Sand | Coarse |
| #20 | 850 | 390.82 | 393.96 | 3.14 | g | 64.3 | Sand | Medium |
| #40 | 425 | 355.50 | 357.16 | 1.66 | g | 60.0 | Sand | Medium |
| #60 | 250 | 323.26 | 324.50 | 1.24 | g | 56.8 | Sand | Fine |
| #80 | 180 | 313.16 | 314.02 | 0.86 | g | 54.6 | Sand | Fine |
| #100 | 150 | 329.63 | 329.99 | 0.36 | g | 53.7 | Sand | Fine |
| #200 | 75 | 321.03 | 322.88 | 1.85 | g | 48.9 | Sand | Fine |
| | | | | 0.00 | g | 48.9 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 38.4 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0110 | 21.0 | 34.9 | 36.2 | Silt | |
| 5 | 5 | 1.0105 | 21.0 | 22.2 | 34.2 | Silt | |
| 15 | 15 | 1.0095 | 21.0 | 12.9 | 30 | Silt | |
| 30 | 30 | 1.0085 | 21.0 | 9.2 | 25.8 | Silt | |
| 60 | 57 | 1.0080 | 21.0 | 6.7 | 23.7 | Silt | |
| 250 | 247 | 1.0065 | 20.5 | 3.3 | 17.1 | Clay | |
| 1440 | 1394 | 1.0050 | 20.0 | 1.4 | 10.5 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | BS COMPOSITE |
| Lab Sample ID | 200-2983-A-23 |

| | |
|---|---|
| Date Received | 12/15/10 |
| Start Date | 01/05/11 |
| End Date | 01/11/11 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.99 | g |
| Wet Sample + Tin | 10.90 | g |
| Dry Sample + Tin | 8.25 | g |
| % Moisture | 26.74 | % |

| | |
|---|---|
| Non-soil material: | plant |
| Shape (> #10): | subangular |
| Hardness (> #10): | brittle |
| Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 63.43 | 63.43 |
| Sample Weight (Oven Dried) | | | 46.5 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 3.79 |
| Sample <#10 | | | 42.7 |
| % Passing #10 | | | 67.3 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 447.49 | 449.90 | 2.41 | g | 94.8 | Gravel | |
| #4 | 4750 | 488.18 | 488.48 | 0.30 | g | 94.2 | Gravel | |
| #10 | 2000 | 462.90 | 463.98 | 1.08 | g | 91.9 | Sand | Coarse |
| #20 | 850 | 390.82 | 392.62 | 1.80 | g | 88.0 | Sand | Medium |
| #40 | 425 | 355.50 | 358.50 | 3.00 | g | 81.5 | Sand | Medium |
| #60 | 250 | 323.26 | 324.84 | 1.58 | g | 78.1 | Sand | Fine |
| #80 | 180 | 313.16 | 314.07 | 0.91 | g | 76.1 | Sand | Fine |
| #100 | 150 | 329.63 | 330.03 | 0.40 | g | 75.2 | Sand | Fine |
| #200 | 75 | 321.03 | 323.13 | 2.10 | g | 70.7 | Sand | Fine |
| | | | | 0.00 | g | 70.7 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 46.5 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0175 | 21.0 | 32.6 | 52.4 | Silt | |
| 5 | 5 | 1.0160 | 21.0 | 20.9 | 47.2 | Silt | |
| 15 | 15 | 1.0140 | 21.0 | 12.4 | 40.3 | Silt | |
| 30 | 30 | 1.0120 | 21.0 | 8.9 | 33.4 | Silt | |
| 60 | 63 | 1.0105 | 21.0 | 6.2 | 28.2 | Silt | |
| 250 | 241 | 1.0080 | 20.0 | 3.3 | 19 | Clay | |
| 1440 | 1388 | 1.0060 | 20.0 | 1.4 | 12.1 | Clay | |

# TestAmerica Burlington

**Sediment Grain Size - D422**

| | | | |
|---|---|---|---|
| Client | | Date Received | 12/15/10 |
| Client Sample ID | DMU SIEVED COMPOSITE | Start Date | 01/05/11 |
| Lab Sample ID | 200-2983-A-24 | End Date | 01/11/11 |

**Dry Weight Determination**

| | | | | |
|---|---|---|---|---|
| Tin Weight | 1.01 | g | Non-soil material: | plant |
| Wet Sample + Tin | 29.02 | g | Shape (> #10): | na |
| Dry Sample + Tin | 14.87 | g | Hardness (> #10): | na |
| % Moisture | 50.52 | % | | |
| | | | Default Soil Gravity | 2.6500 |

| **Sample Weights** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | | 121.59 | 121.59 |
| Sample Weight (Oven Dried) | | | 60.2 |

| **Sample Split (oven dried)** | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 0.02 |
| Sample <#10 | | | 60.2 |
| % Passing #10 | | | 49.5 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 741409 |
| Calib. Date (mm/dd/yyyy) | 12/21/2010 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0030 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0020 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.005833333 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | | | 0.00 | g | 100.0 | Gravel | |
| #4 | 4750 | | | 0.00 | g | 100.0 | Gravel | |
| #10 | 2000 | 462.90 | 462.92 | 0.02 | g | 100.0 | Sand | Coarse |
| #20 | 850 | 390.82 | 391.06 | 0.24 | g | 99.6 | Sand | Medium |
| #40 | 425 | 355.50 | 355.99 | 0.49 | g | 98.8 | Sand | Medium |
| #60 | 250 | 323.26 | 324.32 | 1.06 | g | 97.0 | Sand | Fine |
| #80 | 180 | 313.16 | 314.85 | 1.69 | g | 94.2 | Sand | Fine |
| #100 | 150 | 329.63 | 330.52 | 0.89 | g | 92.7 | Sand | Fine |
| #200 | 75 | 321.03 | 327.36 | 6.33 | g | 82.2 | Sand | Fine |
| | | | | 0.00 | g | 82.2 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 60.2 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0240 | 21.0 | 30.1 | 57.8 | Silt | |
| 5 | 5 | 1.0190 | 21.0 | 20.2 | 44.5 | Silt | |
| 15 | 15 | 1.0130 | 21.0 | 12.5 | 28.5 | Silt | |
| 30 | 31 | 1.0105 | 21.0 | 8.9 | 21.8 | Silt | |
| 60 | 57 | 1.0090 | 20.5 | 6.7 | 17.6 | Silt | |
| 250 | 235 | 1.0070 | 20.5 | 3.4 | 12.2 | Clay | |
| 1440 | 1382 | 1.0060 | 20.0 | 1.4 | 9.34 | Clay | |

## DATA REPORTING QUALIFIERS

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | B | Compound was found in the blank and sample. |
| | U | Indicates the analyte was analyzed for but not detected. |
| | * | Recovery or RPD exceeds control limits |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | H | Sample was prepped or analyzed beyond the specified holding time |
| | X | Surrogate is outside control limits |
| General Chemistry | | |
| | B | Compound was found in the blank and sample. |
| | U | Indicates the analyte was analyzed for but not detected. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | H | Sample was prepped or analyzed beyond the specified holding time |
| Geotechnical | | |
| | H | Sample was prepped or analyzed beyond the specified holding time |

# QUALITY CONTROL RESULTS

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Prep Batch: 200-11275** | | | | | |
| 200-2983-1 | CH-1 | T | Sediment | 5035 | |
| 200-2983-2 | CH-2 | T | Sediment | 5035 | |
| 200-2983-3 | CH-3 | T | Sediment | 5035 | |
| 200-2983-5 | CH-5 | T | Sediment | 5035 | |
| 200-2983-6 | CH-5 DUP | T | Sediment | 5035 | |
| 200-2983-7 | CH-6A | T | Sediment | 5035 | |
| 200-2983-8 | CH-6B | T | Sediment | 5035 | |
| 200-2983-9 | CH-7A | T | Sediment | 5035 | |
| 200-2983-10 | CH-7B | T | Sediment | 5035 | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | 5035 | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | 5035 | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | 5035 | |
| **Prep Batch: 200-11277** | | | | | |
| 200-2983-4 | CH-4 | T | Sediment | 5035 | |
| 200-2983-4RE | CH-4 | T | Sediment | 5035 | |
| 200-2983-11 | CH-8 | T | Sediment | 5035 | |
| 200-2983-11RE | CH-8 | T | Sediment | 5035 | |
| 200-2983-14 | PB-1 | T | Sediment | 5035 | |
| 200-2983-15 | PB-2 | T | Sediment | 5035 | |
| 200-2983-16 | PB-3 | T | Sediment | 5035 | |
| 200-2983-17 | PB-4 | T | Sediment | 5035 | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | 5035 | |
| 200-2983-19 | BS-1 | T | Sediment | 5035 | |
| 200-2983-19RE | BS-1 | T | Sediment | 5035 | |
| 200-2983-20 | BS-2 | T | Sediment | 5035 | |
| 200-2983-20RE | BS-2 | T | Sediment | 5035 | |
| 200-2983-21 | BS-3 | T | Sediment | 5035 | |
| 200-2983-21RE | BS-3 | T | Sediment | 5035 | |
| 200-2983-22 | BS 4 | T | Sediment | 5035 | |
| 200-2983-22RE | BS 4 | T | Sediment | 5035 | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | 5035 | |
| 200-2983-23RE | BS COMPOSITE | T | Sediment | 5035 | |
| **Prep Batch: 200-11425** | | | | | |
| LCS 200-11425/6-A | Lab Control Sample | T | Sediment | 5035 | |
| MB 200-11425/1-A | Method Blank | T | Sediment | 5035 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:200-11512** | | | | | |
| LCS 200-11425/6-A | Lab Control Sample | T | Sediment | 8260B | 200-11425 |
| MB 200-11425/1-A | Method Blank | T | Sediment | 8260B | 200-11425 |
| 200-2983-1 | CH-1 | T | Sediment | 8260B | 200-11275 |
| 200-2983-2 | CH-2 | T | Sediment | 8260B | 200-11275 |
| 200-2983-3 | CH-3 | T | Sediment | 8260B | 200-11275 |
| 200-2983-5 | CH-5 | T | Sediment | 8260B | 200-11275 |
| 200-2983-6 | CH-5 DUP | T | Sediment | 8260B | 200-11275 |
| 200-2983-7 | CH-6A | T | Sediment | 8260B | 200-11275 |
| 200-2983-8 | CH-6B | T | Sediment | 8260B | 200-11275 |
| 200-2983-9 | CH-7A | T | Sediment | 8260B | 200-11275 |
| 200-2983-10 | CH-7B | T | Sediment | 8260B | 200-11275 |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | 8260B | 200-11275 |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | 8260B | 200-11275 |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | 8260B | 200-11275 |
| **Analysis Batch:200-11567** | | | | | |
| LCS 200-11567/4 | Lab Control Sample | T | Sediment | 8260B | |
| MB 200-11567/6 | Method Blank | T | Sediment | 8260B | |
| 200-2983-4 | CH-4 | T | Sediment | 8260B | 200-11277 |
| 200-2983-4RE | CH-4 | T | Sediment | 8260B | 200-11277 |
| 200-2983-11 | CH-8 | T | Sediment | 8260B | 200-11277 |
| 200-2983-15 | PB-2 | T | Sediment | 8260B | 200-11277 |
| 200-2983-16 | PB-3 | T | Sediment | 8260B | 200-11277 |
| 200-2983-17 | PB-4 | T | Sediment | 8260B | 200-11277 |
| 200-2983-18 | PB COMPOSITE | T | Sediment | 8260B | 200-11277 |
| 200-2983-19 | BS-1 | T | Sediment | 8260B | 200-11277 |
| 200-2983-19RE | BS-1 | T | Sediment | 8260B | 200-11277 |
| 200-2983-20 | BS-2 | T | Sediment | 8260B | 200-11277 |
| 200-2983-20RE | BS-2 | T | Sediment | 8260B | 200-11277 |
| 200-2983-21 | BS-3 | T | Sediment | 8260B | 200-11277 |
| 200-2983-21RE | BS-3 | T | Sediment | 8260B | 200-11277 |
| 200-2983-22 | BS 4 | T | Sediment | 8260B | 200-11277 |
| 200-2983-22RE | BS 4 | T | Sediment | 8260B | 200-11277 |
| 200-2983-23 | BS COMPOSITE | T | Sediment | 8260B | 200-11277 |
| **Analysis Batch:200-11588** | | | | | |
| LCS 200-11588/5 | Lab Control Sample | T | Sediment | 8260B | |
| MB 200-11588/7 | Method Blank | T | Sediment | 8260B | |
| 200-2983-11RE | CH-8 | T | Sediment | 8260B | 200-11277 |
| 200-2983-14 | PB-1 | T | Sediment | 8260B | 200-11277 |
| 200-2983-23RE | BS COMPOSITE | T | Sediment | 8260B | 200-11277 |

**Report Basis**
T = Total

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 200-11369** | | | | | |
| HLCS 200-11369/2-A | High Level Control Sample | T | Sediment | 9012A | |
| LCS 200-11369/4-A | Lab Control Sample | T | Sediment | 9012A | |
| LLCS 200-11369/1-A | Low Level Control Sample | T | Sediment | 9012A | |
| MB 200-11369/3-A | Method Blank | T | Sediment | 9012A | |
| 200-2983-1 | CH-1 | T | Sediment | 9012A | |
| 200-2983-2 | CH-2 | T | Sediment | 9012A | |
| 200-2983-3 | CH-3 | T | Sediment | 9012A | |
| 200-2983-4 | CH-4 | T | Sediment | 9012A | |
| 200-2983-5 | CH-5 | T | Sediment | 9012A | |
| 200-2983-6 | CH-5 DUP | T | Sediment | 9012A | |
| 200-2983-7 | CH-6A | T | Sediment | 9012A | |
| 200-2983-8 | CH-6B | T | Sediment | 9012A | |
| 200-2983-9 | CH-7A | T | Sediment | 9012A | |
| 200-2983-10 | CH-7B | T | Sediment | 9012A | |
| 200-2983-11 | CH-8 | T | Sediment | 9012A | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | 9012A | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | 9012A | |
| 200-2983-14 | PB-1 | T | Sediment | 9012A | |
| 200-2983-15 | PB-2 | T | Sediment | 9012A | |
| 200-2983-16 | PB-3 | T | Sediment | 9012A | |
| **Analysis Batch:200-11385** | | | | | |
| HLCS 200-11369/2-A | High Level Control Sample | T | Sediment | 9012A | 200-11369 |
| LCS 200-11369/4-A | Lab Control Sample | T | Sediment | 9012A | 200-11369 |
| LLCS 200-11369/1-A | Low Level Control Sample | T | Sediment | 9012A | 200-11369 |
| MB 200-11369/3-A | Method Blank | T | Sediment | 9012A | 200-11369 |
| 200-2983-1 | CH-1 | T | Sediment | 9012A | 200-11369 |
| 200-2983-2 | CH-2 | T | Sediment | 9012A | 200-11369 |
| 200-2983-3 | CH-3 | T | Sediment | 9012A | 200-11369 |
| 200-2983-4 | CH-4 | T | Sediment | 9012A | 200-11369 |
| 200-2983-5 | CH-5 | T | Sediment | 9012A | 200-11369 |
| 200-2983-6 | CH-5 DUP | T | Sediment | 9012A | 200-11369 |
| 200-2983-7 | CH-6A | T | Sediment | 9012A | 200-11369 |
| 200-2983-8 | CH-6B | T | Sediment | 9012A | 200-11369 |
| 200-2983-9 | CH-7A | T | Sediment | 9012A | 200-11369 |
| 200-2983-10 | CH-7B | T | Sediment | 9012A | 200-11369 |
| 200-2983-11 | CH-8 | T | Sediment | 9012A | 200-11369 |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | 9012A | 200-11369 |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | 9012A | 200-11369 |
| 200-2983-14 | PB-1 | T | Sediment | 9012A | 200-11369 |
| 200-2983-15 | PB-2 | T | Sediment | 9012A | 200-11369 |
| 200-2983-16 | PB-3 | T | Sediment | 9012A | 200-11369 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:200-11390** | | | | | |
| 200-2983-1 | CH-1 | T | Sediment | Moisture | |
| 200-2983-2 | CH-2 | T | Sediment | Moisture | |
| 200-2983-3 | CH-3 | T | Sediment | Moisture | |
| 200-2983-4 | CH-4 | T | Sediment | Moisture | |
| 200-2983-5 | CH-5 | T | Sediment | Moisture | |
| 200-2983-6 | CH-5 DUP | T | Sediment | Moisture | |
| 200-2983-7 | CH-6A | T | Sediment | Moisture | |
| 200-2983-8 | CH-6B | T | Sediment | Moisture | |
| 200-2983-9 | CH-7A | T | Sediment | Moisture | |
| 200-2983-10 | CH-7B | T | Sediment | Moisture | |
| 200-2983-11 | CH-8 | T | Sediment | Moisture | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | Moisture | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | Moisture | |
| 200-2983-14 | PB-1 | T | Sediment | Moisture | |
| 200-2983-15 | PB-2 | T | Sediment | Moisture | |
| 200-2983-16 | PB-3 | T | Sediment | Moisture | |
| 200-2983-17 | PB-4 | T | Sediment | Moisture | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | Moisture | |
| 200-2983-19 | BS-1 | T | Sediment | Moisture | |
| 200-2983-20 | BS-2 | T | Sediment | Moisture | |
| 200-2983-21 | BS-3 | T | Sediment | Moisture | |
| 200-2983-22 | BS 4 | T | Sediment | Moisture | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | Moisture | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | Moisture | |
| **Prep Batch: 200-11398** | | | | | |
| HLCS 200-11398/2-A | High Level Control Sample | T | Sediment | 9012A | |
| LCS 200-11398/4-A | Lab Control Sample | T | Sediment | 9012A | |
| LLCS 200-11398/1-A | Low Level Control Sample | T | Sediment | 9012A | |
| MB 200-11398/3-A | Method Blank | T | Sediment | 9012A | |
| 200-2983-17 | PB-4 | T | Sediment | 9012A | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | 9012A | |
| 200-2983-19 | BS-1 | T | Sediment | 9012A | |
| 200-2983-20 | BS-2 | T | Sediment | 9012A | |
| 200-2983-21 | BS-3 | T | Sediment | 9012A | |
| 200-2983-22 | BS 4 | T | Sediment | 9012A | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | 9012A | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | 9012A | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:200-11408** | | | | | |
| HLCS 200-11398/2-A | High Level Control Sample | T | Sediment | 9012A | 200-11398 |
| LCS 200-11398/4-A | Lab Control Sample | T | Sediment | 9012A | 200-11398 |
| LLCS 200-11398/1-A | Low Level Control Sample | T | Sediment | 9012A | 200-11398 |
| MB 200-11398/3-A | Method Blank | T | Sediment | 9012A | 200-11398 |
| 200-2983-17 | PB-4 | T | Sediment | 9012A | 200-11398 |
| 200-2983-18 | PB COMPOSITE | T | Sediment | 9012A | 200-11398 |
| 200-2983-19 | BS-1 | T | Sediment | 9012A | 200-11398 |
| 200-2983-20 | BS-2 | T | Sediment | 9012A | 200-11398 |
| 200-2983-21 | BS-3 | T | Sediment | 9012A | 200-11398 |
| 200-2983-22 | BS 4 | T | Sediment | 9012A | 200-11398 |
| 200-2983-23 | BS COMPOSITE | T | Sediment | 9012A | 200-11398 |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | 9012A | 200-11398 |
| **Prep Batch: 200-11455** | | | | | |
| LCS 200-11455/2-A | Lab Control Sample | V | Sediment | AVSSEM | |
| MB 200-11455/1-A | Method Blank | V | Sediment | AVSSEM | |
| 200-2983-1 | CH-1 | T | Sediment | AVSSEM | |
| 200-2983-2 | CH-2 | T | Sediment | AVSSEM | |
| 200-2983-3 | CH-3 | T | Sediment | AVSSEM | |
| 200-2983-4 | CH-4 | T | Sediment | AVSSEM | |
| 200-2983-5 | CH-5 | T | Sediment | AVSSEM | |
| 200-2983-6 | CH-5 DUP | T | Sediment | AVSSEM | |
| 200-2983-7 | CH-6A | T | Sediment | AVSSEM | |
| 200-2983-8 | CH-6B | T | Sediment | AVSSEM | |
| 200-2983-9 | CH-7A | T | Sediment | AVSSEM | |
| 200-2983-10 | CH-7B | T | Sediment | AVSSEM | |
| 200-2983-11 | CH-8 | T | Sediment | AVSSEM | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | AVSSEM | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | AVSSEM | |
| 200-2983-14 | PB-1 | T | Sediment | AVSSEM | |
| 200-2983-15 | PB-2 | T | Sediment | AVSSEM | |
| 200-2983-16 | PB-3 | T | Sediment | AVSSEM | |
| 200-2983-17 | PB-4 | T | Sediment | AVSSEM | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | AVSSEM | |
| 200-2983-19 | BS-1 | T | Sediment | AVSSEM | |
| 200-2983-20 | BS-2 | T | Sediment | AVSSEM | |
| 200-2983-21 | BS-3 | T | Sediment | AVSSEM | |
| 200-2983-22 | BS 4 | T | Sediment | AVSSEM | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | AVSSEM | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:200-11459** | | | | | |
| LCS 200-11455/2-A | Lab Control Sample | V | Sediment | AVS | 200-11455 |
| MB 200-11455/1-A | Method Blank | V | Sediment | AVS | 200-11455 |
| 200-2983-1 | CH-1 | T | Sediment | AVS | 200-11455 |
| 200-2983-2 | CH-2 | T | Sediment | AVS | 200-11455 |
| 200-2983-3 | CH-3 | T | Sediment | AVS | 200-11455 |
| 200-2983-4 | CH-4 | T | Sediment | AVS | 200-11455 |
| 200-2983-5 | CH-5 | T | Sediment | AVS | 200-11455 |
| 200-2983-6 | CH-5 DUP | T | Sediment | AVS | 200-11455 |
| 200-2983-7 | CH-6A | T | Sediment | AVS | 200-11455 |
| 200-2983-8 | CH-6B | T | Sediment | AVS | 200-11455 |
| 200-2983-9 | CH-7A | T | Sediment | AVS | 200-11455 |
| 200-2983-10 | CH-7B | T | Sediment | AVS | 200-11455 |
| 200-2983-11 | CH-8 | T | Sediment | AVS | 200-11455 |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | AVS | 200-11455 |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | AVS | 200-11455 |
| 200-2983-14 | PB-1 | T | Sediment | AVS | 200-11455 |
| 200-2983-15 | PB-2 | T | Sediment | AVS | 200-11455 |
| 200-2983-16 | PB-3 | T | Sediment | AVS | 200-11455 |
| 200-2983-17 | PB-4 | T | Sediment | AVS | 200-11455 |
| 200-2983-18 | PB COMPOSITE | T | Sediment | AVS | 200-11455 |
| 200-2983-19 | BS-1 | T | Sediment | AVS | 200-11455 |
| 200-2983-20 | BS-2 | T | Sediment | AVS | 200-11455 |
| 200-2983-21 | BS-3 | T | Sediment | AVS | 200-11455 |
| 200-2983-22 | BS 4 | T | Sediment | AVS | 200-11455 |
| 200-2983-23 | BS COMPOSITE | T | Sediment | AVS | 200-11455 |
| **Prep Batch: 200-11463** | | | | | |
| LCS 200-11463/2-A | Lab Control Sample | V | Sediment | AVSSEM | |
| MB 200-11463/1-A | Method Blank | V | Sediment | AVSSEM | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | AVSSEM | |
| **Analysis Batch:200-11464** | | | | | |
| LCS 200-11463/2-A | Lab Control Sample | V | Sediment | AVS | 200-11463 |
| MB 200-11463/1-A | Method Blank | V | Sediment | AVS | 200-11463 |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | AVS | 200-11463 |
| **Analysis Batch:200-11574** | | | | | |
| LCS 200-11574/4 | Lab Control Sample | T | Sediment | Lloyd Kahn | |
| MB 200-11574/3 | Method Blank | T | Sediment | Lloyd Kahn | |
| 200-2983-19 | BS-1 | T | Sediment | Lloyd Kahn | |
| 200-2983-20 | BS-2 | T | Sediment | Lloyd Kahn | |
| 200-2983-21 | BS-3 | T | Sediment | Lloyd Kahn | |
| 200-2983-22 | BS 4 | T | Sediment | Lloyd Kahn | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | Lloyd Kahn | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | Lloyd Kahn | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:200-11575** | | | | | |
| LCS 200-11575/4 | Lab Control Sample | T | Sediment | Lloyd Kahn | |
| MB 200-11575/3 | Method Blank | T | Sediment | Lloyd Kahn | |
| 200-2983-1 | CH-1 | T | Sediment | Lloyd Kahn | |
| 200-2983-2 | CH-2 | T | Sediment | Lloyd Kahn | |
| 200-2983-3 | CH-3 | T | Sediment | Lloyd Kahn | |
| 200-2983-4 | CH-4 | T | Sediment | Lloyd Kahn | |
| 200-2983-5 | CH-5 | T | Sediment | Lloyd Kahn | |
| 200-2983-6 | CH-5 DUP | T | Sediment | Lloyd Kahn | |
| 200-2983-7 | CH-6A | T | Sediment | Lloyd Kahn | |
| 200-2983-8 | CH-6B | T | Sediment | Lloyd Kahn | |
| 200-2983-9 | CH-7A | T | Sediment | Lloyd Kahn | |
| 200-2983-10 | CH-7B | T | Sediment | Lloyd Kahn | |
| 200-2983-11 | CH-8 | T | Sediment | Lloyd Kahn | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | Lloyd Kahn | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | Lloyd Kahn | |
| 200-2983-14 | PB-1 | T | Sediment | Lloyd Kahn | |
| 200-2983-15 | PB-2 | T | Sediment | Lloyd Kahn | |
| 200-2983-16 | PB-3 | T | Sediment | Lloyd Kahn | |
| 200-2983-17 | PB-4 | T | Sediment | Lloyd Kahn | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | Lloyd Kahn | |
| **Prep Batch: 200-11752** | | | | | |
| LCS 200-11752/3-A | Lab Control Sample | T | Sediment | SM 4500 NH3 B | |
| MB 200-11752/2-A | Method Blank | T | Sediment | SM 4500 NH3 B | |
| 200-2983-1 | CH-1 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-2 | CH-2 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-3 | CH-3 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-4 | CH-4 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-5 | CH-5 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-6 | CH-5 DUP | T | Sediment | SM 4500 NH3 B | |
| 200-2983-7 | CH-6A | T | Sediment | SM 4500 NH3 B | |
| 200-2983-8 | CH-6B | T | Sediment | SM 4500 NH3 B | |
| 200-2983-9 | CH-7A | T | Sediment | SM 4500 NH3 B | |
| 200-2983-10 | CH-7B | T | Sediment | SM 4500 NH3 B | |
| 200-2983-11 | CH-8 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | SM 4500 NH3 B | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | SM 4500 NH3 B | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:200-11753** | | | | | |
| LCS 200-11752/3-A | Lab Control Sample | T | Sediment | SM 4500 NH3 C | 200-11752 |
| MB 200-11752/2-A | Method Blank | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-1 | CH-1 | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-2 | CH-2 | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-3 | CH-3 | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-4 | CH-4 | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-5 | CH-5 | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-6 | CH-5 DUP | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-7 | CH-6A | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-8 | CH-6B | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-9 | CH-7A | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-10 | CH-7B | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-11 | CH-8 | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | SM 4500 NH3 C | 200-11752 |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | SM 4500 NH3 C | 200-11752 |
| **Prep Batch: 200-11754** | | | | | |
| LCS 200-11754/3-A | Lab Control Sample | T | Sediment | SM 4500 NH3 B | |
| MB 200-11754/2-A | Method Blank | T | Sediment | SM 4500 NH3 B | |
| 200-2983-14 | PB-1 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-15 | PB-2 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-16 | PB-3 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-17 | PB-4 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | SM 4500 NH3 B | |
| 200-2983-19 | BS-1 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-20 | BS-2 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-21 | BS-3 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-22 | BS 4 | T | Sediment | SM 4500 NH3 B | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | SM 4500 NH3 B | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | SM 4500 NH3 B | |
| **Analysis Batch:200-11756** | | | | | |
| LCS 200-11754/3-A | Lab Control Sample | T | Sediment | SM 4500 NH3 C | 200-11754 |
| MB 200-11754/2-A | Method Blank | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-14 | PB-1 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-15 | PB-2 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-16 | PB-3 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-17 | PB-4 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-18 | PB COMPOSITE | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-19 | BS-1 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-20 | BS-2 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-21 | BS-3 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-22 | BS 4 | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-23 | BS COMPOSITE | T | Sediment | SM 4500 NH3 C | 200-11754 |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | SM 4500 NH3 C | 200-11754 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 200-11813** | | | | | |
| LCS 200-11813/3-A | Lab Control Sample | T | Sediment | SM4500Norg_C | |
| MB 200-11813/2-A | Method Blank | T | Sediment | SM4500Norg_C | |
| 200-2983-1 | CH-1 | T | Sediment | SM4500Norg_C | |
| 200-2983-2 | CH-2 | T | Sediment | SM4500Norg_C | |
| 200-2983-3 | CH-3 | T | Sediment | SM4500Norg_C | |
| 200-2983-4 | CH-4 | T | Sediment | SM4500Norg_C | |
| 200-2983-5 | CH-5 | T | Sediment | SM4500Norg_C | |
| 200-2983-6 | CH-5 DUP | T | Sediment | SM4500Norg_C | |
| 200-2983-7 | CH-6A | T | Sediment | SM4500Norg_C | |
| 200-2983-8 | CH-6B | T | Sediment | SM4500Norg_C | |
| 200-2983-9 | CH-7A | T | Sediment | SM4500Norg_C | |
| 200-2983-10 | CH-7B | T | Sediment | SM4500Norg_C | |
| 200-2983-11 | CH-8 | T | Sediment | SM4500Norg_C | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | SM4500Norg_C | |
| **Analysis Batch:200-11815** | | | | | |
| LCS 200-11813/3-A | Lab Control Sample | T | Sediment | SM 4500 Norg C | 200-11813 |
| MB 200-11813/2-A | Method Blank | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-1 | CH-1 | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-2 | CH-2 | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-3 | CH-3 | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-4 | CH-4 | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-5 | CH-5 | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-6 | CH-5 DUP | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-7 | CH-6A | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-8 | CH-6B | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-9 | CH-7A | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-10 | CH-7B | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-11 | CH-8 | T | Sediment | SM 4500 Norg C | 200-11813 |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | SM 4500 Norg C | 200-11813 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 200-11816** | | | | | |
| LCS 200-11816/3-A | Lab Control Sample | T | Sediment | SM4500Norg_C | |
| MB 200-11816/2-A | Method Blank | T | Sediment | SM4500Norg_C | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | SM4500Norg_C | |
| 200-2983-14 | PB-1 | T | Sediment | SM4500Norg_C | |
| 200-2983-15 | PB-2 | T | Sediment | SM4500Norg_C | |
| 200-2983-16 | PB-3 | T | Sediment | SM4500Norg_C | |
| 200-2983-17 | PB-4 | T | Sediment | SM4500Norg_C | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | SM4500Norg_C | |
| 200-2983-19 | BS-1 | T | Sediment | SM4500Norg_C | |
| 200-2983-20 | BS-2 | T | Sediment | SM4500Norg_C | |
| 200-2983-21 | BS-3 | T | Sediment | SM4500Norg_C | |
| 200-2983-22 | BS 4 | T | Sediment | SM4500Norg_C | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | SM4500Norg_C | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | SM4500Norg_C | |
| **Analysis Batch:200-11903** | | | | | |
| LCS 200-11816/3-A | Lab Control Sample | T | Sediment | SM 4500 Norg C | 200-11816 |
| MB 200-11816/2-A | Method Blank | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-14 | PB-1 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-15 | PB-2 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-16 | PB-3 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-17 | PB-4 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-18 | PB COMPOSITE | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-19 | BS-1 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-20 | BS-2 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-21 | BS-3 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-22 | BS 4 | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-23 | BS COMPOSITE | T | Sediment | SM 4500 Norg C | 200-11816 |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | SM 4500 Norg C | 200-11816 |

**Report Basis**
V = AVS/SEM
T = Total

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Geotechnical** | | | | | |
| **Analysis Batch:200-11829** | | | | | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | D2216-90 | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | D2216-90 | |
| **Analysis Batch:200-11830** | | | | | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | D2974 | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | D2974 | |
| **Analysis Batch:200-11831** | | | | | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | D4318 | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | D4318 | |
| **Analysis Batch:200-11990** | | | | | |
| 200-2983-1 | CH-1 | T | Sediment | D422 | |
| 200-2983-2 | CH-2 | T | Sediment | D422 | |
| 200-2983-3 | CH-3 | T | Sediment | D422 | |
| 200-2983-4 | CH-4 | T | Sediment | D422 | |
| 200-2983-5 | CH-5 | T | Sediment | D422 | |
| 200-2983-6 | CH-5 DUP | T | Sediment | D422 | |
| 200-2983-7 | CH-6A | T | Sediment | D422 | |
| 200-2983-8 | CH-6B | T | Sediment | D422 | |
| 200-2983-9 | CH-7A | T | Sediment | D422 | |
| 200-2983-10 | CH-7B | T | Sediment | D422 | |
| 200-2983-11 | CH-8 | T | Sediment | D422 | |
| 200-2983-12 | DMU 1 (COMPOSITE) | T | Sediment | D422 | |
| 200-2983-13 | DMU 2 (COMPOSITE) | T | Sediment | D422 | |
| 200-2983-14 | PB-1 | T | Sediment | D422 | |
| 200-2983-15 | PB-2 | T | Sediment | D422 | |
| 200-2983-16 | PB-3 | T | Sediment | D422 | |
| 200-2983-17 | PB-4 | T | Sediment | D422 | |
| 200-2983-18 | PB COMPOSITE | T | Sediment | D422 | |
| 200-2983-19 | BS-1 | T | Sediment | D422 | |
| 200-2983-20 | BS-2 | T | Sediment | D422 | |
| 200-2983-21 | BS-3 | T | Sediment | D422 | |
| 200-2983-22 | BS 4 | T | Sediment | D422 | |
| 200-2983-23 | BS COMPOSITE | T | Sediment | D422 | |
| 200-2983-24 | DMU SIEVED COMPOSITE | T | Sediment | D422 | |

**Report Basis**
T = Total

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Sediment**

| Lab Sample ID | Client Sample ID | DCA %Rec | TOL %Rec | BFB %Rec | DCZ %Rec |
|---|---|---|---|---|---|
| 200-2983-4 | CH-4 | 113 | 128X | 178X | 140 |
| 200-2983-4 RE | CH-4 RE | 114 | 133X | 180X | 138 |
| 200-2983-11 | CH-8 | 80 | 93 | 93 | 72 |
| 200-2983-11 RE | CH-8 RE | 78 | 145X | 170X | 126 |
| 200-2983-14 | PB-1 | 99 | 99 | 107 | 102 |
| 200-2983-15 | PB-2 | 96 | 98 | 105 | 101 |
| 200-2983-16 | PB-3 | 99 | 99 | 106 | 101 |
| 200-2983-17 | PB-4 | 85 | 103 | 109 | 102 |
| 200-2983-18 | PB COMPOSITE | 107 | 105 | 114 | 108 |
| 200-2983-19 | BS-1 | 102 | 109 | 122X | 83 |
| 200-2983-19 RE | BS-1 RE | 103 | 123X | 136X | 111 |
| 200-2983-20 | BS-2 | 108 | 116X | 127X | 90 |
| 200-2983-20 RE | BS-2 RE | 101 | 124X | 141X | 103 |
| 200-2983-21 | BS-3 | 97 | 120X | 123X | 85 |
| 200-2983-21 RE | BS-3 RE | 98 | 162X | 137X | 104 |
| 200-2983-22 | BS 4 | 100 | 133X | 147X | 105 |
| 200-2983-22 RE | BS 4 RE | 112 | 138X | 156X | 126 |
| 200-2983-23 | BS COMPOSITE | 112 | 140X | 166X | 124 |
| 200-2983-23 RE | BS COMPOSITE RE | 74 | 93 | 106 | 85 |
| MB 200-11567/6 | | 101 | 100 | 107 | 106 |
| MB 200-11588/7 | | 102 | 97 | 105 | 104 |
| LCS 200-11567/4 | | 102 | 101 | 100 | 100 |
| LCS 200-11588/5 | | 101 | 99 | 98 | 97 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 | 65-155 |
| TOL = Toluene-d8 | 80-115 |
| BFB = Bromofluorobenzene | 80-115 |
| DCZ = 1,2-Dichlorobenzene-d4 | 45-145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Sediment**

| Lab Sample ID | Client Sample ID | DCA %Rec | TOL %Rec | BFB %Rec | DCZ %Rec |
|---|---|---|---|---|---|
| 200-2983-1 | CH-1 | 87 | 106 | 99 | 105 |
| 200-2983-2 | CH-2 | 84 | 104 | 98 | 103 |
| 200-2983-3 | CH-3 | 84 | 105 | 99 | 104 |
| 200-2983-5 | CH-5 | 86 | 105 | 100 | 104 |
| 200-2983-6 | CH-5 DUP | 85 | 106 | 101 | 105 |
| 200-2983-7 | CH-6A | 86 | 106 | 101 | 107 |
| 200-2983-8 | CH-6B | 87 | 108 | 103 | 107 |
| 200-2983-9 | CH-7A | 84 | 104 | 100 | 105 |
| 200-2983-10 | CH-7B | 84 | 105 | 101 | 106 |
| 200-2983-12 | DMU 1 (COMPOSITE) | 86 | 107 | 103 | 107 |
| 200-2983-13 | DMU 2 (COMPOSITE) | 88 | 110 | 105 | 111 |
| 200-2983-24 | DMU SIEVED COMPOSITE | 86 | 108 | 103 | 108 |
| MB 200-11425/1-A | | 84 | 106 | 101 | 104 |
| LCS 200-11425/6-A | | 83 | 107 | 100 | 105 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 | 65-155 |
| TOL = Toluene-d8 | 80-115 |
| BFB = Bromofluorobenzene | 80-115 |
| DCZ = 1,2-Dichlorobenzene-d4 | 45-145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11425**

**Method: 8260B**
**Preparation: 5035**

Lab Sample ID: MB 200-11425/1-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/21/2010 1143
Date Prepared: 12/21/2010 0933

Analysis Batch: 200-11512
Prep Batch: 200-11425
Units: ug/Kg

Instrument ID: L.i
Lab File ID: lfmw05.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 100 | U | 50 | 100 |
| Chloromethane | 100 | U | 37 | 100 |
| Vinyl chloride | 100 | U | 50 | 100 |
| Bromomethane | 52.3 | J | 35 | 100 |
| Chloroethane | 100 | U | 60 | 100 |
| Trichlorofluoromethane | 100 | U | 50 | 100 |
| 1,1-Dichloroethene | 100 | U | 21 | 100 |
| Freon TF | 100 | U | 28 | 100 |
| Acetone | 500 | U | 100 | 500 |
| Methyl iodide | 50.8 | J | 50 | 100 |
| Carbon disulfide | 100 | U | 19 | 100 |
| Methyl acetate | 100 | U | 50 | 100 |
| Methylene Chloride | 100 | U | 50 | 100 |
| trans-1,2-Dichloroethene | 100 | U | 50 | 100 |
| 1,2-Dichloroethene, Total | 100 | U | 34 | 100 |
| Methyl t-butyl ether | 100 | U | 50 | 100 |
| 1,1-Dichloroethane | 100 | U | 36 | 100 |
| Vinyl acetate | 100 | U | 50 | 100 |
| 2,2-Dichloropropane | 100 | U | 46 | 100 |
| cis-1,2-Dichloroethene | 100 | U | 21 | 100 |
| 2-Butanone | 500 | U | 110 | 500 |
| Bromochloromethane | 100 | U | 53 | 100 |
| Tetrahydrofuran | 1400 | U | 500 | 1400 |
| Chloroform | 100 | U | 33 | 100 |
| 1,1,1-Trichloroethane | 100 | U | 36 | 100 |
| Cyclohexane | 100 | U | 35 | 100 |
| 1,1-Dichloropropene | 100 | U | 22 | 100 |
| Carbon tetrachloride | 100 | U | 32 | 100 |
| Isobutyl alcohol | 5000 | U | 2500 | 5000 |
| Benzene | 100 | U | 31 | 100 |
| 1,2-Dichloroethane | 100 | U | 33 | 100 |
| Trichloroethene | 100 | U | 50 | 100 |
| Methylcyclohexane | 100 | U | 50 | 100 |
| 1,2-Dichloropropane | 100 | U | 38 | 100 |
| Dibromomethane | 100 | U | 25 | 100 |
| 1,4-Dioxane | 5000 | U | 2700 | 5000 |
| Bromodichloromethane | 100 | U | 37 | 100 |
| 2-Chloroethyl vinyl ether | 100 | U | 13 | 100 |
| cis-1,3-Dichloropropene | 100 | U | 32 | 100 |
| 4-Methyl-2-pentanone | 500 | U | 21 | 500 |
| Toluene | 100 | U | 50 | 100 |
| trans-1,3-Dichloropropene | 100 | U | 50 | 100 |
| 1,1,2-Trichloroethane | 100 | U | 42 | 100 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11425**

**Method: 8260B**
**Preparation: 5035**

Lab Sample ID: MB 200-11425/1-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/21/2010 1143
Date Prepared: 12/21/2010 0933

Analysis Batch: 200-11512
Prep Batch: 200-11425
Units: ug/Kg

Instrument ID: L.i
Lab File ID: lfmw05.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Tetrachloroethene | 100 | U | 50 | 100 |
| 1,3-Dichloropropane | 100 | U | 33 | 100 |
| 2-Hexanone | 500 | U | 100 | 500 |
| Dibromochloromethane | 100 | U | 37 | 100 |
| 1,2-Dibromoethane | 100 | U | 50 | 100 |
| Chlorobenzene | 100 | U | 23 | 100 |
| 1,1,1,2-Tetrachloroethane | 100 | U | 36 | 100 |
| Ethylbenzene | 100 | U | 50 | 100 |
| m&p-Xylene | 100 | U | 50 | 100 |
| o-Xylene | 100 | U | 50 | 100 |
| Xylenes, Total | 100 | U | 50 | 100 |
| Styrene | 100 | U | 50 | 100 |
| Bromoform | 100 | U | 39 | 100 |
| Isopropylbenzene | 100 | U | 50 | 100 |
| Bromobenzene | 100 | U | 37 | 100 |
| 1,1,2,2-Tetrachloroethane | 100 | U | 37 | 100 |
| 1,2,3-Trichloropropane | 100 | U | 54 | 100 |
| n-Propylbenzene | 100 | U | 50 | 100 |
| 2-Chlorotoluene | 100 | U | 33 | 100 |
| 4-Chlorotoluene | 100 | U | 34 | 100 |
| 1,3,5-Trimethylbenzene | 100 | U | 32 | 100 |
| tert-Butylbenzene | 100 | U | 50 | 100 |
| 1,2,4-Trimethylbenzene | 100 | U | 34 | 100 |
| sec-Butylbenzene | 100 | U | 50 | 100 |
| 1,3-Dichlorobenzene | 100 | U | 25 | 100 |
| 4-Isopropyltoluene | 100 | U | 18 | 100 |
| 1,4-Dichlorobenzene | 100 | U | 23 | 100 |
| 1,2-Dichlorobenzene | 100 | U | 28 | 100 |
| n-Butylbenzene | 100 | U | 50 | 100 |
| 1,2-Dibromo-3-Chloropropane | 100 | U | 46 | 100 |
| 1,2,4-Trichlorobenzene | 16.9 | J | 16 | 100 |
| Hexachlorobutadiene | 100 | U | 50 | 100 |
| Naphthalene | 100 | U | 50 | 100 |
| 1,2,3-Trichlorobenzene | 100 | U | 25 | 100 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 84 | 65 - 155 |
| Toluene-d8 | 106 | 80 - 115 |
| Bromofluorobenzene | 101 | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 104 | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Lab Control Sample - Batch: 200-11425**

**Method: 8260B**
**Preparation: 5035**

Lab Sample ID: LCS 200-11425/6-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/21/2010 1038
Date Prepared: 12/21/2010 0933

Analysis Batch: 200-11512
Prep Batch: 200-11425
Units: ug/Kg

Instrument ID: L.i
Lab File ID: lfmw03.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | 2500 | 2200 | 88 | 30 - 180 | |
| Chloromethane | 2500 | 2620 | 105 | 55 - 150 | |
| Vinyl chloride | 2500 | 2480 | 99 | 65 - 145 | |
| Bromomethane | 2500 | 1760 | 71 | 65 - 145 | |
| Chloroethane | 2500 | 1780 | 71 | 70 - 135 | |
| Trichlorofluoromethane | 2500 | 1970 | 79 | 70 - 140 | |
| 1,1-Dichloroethene | 2500 | 2340 | 94 | 75 - 135 | |
| Freon TF | 2500 | 2470 | 99 | 75 - 140 | |
| Acetone | 12500 | 9910 | 79 | 50 - 130 | |
| Methyl iodide | 2500 | 1600 | 64 | 70 - 150 | * |
| Carbon disulfide | 2500 | 2530 | 101 | 80 - 135 | |
| Methyl acetate | 2500 | 2870 | 115 | 60 - 140 | |
| Methylene Chloride | 2500 | 2760 | 110 | 75 - 140 | |
| trans-1,2-Dichloroethene | 2500 | 2500 | 100 | 80 - 130 | |
| Methyl t-butyl ether | 2500 | 2380 | 95 | 85 - 130 | |
| 1,1-Dichloroethane | 2500 | 2420 | 97 | 85 - 120 | |
| Vinyl acetate | 2500 | 2200 | 88 | 70 - 135 | |
| 2,2-Dichloropropane | 2500 | 2280 | 91 | 85 - 120 | |
| cis-1,2-Dichloroethene | 2500 | 2400 | 96 | 80 - 120 | |
| 2-Butanone | 12500 | 11900 | 95 | 70 - 135 | |
| Bromochloromethane | 2500 | 2140 | 86 | 75 - 125 | |
| Tetrahydrofuran | 35000 | 33500 | 96 | 75 - 125 | |
| Chloroform | 2500 | 2290 | 92 | 85 - 120 | |
| 1,1,1-Trichloroethane | 2500 | 2210 | 88 | 80 - 115 | |
| Cyclohexane | 2500 | 2510 | 100 | 60 - 140 | |
| 1,1-Dichloropropene | 2500 | 2480 | 99 | 85 - 120 | |
| Carbon tetrachloride | 2500 | 2190 | 87 | 80 - 115 | |
| Isobutyl alcohol | 125000 | 127000 | 101 | 70 - 135 | |
| Benzene | 2500 | 2610 | 104 | 85 - 120 | |
| 1,2-Dichloroethane | 2500 | 2170 | 87 | 75 - 120 | |
| Trichloroethene | 2500 | 2480 | 99 | 85 - 120 | |
| Methylcyclohexane | 2500 | 2600 | 104 | 60 - 140 | |
| 1,2-Dichloropropane | 2500 | 2500 | 100 | 85 - 120 | |
| Dibromomethane | 2500 | 2400 | 96 | 80 - 120 | |
| 1,4-Dioxane | 125000 | 132000 | 106 | 50 - 160 | |
| Bromodichloromethane | 2500 | 2300 | 92 | 80 - 115 | |
| 2-Chloroethyl vinyl ether | 2500 | 2470 | 99 | 65 - 145 | |
| cis-1,3-Dichloropropene | 2500 | 2470 | 99 | 85 - 120 | |
| 4-Methyl-2-pentanone | 12500 | 12000 | 96 | 65 - 135 | |
| Toluene | 2500 | 2700 | 108 | 75 - 125 | |
| trans-1,3-Dichloropropene | 2500 | 2400 | 96 | 85 - 120 | |
| 1,1,2-Trichloroethane | 2500 | 2670 | 107 | 75 - 125 | |
| Tetrachloroethene | 2500 | 2640 | 106 | 85 - 120 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Lab Control Sample - Batch: 200-11425**

**Method: 8260B**
**Preparation: 5035**

Lab Sample ID: LCS 200-11425/6-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/21/2010 1038
Date Prepared: 12/21/2010 0933

Analysis Batch: 200-11512
Prep Batch: 200-11425
Units: ug/Kg

Instrument ID: L.i
Lab File ID: lfmw03.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 2500 | 2580 | 103 | 85 - 120 | |
| 2-Hexanone | 12500 | 13000 | 104 | 70 - 135 | |
| Dibromochloromethane | 2500 | 2500 | 100 | 80 - 120 | |
| 1,2-Dibromoethane | 2500 | 2560 | 102 | 80 - 120 | |
| Chlorobenzene | 2500 | 2620 | 105 | 80 - 120 | |
| 1,1,1,2-Tetrachloroethane | 2500 | 2510 | 100 | 80 - 115 | |
| Ethylbenzene | 2500 | 2620 | 105 | 80 - 120 | |
| m&p-Xylene | 5000 | 5400 | 108 | 80 - 120 | |
| o-Xylene | 2500 | 2710 | 108 | 85 - 120 | |
| Styrene | 2500 | 2650 | 106 | 80 - 125 | |
| Bromoform | 2500 | 2420 | 97 | 75 - 130 | |
| Isopropylbenzene | 2500 | 2610 | 104 | 85 - 120 | |
| Bromobenzene | 2500 | 2580 | 103 | 85 - 120 | |
| 1,1,2,2-Tetrachloroethane | 2500 | 2710 | 109 | 75 - 125 | |
| 1,2,3-Trichloropropane | 2500 | 2190 | 87 | 70 - 125 | |
| n-Propylbenzene | 2500 | 2640 | 106 | 85 - 120 | |
| 2-Chlorotoluene | 2500 | 2630 | 105 | 85 - 120 | |
| 4-Chlorotoluene | 2500 | 2660 | 106 | 85 - 120 | |
| 1,3,5-Trimethylbenzene | 2500 | 2580 | 103 | 85 - 120 | |
| tert-Butylbenzene | 2500 | 2610 | 104 | 85 - 120 | |
| 1,2,4-Trimethylbenzene | 2500 | 2630 | 105 | 85 - 120 | |
| sec-Butylbenzene | 2500 | 2730 | 109 | 85 - 120 | |
| 1,3-Dichlorobenzene | 2500 | 2670 | 107 | 80 - 120 | |
| 4-Isopropyltoluene | 2500 | 2590 | 103 | 85 - 120 | |
| 1,4-Dichlorobenzene | 2500 | 2630 | 105 | 85 - 120 | |
| 1,2-Dichlorobenzene | 2500 | 2650 | 106 | 85 - 120 | |
| n-Butylbenzene | 2500 | 2770 | 111 | 85 - 125 | |
| 1,2-Dibromo-3-Chloropropane | 2500 | 2270 | 91 | 65 - 130 | |
| 1,2,4-Trichlorobenzene | 2500 | 2580 | 103 | 80 - 125 | |
| Hexachlorobutadiene | 2500 | 2630 | 105 | 65 - 150 | |
| Naphthalene | 2500 | 2800 | 112 | 80 - 125 | |
| 1,2,3-Trichlorobenzene | 2500 | 2530 | 101 | 70 - 125 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 83 | 65 - 155 |
| Toluene-d8 | 107 | 80 - 115 |
| Bromofluorobenzene | 100 | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 105 | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11567**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: MB 200-11567/6
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1400
Date Prepared: N/A

Analysis Batch: 200-11567
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndia06.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 5.0 | U | 0.075 | 5.0 |
| Chloromethane | 5.0 | U | 0.50 | 5.0 |
| Vinyl chloride | 5.0 | U | 0.50 | 5.0 |
| Bromomethane | 5.0 | U | 0.17 | 5.0 |
| Chloroethane | 5.0 | U | 0.29 | 5.0 |
| Trichlorofluoromethane | 5.0 | U | 0.069 | 5.0 |
| 1,1-Dichloroethene | 5.0 | U | 0.064 | 5.0 |
| Freon TF | 5.0 | U | 0.072 | 5.0 |
| Acetone | 5.0 | U | 2.0 | 5.0 |
| Methyl iodide | 5.0 | U | 1.0 | 5.0 |
| Carbon disulfide | 0.0917 | J | 0.048 | 5.0 |
| Methyl acetate | 5.0 | U | 0.31 | 5.0 |
| Methylene Chloride | 0.249 | J | 0.14 | 5.0 |
| trans-1,2-Dichloroethene | 5.0 | U | 0.082 | 5.0 |
| 1,2-Dichloroethene, Total | 5.0 | U | 0.40 | 5.0 |
| Methyl t-butyl ether | 5.0 | U | 0.076 | 5.0 |
| 1,1-Dichloroethane | 5.0 | U | 1.0 | 5.0 |
| Vinyl acetate | 5.0 | U | 0.38 | 5.0 |
| 2,2-Dichloropropane | 5.0 | U | 1.0 | 5.0 |
| cis-1,2-Dichloroethene | 5.0 | U | 0.50 | 5.0 |
| 2-Butanone | 5.0 | U | 0.78 | 5.0 |
| Bromochloromethane | 5.0 | U | 0.45 | 5.0 |
| Tetrahydrofuran | 3.36 | J | 1.0 | 50 |
| Chloroform | 5.0 | U | 0.066 | 5.0 |
| 1,1,1-Trichloroethane | 5.0 | U | 0.50 | 5.0 |
| Cyclohexane | 5.0 | U | 1.0 | 5.0 |
| 1,1-Dichloropropene | 5.0 | U | 0.50 | 5.0 |
| Carbon tetrachloride | 5.0 | U | 0.069 | 5.0 |
| Isobutyl alcohol | 250 | U | 6.6 | 250 |
| Benzene | 5.0 | U | 0.20 | 5.0 |
| 1,2-Dichloroethane | 5.0 | U | 2.0 | 5.0 |
| Trichloroethene | 5.0 | U | 0.064 | 5.0 |
| Methylcyclohexane | 5.0 | U | 0.12 | 5.0 |
| 1,2-Dichloropropane | 5.0 | U | 2.0 | 5.0 |
| Dibromomethane | 5.0 | U | 0.14 | 5.0 |
| 1,4-Dioxane | 250 | U | 10 | 250 |
| Bromodichloromethane | 5.0 | U | 2.0 | 5.0 |
| 2-Chloroethyl vinyl ether | 5.0 | U | 0.12 | 5.0 |
| cis-1,3-Dichloropropene | 5.0 | U | 0.13 | 5.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.048 | 5.0 |
| Toluene | 5.0 | U | 0.080 | 5.0 |
| trans-1,3-Dichloropropene | 5.0 | U | 0.50 | 5.0 |
| 1,1,2-Trichloroethane | 5.0 | U | 0.080 | 5.0 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11567**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: MB 200-11567/6
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1400
Date Prepared: N/A

Analysis Batch: 200-11567
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndia06.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Tetrachloroethene | 5.0 | U | 0.33 | 5.0 |
| 1,3-Dichloropropane | 5.0 | U | 0.064 | 5.0 |
| 2-Hexanone | 5.0 | U | 1.0 | 5.0 |
| Dibromochloromethane | 5.0 | U | 0.39 | 5.0 |
| 1,2-Dibromoethane | 5.0 | U | 2.0 | 5.0 |
| Chlorobenzene | 5.0 | U | 0.050 | 5.0 |
| 1,1,1,2-Tetrachloroethane | 5.0 | U | 0.50 | 5.0 |
| Ethylbenzene | 5.0 | U | 0.055 | 5.0 |
| m&p-Xylene | 5.0 | U | 0.40 | 5.0 |
| o-Xylene | 5.0 | U | 0.084 | 5.0 |
| Xylenes, Total | 5.0 | U | 0.15 | 5.0 |
| Styrene | 5.0 | U | 0.20 | 5.0 |
| Bromoform | 5.0 | U | 2.0 | 5.0 |
| Isopropylbenzene | 5.0 | U | 0.11 | 5.0 |
| Bromobenzene | 5.0 | U | 0.081 | 5.0 |
| 1,1,2,2-Tetrachloroethane | 5.0 | U | 1.0 | 5.0 |
| 1,2,3-Trichloropropane | 5.0 | U | 0.21 | 5.0 |
| n-Propylbenzene | 5.0 | U | 0.12 | 5.0 |
| 2-Chlorotoluene | 5.0 | U | 0.13 | 5.0 |
| 4-Chlorotoluene | 5.0 | U | 0.16 | 5.0 |
| 1,3,5-Trimethylbenzene | 5.0 | U | 0.11 | 5.0 |
| tert-Butylbenzene | 5.0 | U | 0.14 | 5.0 |
| 1,2,4-Trimethylbenzene | 0.170 | J | 0.086 | 5.0 |
| sec-Butylbenzene | 0.143 | J | 0.13 | 5.0 |
| 1,3-Dichlorobenzene | 0.184 | J | 0.11 | 5.0 |
| 4-Isopropyltoluene | 0.177 | J | 0.11 | 5.0 |
| 1,4-Dichlorobenzene | 0.309 | J | 0.13 | 5.0 |
| 1,2-Dichlorobenzene | 0.255 | J | 0.12 | 5.0 |
| n-Butylbenzene | 0.345 | J | 0.088 | 5.0 |
| 1,2-Dibromo-3-Chloropropane | 5.0 | U | 1.0 | 5.0 |
| 1,2,4-Trichlorobenzene | 0.535 | J | 0.069 | 5.0 |
| Hexachlorobutadiene | 0.271 | J | 0.20 | 5.0 |
| Naphthalene | 1.06 | J | 0.089 | 5.0 |
| 1,2,3-Trichlorobenzene | 0.669 | J | 0.13 | 5.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 65 - 155 |
| Toluene-d8 | 100 | 80 - 115 |
| Bromofluorobenzene | 107 | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 106 | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Lab Control Sample - Batch: 200-11567**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: LCS 200-11567/4
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1259
Date Prepared: N/A

Analysis Batch: 200-11567
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndia04.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | 50.0 | 41.5 | 83 | 30 - 180 | |
| Chloromethane | 50.0 | 44.0 | 88 | 55 - 150 | |
| Vinyl chloride | 50.0 | 49.7 | 99 | 65 - 145 | |
| Bromomethane | 50.0 | 41.6 | 83 | 65 - 145 | |
| Chloroethane | 50.0 | 49.2 | 98 | 70 - 135 | |
| Trichlorofluoromethane | 50.0 | 47.0 | 94 | 70 - 140 | |
| 1,1-Dichloroethene | 50.0 | 50.1 | 100 | 75 - 135 | |
| Freon TF | 50.0 | 44.7 | 89 | 75 - 140 | |
| Acetone | 125 | 111 | 89 | 50 - 130 | |
| Methyl iodide | 50.0 | 49.6 | 99 | 70 - 150 | |
| Carbon disulfide | 50.0 | 44.0 | 88 | 80 - 135 | |
| Methyl acetate | 50.0 | 49.5 | 99 | 60 - 140 | |
| Methylene Chloride | 50.0 | 51.2 | 102 | 75 - 140 | |
| trans-1,2-Dichloroethene | 50.0 | 49.3 | 99 | 80 - 130 | |
| Methyl t-butyl ether | 50.0 | 46.3 | 93 | 85 - 130 | |
| 1,1-Dichloroethane | 50.0 | 47.8 | 96 | 85 - 120 | |
| Vinyl acetate | 50.0 | 46.7 | 93 | 70 - 135 | |
| 2,2-Dichloropropane | 50.0 | 49.7 | 99 | 85 - 120 | |
| cis-1,2-Dichloroethene | 50.0 | 50.2 | 100 | 80 - 120 | |
| 2-Butanone | 125 | 118 | 94 | 70 - 135 | |
| Bromochloromethane | 50.0 | 48.4 | 97 | 75 - 125 | |
| Tetrahydrofuran | 575 | 536 | 93 | 75 - 125 | |
| Chloroform | 50.0 | 45.6 | 91 | 85 - 120 | |
| 1,1,1-Trichloroethane | 50.0 | 46.7 | 93 | 80 - 115 | |
| Cyclohexane | 50.0 | 47.7 | 95 | 60 - 140 | |
| 1,1-Dichloropropene | 50.0 | 53.4 | 107 | 85 - 120 | |
| Carbon tetrachloride | 50.0 | 49.9 | 100 | 80 - 115 | |
| Isobutyl alcohol | 2500 | 2600 | 104 | 70 - 135 | |
| Benzene | 50.0 | 50.6 | 101 | 85 - 120 | |
| 1,2-Dichloroethane | 50.0 | 47.8 | 96 | 75 - 120 | |
| Trichloroethene | 50.0 | 47.8 | 96 | 85 - 120 | |
| Methylcyclohexane | 50.0 | 49.0 | 98 | 60 - 140 | |
| 1,2-Dichloropropane | 50.0 | 47.8 | 96 | 85 - 120 | |
| Dibromomethane | 50.0 | 48.3 | 97 | 80 - 120 | |
| 1,4-Dioxane | 2500 | 2410 | 96 | 50 - 160 | |
| Bromodichloromethane | 50.0 | 47.0 | 94 | 80 - 115 | |
| 2-Chloroethyl vinyl ether | 50.0 | 51.0 | 102 | 65 - 145 | |
| cis-1,3-Dichloropropene | 50.0 | 48.9 | 98 | 85 - 120 | |
| 4-Methyl-2-pentanone | 125 | 131 | 104 | 65 - 135 | |
| Toluene | 50.0 | 49.4 | 99 | 75 - 125 | |
| trans-1,3-Dichloropropene | 50.0 | 48.4 | 97 | 85 - 120 | |
| 1,1,2-Trichloroethane | 50.0 | 46.7 | 93 | 75 - 125 | |
| Tetrachloroethene | 50.0 | 49.0 | 98 | 85 - 120 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Lab Control Sample - Batch: 200-11567**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: LCS 200-11567/4
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1259
Date Prepared: N/A

Analysis Batch: 200-11567
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndia04.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 50.0 | 48.7 | 97 | 85 - 120 | |
| 2-Hexanone | 125 | 132 | 106 | 70 - 135 | |
| Dibromochloromethane | 50.0 | 47.6 | 95 | 80 - 120 | |
| 1,2-Dibromoethane | 50.0 | 49.7 | 99 | 80 - 120 | |
| Chlorobenzene | 50.0 | 48.3 | 97 | 80 - 120 | |
| 1,1,1,2-Tetrachloroethane | 50.0 | 47.8 | 96 | 80 - 115 | |
| Ethylbenzene | 50.0 | 49.4 | 99 | 80 - 120 | |
| m&p-Xylene | 100 | 98.3 | 98 | 80 - 120 | |
| o-Xylene | 50.0 | 48.8 | 98 | 85 - 120 | |
| Styrene | 50.0 | 49.7 | 99 | 80 - 125 | |
| Bromoform | 50.0 | 47.7 | 95 | 75 - 130 | |
| Isopropylbenzene | 50.0 | 49.8 | 100 | 85 - 120 | |
| Bromobenzene | 50.0 | 48.8 | 98 | 85 - 120 | |
| 1,1,2,2-Tetrachloroethane | 50.0 | 49.1 | 98 | 75 - 125 | |
| 1,2,3-Trichloropropane | 50.0 | 49.9 | 100 | 70 - 125 | |
| n-Propylbenzene | 50.0 | 50.1 | 100 | 85 - 120 | |
| 2-Chlorotoluene | 50.0 | 49.7 | 99 | 85 - 120 | |
| 4-Chlorotoluene | 50.0 | 50.2 | 100 | 85 - 120 | |
| 1,3,5-Trimethylbenzene | 50.0 | 49.6 | 99 | 85 - 120 | |
| tert-Butylbenzene | 50.0 | 49.3 | 99 | 85 - 120 | |
| 1,2,4-Trimethylbenzene | 50.0 | 48.6 | 97 | 85 - 120 | |
| sec-Butylbenzene | 50.0 | 50.4 | 101 | 85 - 120 | |
| 1,3-Dichlorobenzene | 50.0 | 48.1 | 96 | 80 - 120 | |
| 4-Isopropyltoluene | 50.0 | 48.8 | 98 | 85 - 120 | |
| 1,4-Dichlorobenzene | 50.0 | 49.0 | 98 | 85 - 120 | |
| 1,2-Dichlorobenzene | 50.0 | 48.3 | 97 | 85 - 120 | |
| n-Butylbenzene | 50.0 | 50.5 | 101 | 85 - 125 | |
| 1,2-Dibromo-3-Chloropropane | 50.0 | 50.1 | 100 | 65 - 130 | |
| 1,2,4-Trichlorobenzene | 50.0 | 48.8 | 98 | 80 - 125 | |
| Hexachlorobutadiene | 50.0 | 51.8 | 104 | 65 - 150 | |
| Naphthalene | 50.0 | 53.4 | 107 | 80 - 125 | |
| 1,2,3-Trichlorobenzene | 50.0 | 50.4 | 101 | 70 - 125 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 65 - 155 |
| Toluene-d8 | 101 | 80 - 115 |
| Bromofluorobenzene | 100 | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 100 | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11588**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: MB 200-11588/7
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/23/2010 1032
Date Prepared: N/A

Analysis Batch: 200-11588
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndib07.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 5.0 | U | 0.075 | 5.0 |
| Chloromethane | 5.0 | U | 0.50 | 5.0 |
| Vinyl chloride | 5.0 | U | 0.50 | 5.0 |
| Bromomethane | 5.0 | U | 0.17 | 5.0 |
| Chloroethane | 5.0 | U | 0.29 | 5.0 |
| Trichlorofluoromethane | 5.0 | U | 0.069 | 5.0 |
| 1,1-Dichloroethene | 5.0 | U | 0.064 | 5.0 |
| Freon TF | 5.0 | U | 0.072 | 5.0 |
| Acetone | 5.0 | U | 2.0 | 5.0 |
| Methyl iodide | 5.0 | U | 1.0 | 5.0 |
| Carbon disulfide | 0.0714 | J | 0.048 | 5.0 |
| Methyl acetate | 5.0 | U | 0.31 | 5.0 |
| Methylene Chloride | 0.249 | J | 0.14 | 5.0 |
| trans-1,2-Dichloroethene | 5.0 | U | 0.082 | 5.0 |
| 1,2-Dichloroethene, Total | 5.0 | U | 0.40 | 5.0 |
| Methyl t-butyl ether | 5.0 | U | 0.076 | 5.0 |
| 1,1-Dichloroethane | 5.0 | U | 1.0 | 5.0 |
| Vinyl acetate | 5.0 | U | 0.38 | 5.0 |
| 2,2-Dichloropropane | 5.0 | U | 1.0 | 5.0 |
| cis-1,2-Dichloroethene | 5.0 | U | 0.50 | 5.0 |
| 2-Butanone | 5.0 | U | 0.78 | 5.0 |
| Bromochloromethane | 5.0 | U | 0.45 | 5.0 |
| Tetrahydrofuran | 2.81 | J | 1.0 | 50 |
| Chloroform | 5.0 | U | 0.066 | 5.0 |
| 1,1,1-Trichloroethane | 5.0 | U | 0.50 | 5.0 |
| Cyclohexane | 5.0 | U | 1.0 | 5.0 |
| 1,1-Dichloropropene | 5.0 | U | 0.50 | 5.0 |
| Carbon tetrachloride | 5.0 | U | 0.069 | 5.0 |
| Isobutyl alcohol | 250 | U | 6.6 | 250 |
| Benzene | 5.0 | U | 0.20 | 5.0 |
| 1,2-Dichloroethane | 5.0 | U | 2.0 | 5.0 |
| Trichloroethene | 5.0 | U | 0.064 | 5.0 |
| Methylcyclohexane | 5.0 | U | 0.12 | 5.0 |
| 1,2-Dichloropropane | 5.0 | U | 2.0 | 5.0 |
| Dibromomethane | 5.0 | U | 0.14 | 5.0 |
| 1,4-Dioxane | 250 | U | 10 | 250 |
| Bromodichloromethane | 5.0 | U | 2.0 | 5.0 |
| 2-Chloroethyl vinyl ether | 5.0 | U | 0.12 | 5.0 |
| cis-1,3-Dichloropropene | 5.0 | U | 0.13 | 5.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.048 | 5.0 |
| Toluene | 0.143 | J | 0.080 | 5.0 |
| trans-1,3-Dichloropropene | 5.0 | U | 0.50 | 5.0 |
| 1,1,2-Trichloroethane | 5.0 | U | 0.080 | 5.0 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11588**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: MB 200-11588/7
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/23/2010 1032
Date Prepared: N/A

Analysis Batch: 200-11588
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndib07.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Tetrachloroethene | 5.0 | U | 0.33 | 5.0 |
| 1,3-Dichloropropane | 5.0 | U | 0.064 | 5.0 |
| 2-Hexanone | 5.0 | U | 1.0 | 5.0 |
| Dibromochloromethane | 5.0 | U | 0.39 | 5.0 |
| 1,2-Dibromoethane | 5.0 | U | 2.0 | 5.0 |
| Chlorobenzene | 5.0 | U | 0.050 | 5.0 |
| 1,1,1,2-Tetrachloroethane | 5.0 | U | 0.50 | 5.0 |
| Ethylbenzene | 5.0 | U | 0.055 | 5.0 |
| m&p-Xylene | 5.0 | U | 0.40 | 5.0 |
| o-Xylene | 5.0 | U | 0.084 | 5.0 |
| Xylenes, Total | 5.0 | U | 0.15 | 5.0 |
| Styrene | 5.0 | U | 0.20 | 5.0 |
| Bromoform | 5.0 | U | 2.0 | 5.0 |
| Isopropylbenzene | 5.0 | U | 0.11 | 5.0 |
| Bromobenzene | 5.0 | U | 0.081 | 5.0 |
| 1,1,2,2-Tetrachloroethane | 5.0 | U | 1.0 | 5.0 |
| 1,2,3-Trichloropropane | 5.0 | U | 0.21 | 5.0 |
| n-Propylbenzene | 5.0 | U | 0.12 | 5.0 |
| 2-Chlorotoluene | 5.0 | U | 0.13 | 5.0 |
| 4-Chlorotoluene | 5.0 | U | 0.16 | 5.0 |
| 1,3,5-Trimethylbenzene | 5.0 | U | 0.11 | 5.0 |
| tert-Butylbenzene | 5.0 | U | 0.14 | 5.0 |
| 1,2,4-Trimethylbenzene | 0.0911 | J | 0.086 | 5.0 |
| sec-Butylbenzene | 5.0 | U | 0.13 | 5.0 |
| 1,3-Dichlorobenzene | 0.135 | J | 0.11 | 5.0 |
| 4-Isopropyltoluene | 5.0 | U | 0.11 | 5.0 |
| 1,4-Dichlorobenzene | 0.201 | J | 0.13 | 5.0 |
| 1,2-Dichlorobenzene | 0.184 | J | 0.12 | 5.0 |
| n-Butylbenzene | 0.234 | J | 0.088 | 5.0 |
| 1,2-Dibromo-3-Chloropropane | 5.0 | U | 1.0 | 5.0 |
| 1,2,4-Trichlorobenzene | 0.340 | J | 0.069 | 5.0 |
| Hexachlorobutadiene | 5.0 | U | 0.20 | 5.0 |
| Naphthalene | 0.632 | J | 0.089 | 5.0 |
| 1,2,3-Trichlorobenzene | 0.413 | J | 0.13 | 5.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 65 - 155 |
| Toluene-d8 | 97 | 80 - 115 |
| Bromofluorobenzene | 105 | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 104 | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Lab Control Sample - Batch: 200-11588**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: LCS 200-11588/5
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/23/2010 0931
Date Prepared: N/A

Analysis Batch: 200-11588
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndib05.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | 50.0 | 40.2 | 80 | 30 - 180 | |
| Chloromethane | 50.0 | 44.0 | 88 | 55 - 150 | |
| Vinyl chloride | 50.0 | 49.2 | 98 | 65 - 145 | |
| Bromomethane | 50.0 | 41.6 | 83 | 65 - 145 | |
| Chloroethane | 50.0 | 49.7 | 99 | 70 - 135 | |
| Trichlorofluoromethane | 50.0 | 47.1 | 94 | 70 - 140 | |
| 1,1-Dichloroethene | 50.0 | 51.0 | 102 | 75 - 135 | |
| Freon TF | 50.0 | 45.5 | 91 | 75 - 140 | |
| Acetone | 125 | 109 | 88 | 50 - 130 | |
| Methyl iodide | 50.0 | 48.0 | 96 | 70 - 150 | |
| Carbon disulfide | 50.0 | 44.6 | 89 | 80 - 135 | |
| Methyl acetate | 50.0 | 49.9 | 100 | 60 - 140 | |
| Methylene Chloride | 50.0 | 52.9 | 106 | 75 - 140 | |
| trans-1,2-Dichloroethene | 50.0 | 50.5 | 101 | 80 - 130 | |
| Methyl t-butyl ether | 50.0 | 48.1 | 96 | 85 - 130 | |
| 1,1-Dichloroethane | 50.0 | 49.0 | 98 | 85 - 120 | |
| Vinyl acetate | 50.0 | 47.3 | 95 | 70 - 135 | |
| 2,2-Dichloropropane | 50.0 | 50.8 | 102 | 85 - 120 | |
| cis-1,2-Dichloroethene | 50.0 | 50.7 | 101 | 80 - 120 | |
| 2-Butanone | 125 | 118 | 94 | 70 - 135 | |
| Bromochloromethane | 50.0 | 49.2 | 98 | 75 - 125 | |
| Tetrahydrofuran | 575 | 544 | 95 | 75 - 125 | |
| Chloroform | 50.0 | 46.8 | 94 | 85 - 120 | |
| 1,1,1-Trichloroethane | 50.0 | 48.5 | 97 | 80 - 115 | |
| Cyclohexane | 50.0 | 47.6 | 95 | 60 - 140 | |
| 1,1-Dichloropropene | 50.0 | 49.0 | 98 | 85 - 120 | |
| Carbon tetrachloride | 50.0 | 46.7 | 93 | 80 - 115 | |
| Isobutyl alcohol | 2500 | 2610 | 105 | 70 - 135 | |
| Benzene | 50.0 | 52.0 | 104 | 85 - 120 | |
| 1,2-Dichloroethane | 50.0 | 49.7 | 99 | 75 - 120 | |
| Trichloroethene | 50.0 | 49.0 | 98 | 85 - 120 | |
| Methylcyclohexane | 50.0 | 49.9 | 100 | 60 - 140 | |
| 1,2-Dichloropropane | 50.0 | 49.5 | 99 | 85 - 120 | |
| Dibromomethane | 50.0 | 50.2 | 100 | 80 - 120 | |
| 1,4-Dioxane | 2500 | 2470 | 99 | 50 - 160 | |
| Bromodichloromethane | 50.0 | 48.8 | 98 | 80 - 115 | |
| 2-Chloroethyl vinyl ether | 50.0 | 41.5 | 83 | 65 - 145 | |
| cis-1,3-Dichloropropene | 50.0 | 50.2 | 100 | 85 - 120 | |
| 4-Methyl-2-pentanone | 125 | 132 | 106 | 65 - 135 | |
| Toluene | 50.0 | 51.0 | 102 | 75 - 125 | |
| trans-1,3-Dichloropropene | 50.0 | 50.7 | 101 | 85 - 120 | |
| 1,1,2-Trichloroethane | 50.0 | 48.9 | 98 | 75 - 125 | |
| Tetrachloroethene | 50.0 | 50.4 | 101 | 85 - 120 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Lab Control Sample - Batch: 200-11588**

**Method: 8260B**
**Preparation: N/A**

Lab Sample ID: LCS 200-11588/5
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/23/2010 0931
Date Prepared: N/A

Analysis Batch: 200-11588
Prep Batch: N/A
Units: ug/Kg

Instrument ID: N.i
Lab File ID: ndib05.d
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,3-Dichloropropane | 50.0 | 49.9 | 100 | 85 - 120 | |
| 2-Hexanone | 125 | 131 | 105 | 70 - 135 | |
| Dibromochloromethane | 50.0 | 49.6 | 99 | 80 - 120 | |
| 1,2-Dibromoethane | 50.0 | 51.3 | 103 | 80 - 120 | |
| Chlorobenzene | 50.0 | 50.1 | 100 | 80 - 120 | |
| 1,1,1,2-Tetrachloroethane | 50.0 | 49.3 | 99 | 80 - 115 | |
| Ethylbenzene | 50.0 | 50.7 | 101 | 80 - 120 | |
| m&p-Xylene | 100 | 103 | 103 | 80 - 120 | |
| o-Xylene | 50.0 | 50.5 | 101 | 85 - 120 | |
| Styrene | 50.0 | 51.0 | 102 | 80 - 125 | |
| Bromoform | 50.0 | 49.2 | 98 | 75 - 130 | |
| Isopropylbenzene | 50.0 | 50.4 | 101 | 85 - 120 | |
| Bromobenzene | 50.0 | 50.0 | 100 | 85 - 120 | |
| 1,1,2,2-Tetrachloroethane | 50.0 | 49.5 | 99 | 75 - 125 | |
| 1,2,3-Trichloropropane | 50.0 | 50.3 | 101 | 70 - 125 | |
| n-Propylbenzene | 50.0 | 50.5 | 101 | 85 - 120 | |
| 2-Chlorotoluene | 50.0 | 50.0 | 100 | 85 - 120 | |
| 4-Chlorotoluene | 50.0 | 50.3 | 101 | 85 - 120 | |
| 1,3,5-Trimethylbenzene | 50.0 | 49.7 | 99 | 85 - 120 | |
| tert-Butylbenzene | 50.0 | 49.0 | 98 | 85 - 120 | |
| 1,2,4-Trimethylbenzene | 50.0 | 48.8 | 98 | 85 - 120 | |
| sec-Butylbenzene | 50.0 | 49.6 | 99 | 85 - 120 | |
| 1,3-Dichlorobenzene | 50.0 | 48.2 | 96 | 80 - 120 | |
| 4-Isopropyltoluene | 50.0 | 48.2 | 96 | 85 - 120 | |
| 1,4-Dichlorobenzene | 50.0 | 50.4 | 101 | 85 - 120 | |
| 1,2-Dichlorobenzene | 50.0 | 49.0 | 98 | 85 - 120 | |
| n-Butylbenzene | 50.0 | 50.4 | 101 | 85 - 125 | |
| 1,2-Dibromo-3-Chloropropane | 50.0 | 49.0 | 98 | 65 - 130 | |
| 1,2,4-Trichlorobenzene | 50.0 | 48.5 | 97 | 80 - 125 | |
| Hexachlorobutadiene | 50.0 | 49.7 | 99 | 65 - 150 | |
| Naphthalene | 50.0 | 48.5 | 97 | 80 - 125 | |
| 1,2,3-Trichlorobenzene | 50.0 | 48.8 | 98 | 70 - 125 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 65 - 155 |
| Toluene-d8 | 99 | 80 - 115 |
| Bromofluorobenzene | 98 | 80 - 115 |
| 1,2-Dichlorobenzene-d4 | 97 | 45 - 145 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11369**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11369/3-A | Analysis Batch: | 200-11385 | Instrument ID: | WCLachat |
| Client Matrix: | Sediment | Prep Batch: | 200-11369 | Lab File ID: | OM_12-20-10_12-37-48PM.O |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 1.00 g |
| Date Analyzed: | 12/20/2010 1252 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 12/20/2010 1030 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Cyanide, Total | 0.50 | U | 0.062 | 0.50 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Low Level Control Sample - Batch: 200-11369**

**Method: 9012A**
**Preparation: 9012A**

Lab Sample ID: LLCS 200-11369/1-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 1248
Date Prepared: 12/20/2010 1030

Analysis Batch: 200-11385
Prep Batch: 200-11369
Units: mg/Kg

Instrument ID: WCLachat
Lab File ID: OM_12-20-10_12-37-48PM.O
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 0.0500 | 0.0491 | 98 | 90 - 110 | |

**High Level Control Sample - Batch: 200-11369**

**Method: 9012A**
**Preparation: 9012A**

Lab Sample ID: HLCS 200-11369/2-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 1249
Date Prepared: 12/20/2010 1030

Analysis Batch: 200-11385
Prep Batch: 200-11369
Units: mg/Kg

Instrument ID: WCLachat
Lab File ID: OM_12-20-10_12-37-48PM.O
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 0.200 | 0.202 | 101 | 90 - 110 | |

**Lab Control Sample - Batch: 200-11369**

**Method: 9012A**
**Preparation: 9012A**

Lab Sample ID: LCS 200-11369/4-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 1254
Date Prepared: 12/20/2010 1030

Analysis Batch: 200-11385
Prep Batch: 200-11369
Units: mg/Kg

Instrument ID: WCLachat
Lab File ID: OM_12-20-10_12-37-48PM.O
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 0.120 | 0.125 | 104 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

Lab Sample ID: MB 200-11398/3-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 1759
Date Prepared: 12/20/2010 1540

Analysis Batch: 200-11408
Prep Batch: 200-11398
Units: mg/Kg

Instrument ID: WCLachat
Lab File ID: OM_12-20-10_05-44-33PM.O
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Cyanide, Total | 0.50 | U | 0.062 | 0.50 |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Low Level Control Sample - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

Lab Sample ID: LLCS 200-11398/1-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 1755
Date Prepared: 12/20/2010 1540

Analysis Batch: 200-11408
Prep Batch: 200-11398
Units: mg/Kg

Instrument ID: WCLachat
Lab File ID: OM_12-20-10_05-44-33PM.O
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 0.0500 | 0.0492 | 98 | 90 - 110 | |

**High Level Control Sample - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

Lab Sample ID: HLCS 200-11398/2-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 1756
Date Prepared: 12/20/2010 1540

Analysis Batch: 200-11408
Prep Batch: 200-11398
Units: mg/Kg

Instrument ID: WCLachat
Lab File ID: OM_12-20-10_05-44-33PM.O
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 0.200 | 0.199 | 99 | 90 - 110 | |

**Lab Control Sample - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

Lab Sample ID: LCS 200-11398/4-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 1800
Date Prepared: 12/20/2010 1540

Analysis Batch: 200-11408
Prep Batch: 200-11398
Units: mg/Kg

Instrument ID: WCLachat
Lab File ID: OM_12-20-10_05-44-33PM.O
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 0.120 | 0.123 | 102 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11455**

**Method: AVS**
**Preparation: AVSSEM**
**AVS/SEM**

Lab Sample ID: MB 200-11455/1-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 0800
Date Prepared: 12/20/2010 0800

Analysis Batch: 200-11459
Prep Batch: 200-11455
Units: mg/Kg

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 10.00 g
Final Weight/Volume: 10.00 mL

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 16.0 | U | 16.0 | 16.0 |

**Lab Control Sample - Batch: 200-11455**

**Method: AVS**
**Preparation: AVSSEM**
**AVS/SEM**

Lab Sample ID: LCS 200-11455/2-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/20/2010 0800
Date Prepared: 12/20/2010 0800

Analysis Batch: 200-11459
Prep Batch: 200-11455
Units: mg/Kg

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 10.00 g
Final Weight/Volume: 10.00 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 360 | 340.0 | 94 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11463**

**Method: AVS**
**Preparation: AVSSEM**
**AVS/SEM**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11463/1-A | Analysis Batch: | 200-11464 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Sediment | Prep Batch: | 200-11463 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 10.00 g |
| Date Analyzed: | 12/20/2010 1350 | | | Final Weight/Volume: | 10.00 mL |
| Date Prepared: | 12/20/2010 1350 | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 16.0 | U | 16.0 | 16.0 |

**Lab Control Sample - Batch: 200-11463**

**Method: AVS**
**Preparation: AVSSEM**
**AVS/SEM**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11463/2-A | Analysis Batch: | 200-11464 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Sediment | Prep Batch: | 200-11463 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 10.00 g |
| Date Analyzed: | 12/20/2010 1350 | | | Final Weight/Volume: | 10.00 mL |
| Date Prepared: | 12/20/2010 1350 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Acid Volatile Sulfides (AVS) | 360 | 352.0 | 98 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11574**

**Method: Lloyd Kahn**
**Preparation: N/A**

Lab Sample ID: MB 200-11574/3
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1909
Date Prepared: N/A

Analysis Batch: 200-11574
Prep Batch: N/A
Units: mg/Kg

Instrument ID: WCCH2
Lab File ID: 122210D003
Initial Weight/Volume: 1.0 g
Final Weight/Volume: 1.0 g

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Total Organic Carbon | 1000 | U | 1000 | 1000 |

**Lab Control Sample - Batch: 200-11574**

**Method: Lloyd Kahn**
**Preparation: N/A**

Lab Sample ID: LCS 200-11574/4
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1921
Date Prepared: N/A

Analysis Batch: 200-11574
Prep Batch: N/A
Units: mg/Kg

Instrument ID: WCCH2
Lab File ID: 122210D005
Initial Weight/Volume: 1.0 g
Final Weight/Volume: 1.0 g

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon | 8500 | 7970 | 94 | 75 - 125 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11575**

**Method: Lloyd Kahn**
**Preparation: N/A**

Lab Sample ID: MB 200-11575/3
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1630
Date Prepared: N/A

Analysis Batch: 200-11575
Prep Batch: N/A
Units: mg/Kg

Instrument ID: WCCH1
Lab File ID: 12210C003
Initial Weight/Volume: 1.0 g
Final Weight/Volume: 1.0 g

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Total Organic Carbon | 1000 | U | 1000 | 1000 |

**Lab Control Sample - Batch: 200-11575**

**Method: Lloyd Kahn**
**Preparation: N/A**

Lab Sample ID: LCS 200-11575/4
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 12/22/2010 1643
Date Prepared: N/A

Analysis Batch: 200-11575
Prep Batch: N/A
Units: mg/Kg

Instrument ID: WCCH1
Lab File ID: 12210C005
Initial Weight/Volume: 1.0 g
Final Weight/Volume: 1.0 g

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon | 8500 | 8165 | 96 | 75 - 125 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11752**

**Method: SM 4500 NH3 C**
**Preparation: SM 4500 NH3 B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11752/2-A | Analysis Batch: | 200-11753 | Instrument ID: | WCS2 |
| Client Matrix: | Sediment | Prep Batch: | 200-11752 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/22/2010 1600 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 12/22/2010 1040 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Ammonia | 0.0518 | J | 0.046 | 0.10 |

**Lab Control Sample - Batch: 200-11752**

**Method: SM 4500 NH3 C**
**Preparation: SM 4500 NH3 B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11752/3-A | Analysis Batch: | 200-11753 | Instrument ID: | WCS2 |
| Client Matrix: | Sediment | Prep Batch: | 200-11752 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 20 mL |
| Date Analyzed: | 12/22/2010 1600 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 12/22/2010 1040 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Ammonia | 2.00 | 1.93 | 96 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11754**

**Method: SM 4500 NH3 C**
**Preparation: SM 4500 NH3 B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11754/2-A | Analysis Batch: | 200-11756 | Instrument ID: | WCS2 |
| Client Matrix: | Sediment | Prep Batch: | 200-11754 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 12/23/2010 1600 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 12/23/2010 0830 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Ammonia | 0.10 | U | 0.046 | 0.10 |

**Lab Control Sample - Batch: 200-11754**

**Method: SM 4500 NH3 C**
**Preparation: SM 4500 NH3 B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11754/3-A | Analysis Batch: | 200-11756 | Instrument ID: | WCS2 |
| Client Matrix: | Sediment | Prep Batch: | 200-11754 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 20 mL |
| Date Analyzed: | 12/23/2010 1600 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 12/23/2010 0830 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Ammonia | 2.00 | 1.93 | 96 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11813**

**Method: SM 4500 Norg C**
**Preparation: SM4500Norg_C**

Lab Sample ID: MB 200-11813/2-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 01/05/2011 1427
Date Prepared: 01/04/2011 1415

Analysis Batch: 200-11815
Prep Batch: 200-11813
Units: mg/Kg

Instrument ID: WCS2
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrogen, Kjeldahl | 0.20 | U | 0.20 | 0.20 |

**Lab Control Sample - Batch: 200-11813**

**Method: SM 4500 Norg C**
**Preparation: SM4500Norg_C**

Lab Sample ID: LCS 200-11813/3-A
Client Matrix: Sediment
Dilution: 1.0
Date Analyzed: 01/05/2011 1427
Date Prepared: 01/04/2011 1415

Analysis Batch: 200-11815
Prep Batch: 200-11813
Units: mg/Kg

Instrument ID: WCS2
Lab File ID: N/A
Initial Weight/Volume: 20 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrogen, Kjeldahl | 2.40 | 2.38 | 99 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2983-1
Sdg Number: 200-2983-1

**Method Blank - Batch: 200-11816**

**Method: SM 4500 Norg C**
**Preparation: SM4500Norg_C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11816/2-A | Analysis Batch: | 200-11903 | Instrument ID: | WCS2 |
| Client Matrix: | Sediment | Prep Batch: | 200-11816 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 01/06/2011 0815 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 01/05/2011 1200 | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Nitrogen, Kjeldahl | 0.20 | U | 0.20 | 0.20 |

**Lab Control Sample - Batch: 200-11816**

**Method: SM 4500 Norg C**
**Preparation: SM4500Norg_C**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11816/3-A | Analysis Batch: | 200-11903 | Instrument ID: | WCS2 |
| Client Matrix: | Sediment | Prep Batch: | 200-11816 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | mg/Kg | Initial Weight/Volume: | 20 mL |
| Date Analyzed: | 01/06/2011 0815 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 01/05/2011 1200 | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrogen, Kjeldahl | 2.40 | 2.38 | 99 | 85 - 115 | |

FROM: U.S. ARMY ERDC CE-WES-LM-MS (601) 634-4826
U.S. ARMY ERDC CE-WES-LM-MS
3909 Halls Ferry Road
PATTY TUMINELLO
Vicksburg, MS 39180

FedEx Revenue Barcode

FedEx Express

TO: **TEST AMERICA (802) 660-1990**

**BURLINGTON LAB**
**30 COMMUNITY DRIVE SUITE 11**
**SOUTH BURLINGTON, VT 05403**

CAD: 2207818
SHIP DATE: 14DEC10
WEIGHT: 50.0 LB

DIMMED: 24 X 14 X 15 IN

Ref: 00820280W81EWFJS

RELEASE#

DELIVERY ADDRESS (FedEx-EDR)

**PRIORITY OVERNIGHT**

**WED**
**AA**
Deliver by:
**15DEC10**

**TRK # 7942 1736 8752**

FORM
0201

**BTV**

**05403** -VT-US

**XH BTVA**

J-1030101004

FROM: U.S. ARMY ERDC CE-WES-LM-MS (601) 634-4826
U.S. ARMY ERDC CE-WES-LM-MS
3909 Halls Ferry Road
PATTY TUMINELLO
Vicksburg, MS 39180

FedEx Revenue Barcode

FedEx Express

TO: **TEST AMERICA (802) 660-1990**

**BURLINGTON LAB**
**30 COMMUNITY DRIVE SUITE 11**
**SOUTH BURLINGTON, VT 05403**

CAD: 2207818
SHIP DATE: 14DEC10
WEIGHT: 50.0 LB

DIMMED: 24 X 14 X 15 IN

Ref: 00820280W81EWFKQ

RELEASE#

DELIVERY ADDRESS (FedEx-EDR)

**PRIORITY OVERNIGHT**

**WED**
**AA**
Deliver by:
**15DEC10**

**TRK # 7965 5206 6857**

FORM
0201

**BTV**

**05403** -VT-US

**XH BTVA**

J-1030101004

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

**SENDING LABORATORY:**

ERDC- EL-EP-C (Environmental Chemistry Branch)
3909 Halls Ferry Road , Building 3299
Vicksburg, MS 39180
Phone: 601-634-4826
Fax: 601-634-2742
Project Manager: Patty Tuminello

**RECEIVING LABORATORY:**

White Water Associates
429 River Lane
Amasa, MI 49903
Phone :(906) 822-7889
Fax: -

TestAmerica
Burlington Lab
30 Community Drive
Suite 11
South Burlington, VT 05403
802-660-1990

**BPA Call No:** 19 (Millington) **BPA Call Date:** 12/7/10

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: CH - 1** | **Soil/Sedir Sampled:09-Nov-2010 00:00** | | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | * For AVS, send material for SEM prep back to ERDC - Vicksburg |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* 1-4oz, 1-16oz jar | | | | * Do this for all samples |
| **ID: CH - 2** | **Soil/Sedir Sampled:09-Nov-2010 00:00** | | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | * SEM prep |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* 1-4oz, 1-16oz jar | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| Patty Tuminello | 13 Dec 2010 | [signature] | 12/15/10 1020 |
| | | | |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: CH - 3** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4oz, 16oz | | | | |
| **ID: CH - 4** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | SEM Prep |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz jar, 16oz jar | | | | |
| **ID: CH - 5** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | SEM prep |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz, 16oz jar | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| F. L | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: CH - 5 DUP** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz, 16 oz | | | | |
| **ID: CH - 6a** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz, 16 oz | | | | |
| **ID: CH - 6b** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz, 16 oz | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: CH - 7a** | **Soil/Sedi** | **Sampled:09-Nov-2010 00:00** | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | SEM prep |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz, 16 oz | | | | |
| **ID: CH - 7b** | **Soil/Sedi** | **Sampled:09-Nov-2010 00:00** | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz, 16 oz | | | | |
| **ID: CH - 8** | **Soil/Sedi** | **Sampled:09-Nov-2010 00:00** | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | SEM prep |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4 oz, 16 oz | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: DMU 1 (composite)** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| *Containers Supplied:* 1602 | | | | * See note on last page |
| **ID: DMU 2 (composite)** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* 1602 | | | | * See note on last page |
| **ID: PB - 1** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* 402, 1602 | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: PB - 2** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4oz, 16oz | | | | |
| **ID: PB - 3** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | SEM prep |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4oz, 16oz | | | | |
| **ID: PB - 4** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | SEM prep |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4oz, 16oz | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: PB Composite** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4oz, 16oz | | | | |
| **ID: BS - 1** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4oz, 16oz | | | | |
| **ID: BS - 2** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| 4oz, 16oz | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: BS - 3** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | SEM prep |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| *Containers Supplied:* 4 oz, 16 oz | | | | |
| **ID: BS 4** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | SEM prep |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| *Containers Supplied:* 4 oz, 16 oz | | | | |
| **ID: BS Composite** | **Soil/Sedi Sampled:09-Nov-2010 00:00** | | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| *Containers Supplied:* 4 oz, 16 oz | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111202**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: DMU Sieved Composite** | **Soil/Sedir Sampled:09-Nov-2010 00:00** | | [redacted] | |
| Volatiles | 30-Nov-2010 00:00 | 09-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| AVS | 07-Dec-2010 00:00 | 09-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | SEM prep |
| Nitrogen - Kjeldahl, Total (TKN | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Particle Size - Hydrometer | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| Particle Size - Sieve | 13-Nov-2010 00:00 | 23-Nov-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 09-Dec-2010 00:00 | | |

*Containers Supplied:*
1 6oz jar

For DMU1 (composite) and DMU 2 (composite), we were limited on the amount of material we could send. Run the Volatiles, AVS|SEM prep, Ammonia, TKN, TOC, Cyanide, [redacted] and Particle Size (Hydrometer & Sieve) first. If there is enough material, then run for Atterberg Limits, Percent Moisture, Percent Organic Matter.

The Proctor and Permeability tests require either 5gal bucket of material or Shelby Tube (10"). I do not have either. We may send material later.

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 12/13/10 | [signature] | 12/15/10 1020 |
| Released By | Date | Received By | Date |

# Login Sample Receipt Check List

Client: White Water Associates

Job Number: 200-2983-1
SDG Number: 200-2983-1

**Login Number: 2983**
**List Source: TestAmerica Burlington**
**Creator: Keeton, Jamie**
**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 2.3, 4.7ºC IR gun ID 96, CF= -1 |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | N/A | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | False | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | N/A | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

12 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| CH - 1 | 0111202-01 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 2 | 0111202-02 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 3 | 0111202-03 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 4 | 0111202-04 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 | 0111202-05 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 5 DUP | 0111202-06 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6a | 0111202-07 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 6b | 0111202-08 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7a | 0111202-09 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 7b | 0111202-10 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| CH - 8 | 0111202-11 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 1 (composite) | 0111202-12 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU 2 (composite) | 0111202-13 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 1 | 0111202-14 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 2 | 0111202-15 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 3 | 0111202-16 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB - 4 | 0111202-17 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| PB Composite | 0111202-18 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 1 | 0111202-19 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 2 | 0111202-20 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS - 3 | 0111202-21 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS 4 | 0111202-22 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| BS Composite | 0111202-23 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |
| DMU Sieved Composite | 0111202-24 | Soil/Sediment | 09-Nov-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 1

**0111202-01 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **47.7** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 2

**0111202-02 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **43.6** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 3

**0111202-03 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **44.0** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 4

**0111202-04 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **52.4** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 5

**0111202-05 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **54.1** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 5 DUP

**0111202-06 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **48.6** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 6a

**0111202-07 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **48.0** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 6b

**0111202-08 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **51.3** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 7a

**0111202-09 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **55.7** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 7b

**0111202-10 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **55.4** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## CH - 8

**0111202-11 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **54.9** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 (composite)

**0111202-12 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **41.4** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 2 (composite)

**0111202-13 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **54.3** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## PB - 1

**0111202-14 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **82.7** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## PB - 2

**0111202-15 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **82.2** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## PB - 3

**0111202-16 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.7** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## PB - 4

**0111202-17 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **82.8** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## PB Composite

**0111202-18 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **76.7** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS - 1

**0111202-19 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **73.6** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS - 2

**0111202-20 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **79.2** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS - 3

**0111202-21 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **73.3** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS 4

**0111202-22 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **70.1** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## BS Composite

**0111202-23 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **74.7** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU Sieved Composite

**0111202-24 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **50.3** | 0.100 | g | 1 | 10-Dec-2010 | 10-Dec-2010 | % Calculation | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 200-3067-1

Job Description: Vicksburg Quote

For:
White Water Associates
429 River Lane
PO BOX 27
Amasa, MI 49903

Attention: Dr. Bette J Premo

Approved for release.
Sara S Goff
Project Manager I
1/24/2011 3:59 PM

Sara S Goff
Project Manager I
sara.goff@testamericainc.com
01/24/2011

The test results in this report relate only to sample(s) as received by the laboratory. These test results were derived under a quality system that adheres to the requirements of NELAC. Pursuant to NELAC, this report may not be produced in full without written approval from the laboratory

# CASE NARRATIVE

## Client: White Water Associates

## Project: Vicksburg Quote

## Report Number: 200-3067-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

**RECEIPT**

The samples were received on 12/15/2010; the samples arrived in good condition.

After receipt in Burlington, containers for the analysis of ASTM methods D698 and D5084 were were delivered to GeoTesting Express in Boxborough, MA.

# METHOD SUMMARY

Client: White Water Associates

Job Number: 200-3067-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Sediment** | | | |
| ASTM D5084 Hydraulic Conductivity | GeoTesting | ASTM D5084 | |
| ASTM D698 (Moisture Content-Proctor) | GeoTesting | ASTM D698 | |

**Lab References:**

GeoTesting = GeoTesting - Boxboro

**Method References:**

ASTM = ASTM International

## SAMPLE SUMMARY

Client: White Water Associates

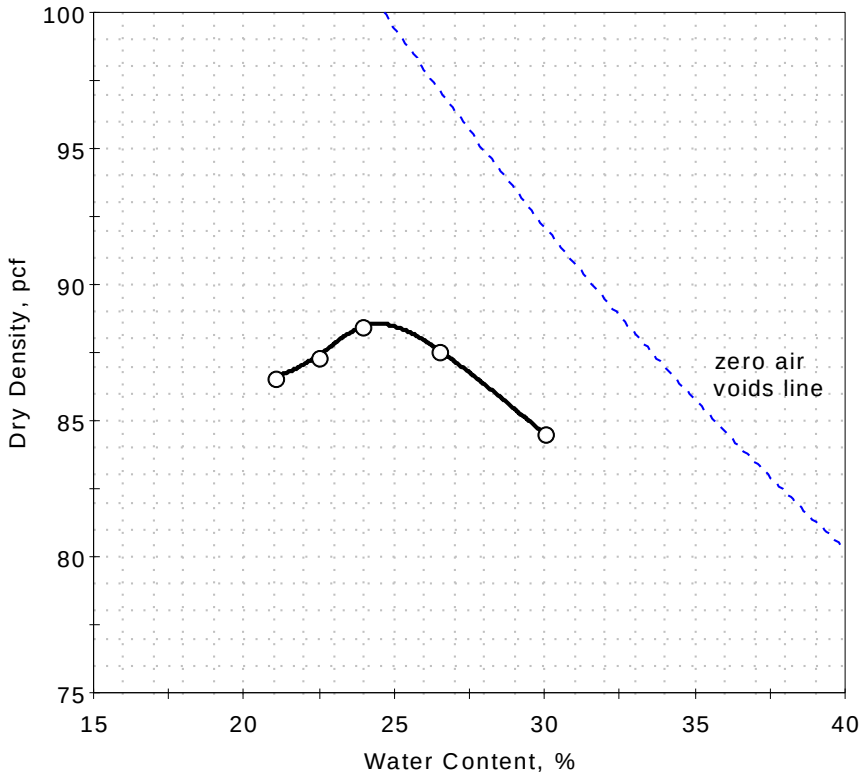
Job Number: 200-3067-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 200-3067-1 | DMU2 | Sediment | 11/09/2010 0000 | 12/21/2010 1130 |

| | | | | | |
|---|---|---|---|---|---|
| Client: | Test America | | | | |
| Project: | Vicksburg Quote | | | | |
| Location: | --- | | | Project No: | GTX-10474 |
| Boring ID: | --- | Sample Type: | bucket | Tested By: | cwd |
| Sample ID: | DMU2 (200-3067-1) | Test Date: | 01/17/11 | Checked By: | jdt |
| Depth : | --- | Test Id: | 201749 | | |

Test Comment: ---
Sample Description: Moist, gray clay
Sample Comment: ---

# Compaction Report - ASTM D 698




| Data Points | Point 1 | Point 2 | Point 3 | Point 4 | Point 5 |
|---|---|---|---|---|---|
| Dry density, pcf | 86.6 | 87.4 | 88.5 | 87.6 | 84.5 |
| Moisture Content, % | 21.0 | 22.5 | 23.9 | 26.5 | 30.0 |

Method : A
Preparation : DRY
As received Moisture :
Rammer : Manual
Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 88.5 pcf
Optimum Moisture= 24.5 %

| | | | |
|---|---|---|---|
| Client: | Test America | | |
| Project Name: | Vicksburg Quote | | |
| Project Location: | --- | | |
| GTX #: | 10474 | | |
| Start Date: | 01/18/11 | Tested By: | md/ema |
| End Date: | 01/20/11 | Checked By: | jdt |
| Boring #: | --- | | |
| Sample #: | DMUS (200-3067-1) | | |
| Depth: | --- | | |
| Visual Description: | Moist, gray clay | | |

# Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D 5084

## Constant Gradient

| | | | |
|---|---|---|---|
| Sample Type: | remolded | Permeant Fluid: | de-aired tap water |
| Orientation: | Vertical | Cell #: | 12/5/15 |

Sample Preparation: Target Compaction: 100% of Maximum Dry Density (88.5 pcf) at optimuim moisture content (24.5%). Trimmings moisture content = 24.0%.

| Parameter | Initial | Final |
|---|---|---|
| Height, in | 1.99 | 1.93 |
| Diameter, in | 2.86 | 2.86 |
| Area, $in^2$ | 6.42 | 6.42 |
| Volume, $in^3$ | 12.78 | 12.40 |
| Mass, g | 368 | 386 |
| Bulk Density, pcf | 110 | 118 |
| Moisture Content, % | 24.1 | 30.2 |
| Dry Density, pcf | 88.2 | 91.0 |
| Degree of Saturation, % | --- | 96 |

**B COEFFICIENT DETERMINATION**

| | | | |
|---|---|---|---|
| Cell Pressure, psi: | 94.8 | Pressure Increment, psi: | 5.06 |
| Sample Pressure, psi: | 89.262 | B Coefficient: | 0.84 |

* B value did not increase with increase in pressure.

**FLOW DATA**

| Date | Time, sec | Pressure, psi Cell | Inlet | Outlet | Gradient | Flow Volume, cc In | Out | Δ In | Δ Out | Temp, °C | $R_t$ | Permeability K @ 20 °C, cm/sec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/19 | --- | 90.0 | 85.5 | 84.5 | 14.3 | 11.80 | 13.10 | --- | --- | --- | --- | --- |
| 1/19 | 2640 | 90.0 | 85.5 | 84.5 | 14.3 | 11.90 | 13.00 | 0.10 | 0.10 | 20 | 1.000 | 6.4E-08 |
| 1/19 | ---- | 90.0 | 85.5 | 84.5 | 14.3 | 11.90 | 13.00 | --- | --- | --- | --- | --- |
| 1/19 | 4840 | 90.0 | 85.5 | 84.5 | 14.3 | 12.10 | 12.80 | 0.20 | 0.20 | 20 | 1.000 | 7.0E-08 |
| 1/19 | ---- | 90.0 | 85.5 | 84.5 | 14.3 | 12.10 | 12.80 | --- | --- | --- | --- | --- |
| 1/19 | 6000 | 90.0 | 85.5 | 84.5 | 14.3 | 12.30 | 12.60 | 0.20 | 0.20 | 20 | 1.000 | 5.6E-08 |
| 1/19 | ---- | 90.0 | 85.5 | 84.5 | 14.3 | 12.30 | 12.60 | --- | --- | --- | --- | --- |
| 1/19 | 2840 | 90.0 | 85.5 | 84.5 | 14.3 | 12.40 | 12.50 | 0.10 | 0.10 | 20 | 1.000 | 5.9E-08 |

**PERMEABILITY AT 20° C: 6.2 x $10^{-8}$ cm/sec (@ 5 psi effective stress)**

FROM: U.S. ARMY ERDC CE-WES-LM-MS (601) 634-4826
U.S. ARMY ERDC CE-WES-LM-MS
3909 Halls Ferry Road
PATTY TUMINELLO
Vicksburg, MS 39180

FedEx Revenue Barcode

FedEx Express

TO: **TEST AMERICA (802) 660-1990**

**BURLINGTON LAB**
**30 COMMUNITY DRIVE SUITE 11**
**SOUTH BURLINGTON, VT 05403**

CAD: 2207818
SHIP DATE: 20DEC10
WEIGHT: 15.0 LB

DIMMED: 18 X 12 X 16 IN

Ref: 00820280W81EWFZY

RELEASE#

DELIVERY ADDRESS (FedEx-EDR)

**PRIORITY OVERNIGHT**

**TUE**
**AA**
Deliver by:
**21DEC10**

**TRK # 7965 7638 2859**

FORM
0201

**BTV**

**05403** -VT-US

# XH BTVA

J-1030101004

FROM: U.S. ARMY ERDC CE-WES-LM-MS (601) 634-4826
U.S. ARMY ERDC CE-WES-LM-MS
3909 Halls Ferry Road
PATTY TUMINELLO
Vicksburg, MS 39180

FedEx Revenue Barcode

FedEx Express

TO: **TEST AMERICA (802) 660-1990**

**BURLINGTON LAB**
**30 COMMUNITY DRIVE SUITE 11**
**SOUTH BURLINGTON, VT 05403**

CAD: 2207818
SHIP DATE: 20DEC10
WEIGHT: 58.0 LB

DIMMED: 24 X 13 X 14 IN

Ref: 00820280W81EWFXR

RELEASE#

DELIVERY ADDRESS (FedEx-EDR)

**PRIORITY OVERNIGHT**

**TUE**
**AA**
Deliver by:
**21DEC10**

**TRK # 7942 4161 8886**

FORM
0201

**BTV**

**05403** -VT-US

# XH BTVA

J-1030101004

# U.S. Army Corps of Engineers

# Chain of Custody Record

(ER 1110-1-263)

| Proj. No. | Project Name Cleveland | | | | | Number of Containers | Standard Procedure | Remarkability | | | | | | Remarks: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampler : (Signature) | | | | | | | | | | | | | | |
| Date | Time | Pres. | Grab | Comp | Site Code/Sample Number | | | | | | | | | |
| 9 Nov 2010 | | | | | DMU 2 | 3 | X | X | | | | | | Ref White Water- |
| | | | | | | | | | | | | | | BPA Call 19 |
| | | | | | * Material was shipped in 3 | | | | | | | | | (Millington) |
| | | | | | buckets for ease of shipment | | | | | | | | | |
| | | | | | Please Recombine material. | | | | | | | | | |
| | | | | | * This is more of the same | | | | | | | | | From: |
| | | | | | Material that was sent | | | | | | | | | Patty Tumiello |
| | | | | | previously. | | | | | | | | | ERDC-Vicksburg |
| | | | | | | | | | | | | | | 601-634-4826 |
| | | | | | | | | | | | | | | |

| | | | | |
|---|---|---|---|---|
| Sampler Relinquished by: | Date/Time 20 Dec 10 | Received by: (Sig.) | Date/Time 14 Dec 10 1130 | Hazards Associated with Samples |
| Relinquished by: (Sig.) | Date/Time | Received by: (Sig.) | Date/Time | |
| Relinquished by: (Sig) | Date/Time | Received for Laboratory by: (Sig.) | Date/Time | Remarks at time of receipt: |
| Custody Seal No. | | Lab case No.: | | |





EMG Form 5021-R, Oct 90

Proponent: CEMP-RT

# Login Sample Receipt Check List

Client: White Water Associates

Job Number: 200-3067-1

**Login Number: 3067**

**List Source: TestAmerica Burlington**

**Creator: Marion, Greg T**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | False | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 10.6, 12.5ºC IR gun ID 96, CF= -2 |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | False | See NCM |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | N/A | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |

**Report of Laboratory Analysis**

December 23, 2010

Dr. Steven B. Hawthorne
Energy and Environmental Research Center, Campus Box 9018
University of North Dakota, Grand Forks, North Dakota 58201
701-777-5256

## Narrative

Fifteen sediment samples variously labeled CH-1 to CH-8 and PB-1 to PB-4 were received on 12/10/2010. All samples were in good condition except that samples PB-1, -2, -3, and -4 did not have sufficient water to allow the pore water analyses to be performed. Therefore, it was necessary to add 30 mL of HPLC-grade water to each of these samples and let them equilibrate for several days before any analyses were begun. Measured temperatures of the sediments on arrival were 0 to 3°C, as noted on the attached chain of custody forms. Each of the sediments was analyzed for freely-dissolved pore water PAH-34 concentrations, and sediment PAH-34 concentrations.

Although the samples were collected on 11/9/10, they did not arrive at EERC until 12/10/10. Therefore, it was impossible to meet the 28-day holding requirement specified in ASTM D7363 (pore water analyses) and the *EERC Methods and Quality Assurance Procedures: 2010*. Sample pore water determinations began the day the sediments arrived at EERC, and were completed in one week in order that the samples be as fresh as possible. The Soxhlet extractions were begun immediately after completion of the pore water analyses, and all analyses were completed within 12 days of sample receipt. With the exception of the holding times, all analyses for reported data met all QA/QC criteria listed in the *EERC Methods and Quality Assurance Procedures: 2010*. All calibration runs, solvent blanks, and pore water blanks met the program requirements stated in the same document. Pore waters were all analyzed in duplicate, and Soxhlet extracts as single runs. All extracts met the 70 to 120% recovery criteria and met all QA/QC criteria.

Data qualifiers are listed with each determination, and include "J" (for values estimated below the lowest calibration concentrations), "E" (for values exceeding the highest calibration concentration, and "R" (for values rejected on the basis of the reasons described in the footnotes listed at the bottom of the table).

# U.S. Army Corps of Engineers

# Chain of Custody Record

(ER 1110-1-263)

| Proj. No. | Project Name | USACE - Cleveland |
|---|---|---|
| | Sampler : (Signature) | |

| Date | Time | Pres. | Grab | Comp | Site Code/Sample Number | | Number of Containers | PAH analyses per agreement | | | | | | | Remarks: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/9 | 10 | | | X | CH-1 | 0°C | 1 | X | | | | | | | p 1 of 2 |
| | | | | X | CH-2 | 0°C | 1 | | | | | | | | |
| | | | | X | CH-3 | 0°C | 1 | | | | | | | | |
| | | | | X | CH-4 | 0°C | 1 | | | | | | | | From: Patty Tuminello |
| | | | | X | CH-5 | 1°C | 1 | | | | | | | | USACE ERDC |
| | | | | X | CH-5 Dup | 0°C | 1 | | | | | | | | 3909 Halls Ferry Rd |
| | | | | X | CH-6a | 0°C | 1 | | | | | | | | Vicksburg MS 39180 |
| | | | | X | CH-6b | 0°C | 1 | | | | | | | | 601-634-4826 |
| | | | | X | CH-7a | 1°C | 1 | | | | | | | | |
| | | | | X | CH-7b | 0°C | 1 | | | | | | | | |

| | | | | |
|---|---|---|---|---|
| Sampler Relinquished by: | Date/Time 12/10/10 | Received by: (Sig.) Carol Sabanski | Date/Time 12/10/10 10:20 am | Hazards Associated with Samples |
| Relinquished by: (Sig.) | Date/Time | Received by: (Sig.) | Date/Time | |
| Relinquished by: (Sig) | Date/Time | Received for Laboratory by: (Sig.) | Date/Time | Remarks at time of receipt: |
| Custody Seal No. | | Lab case No.: | | |

ENG Form 5021-R, Oct 90

Proponent: CEMP-RT

**U.S. Army Corps of Engineers**

**Chain of Custody Record**
(ER 1110-1-263)

**Proj. No.**

**Project Name** USACE-Cleveland

**Sampler: (Signature)**

P 2 of 2

| Date | Time | Pres. | Grab | Comp | Site Code/Sample Number | Number of Containers | PAH analyses | per agreement | | | | | | Remarks: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/9/10 | | | | ✓ | CH-8 -1°C | 1 | | | | | | | | From - |
| | | DRY | | ✓ | PB-1 3°C | 1 | | | | | | | | Patty Tuminello |
| | | DRY | | ✓ | PB-2 0°C | 1 | | | | | | | | 601-634-4826 |
| | | DRY | | ✓ | PB-3 3°C | 1 | | | | | | | | |
| | | DRY | | ✓ | PB-4 2°C | 1 | | | | | | | | |

| | | | | |
|---|---|---|---|---|
| **Sampler Relinquished by:** | **Date/Time** 12/10/10 | **Received by: (Sig.)** Carol B [illegible] | **Date/Time** 12/10/10 10:20am | **Hazards Associated with Samples** |
| **Relinquished by: (Sig.)** | **Date/Time** | **Received by: (Sig.)** | **Date/Time** | |
| **Relinquished by: (Sig)** | **Date/Time** | **Received for Laboratory by: (Sig.)** | **Date/Time** | **Remarks at time of receipt:** |
| **Custody Seal No.** | | **Lab case No.:** | | |

ENG Form 5021-R, Oct 90

Proponent: CEMP-RT

*Energy and Environmental Research Center, GC/MS Lab*
*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **76A-1** | | **76A-2** | | | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/15/2010** | | **12/15/2010** | | **12/15/2010** | | | |
| **EERC Run Number** | **2614A11.D** | | **2614A12.D** | | **2614A10.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **PB1** | | **PB1** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | | |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.112 | J | 0.106 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.013 | J | 0.012 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.014 | J | 0.012 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | ND | | ND | | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | ND | | ND | | ND | | 9 | 0.2 |
| acenaphthene | 0.008 | J | 0.006 | J | ND | | 1.6 | 0.1 |
| fluorene | ND | | ND | | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.021 | J | 0.020 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.002 | J | 0.002 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.010 | J | 0.011 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.009 | J | 0.009 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | ND | | ND | | ND | | 0.14 | 0.01 |
| benz[a]anthracene | ND | | ND | | ND | | 0.066 | 0.001 |
| chrysene | ND | | ND | | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **77A-1** | | **77A-2** | | | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/16/2010** | | **12/16/2010** | | **12/16/2010** | | | |
| **EERC Run Number** | **2615A03.D** | | **2615A04.D** | | **2615A02.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **PB2** | | **PB2** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | | |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.161 | J | 0.162 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.027 | J | 0.026 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.030 | J | 0.030 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | ND | | ND | | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.020 | J | 0.019 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.008 | J | 0.008 | J | ND | | 1.6 | 0.1 |
| fluorene | ND | | ND | | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.039 | J | 0.036 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.004 | J | 0.003 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.012 | J | 0.012 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.010 | J | 0.009 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | ND | | ND | | ND | | 0.14 | 0.01 |
| benz[a]anthracene | ND | | ND | | ND | | 0.066 | 0.001 |
| chrysene | ND | | ND | | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| EERC ID | 78A-1 | | 78A-2 | | | | Target detection limit ng/g | Actual (reporting) detection limit, ng/g |
|---|---|---|---|---|---|---|---|---|
| Sample Collection Date | | | | | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | 12/10/2010 | | | | | |
| EERC Run Date | 12/16/2010 | | 12/16/2010 | | 12/16/2010 | | | |
| EERC Run Number | 2615A07.D | | 2615A08.D | | 2615A06.D | | | |
| | | | | | Fiber | | | |
| Sample Name | PB3 | | PB3 | | Water Blank | | | |
| Treatment | Pore Water | | Pore Water | | Pore Water | | | |
| Sample Weight, g | 1.51 | | 1.50 | | 1.50 | | | |
| Matrix | Sediment | | Sediment | | | | | |
| Units | ng/g | | ng/g | | ng/g | | | |
| naphthalene | 0.107 | J | 0.113 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.017 | J | 0.017 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.018 | J | 0.017 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | ND | | ND | | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.010 | J | 0.011 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.007 | J | 0.007 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.005 | J | 0.005 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.024 | J | 0.021 | J | ND | | 0.56 | 0.1 |
| anthracene | ND | | ND | | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.009 | J | 0.009 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.009 | J | 0.008 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | ND | | ND | | ND | | 0.14 | 0.01 |
| benz[a]anthracene | ND | | ND | | ND | | 0.066 | 0.001 |
| chrysene | ND | | ND | | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **79A-1** | | **79A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/16/2010** | | **12/16/2010** | | **12/16/2010** | | | |
| **EERC Run Number** | **2615A11.D** | | **2615A12.D** | | **2615A10.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **PB4** | | **PB4** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.102 | J | 0.082 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.013 | J | 0.012 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.014 | J | 0.013 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | ND | | ND | | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.010 | J | 0.009 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.008 | J | 0.007 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.006 | J | 0.007 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.022 | J | 0.021 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.002 | J | 0.002 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.009 | J | 0.009 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.008 | J | 0.008 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | ND | | ND | | ND | | 0.14 | 0.01 |
| benz[a]anthracene | ND | | ND | | ND | | 0.066 | 0.001 |
| chrysene | ND | | ND | | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **65A-1** | | **65A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/10/2010** | | **12/10/2010** | | **12/10/2010** | | | |
| **EERC Run Number** | **2611A03.D** | | **2611A04.D** | | **2611A02.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH1** | | **CH1** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.51** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 2.572 | J | 2.507 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.163 | J | 0.165 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.241 | J | 0.234 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.312 | J | 0.289 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | 0.228 | J | 0.217 | J | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.051 | J | 0.049 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.361 | J | 0.369 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.202 | J | 0.208 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | 0.056 | J | 0.037 | J | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.193 | J | 0.191 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.020 | J | 0.020 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.047 | J | 0.040 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | 0.144 | J | 0.127 | J | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.053 | J | 0.051 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.043 | J | 0.040 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.020 | J | 0.013 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.003 | J | 0.002 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.006 | J | 0.007 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **66A-1** | | **66A-2** | | | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/10/2010** | | **12/10/2010** | | **12/10/2010** | | | |
| **EERC Run Number** | **2611A07.D** | | **2611A08.D** | | **2611A06.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH2** | | **CH2** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | | |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.445 | J | 0.422 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.044 | J | 0.041 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.049 | J | 0.049 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.130 | J | 0.134 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | 0.131 | J | 0.120 | J | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.018 | J | 0.017 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.066 | J | 0.069 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.045 | J | 0.043 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.083 | J | 0.086 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.010 | J | 0.009 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.045 | J | 0.041 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.038 | J | 0.037 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.033 | J | 0.033 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.007 | J | 0.007 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.002 | J | 0.002 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.005 | J | 0.006 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
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*701-777-5000*

| **EERC ID** | **67A-1** | | **67A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/10/2010** | | **12/10/2010** | | **12/10/2010** | | | |
| **EERC Run Number** | **2611A11.D** | | **2611A12.D** | | **2611A10.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH3** | | **CH3** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.393 | J | 0.366 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.044 | J | 0.040 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.042 | J | 0.041 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.149 | J | 0.131 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | 0.116 | J | 0.119 | J | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | ND | | ND | | ND | | 9 | 0.2 |
| acenaphthene | 0.055 | J | 0.055 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.040 | J | 0.040 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.091 | J | 0.092 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.009 | J | 0.010 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.035 | J | 0.027 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | 0.136 | J | 0.150 | J | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.046 | J | 0.048 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.037 | J | 0.038 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.014 | J | 0.011 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.002 | J | 0.002 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.006 | J | 0.007 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*701-777-5000*

| **EERC ID** | **68A-1** | | **68A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/13/2010** | | **12/13/2010** | | **12/13/2010** | | | |
| **EERC Run Number** | **2612A03.D** | | **2612A04.D** | | **2612A02.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH4** | | **CH4** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.197 | J | 0.156 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.030 | J | 0.026 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.035 | J | 0.032 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.090 | J | 0.113 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.017 | J | 0.011 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.014 | J | 0.017 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.015 | J | 0.015 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.053 | J | 0.052 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.005 | J | 0.004 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.023 | J | 0.024 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.022 | J | 0.022 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | ND | | ND | | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.002 | J | 0.002 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.004 | J | 0.004 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*701-777-5000*

| EERC ID | 69A-1 | | 69A-2 | | | | Target detection limit ng/g | Actual (reporting) detection limit, ng/g |
|---|---|---|---|---|---|---|---|---|
| Sample Collection Date | | | | | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | 12/10/2010 | | | | | |
| EERC Run Date | 12/13/2010 | | 12/13/2010 | | 12/13/2010 | | | |
| EERC Run Number | 2612A07.D | | 2612A08.D | | 2612A06.D | | | |
| | | | | | Fiber | | | |
| Sample Name | CH5 | | CH5 | | Water Blank | | | |
| Treatment | Pore Water | | Pore Water | | Pore Water | | | |
| Sample Weight, g | 1.50 | | 1.50 | | 1.50 | | | |
| Matrix | Sediment | | Sediment | | | | | |
| Units | ng/g | | ng/g | | ng/g | | | |
| naphthalene | 0.117 | J | 0.149 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.024 | J | 0.026 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.023 | J | 0.028 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.103 | J | 0.096 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | ND | | ND | | ND | | 9 | 0.2 |
| acenaphthene | 0.015 | J | 0.017 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.016 | J | 0.015 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.044 | J | 0.047 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.004 | J | 0.005 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.030 | J | 0.030 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.027 | J | 0.026 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | ND | | ND | | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.002 | J | 0.002 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.005 | J | 0.006 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **70A-1** | | **70A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/13/2010** | | **12/13/2010** | | **12/13/2010** | | | |
| **EERC Run Number** | **2612A11.D** | | **2612A12.D** | | **2612A10.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH5 Dup** | | **CH5 Dup** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.51** | | **1.50** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.224 | J | 0.205 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.034 | J | 0.033 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.033 | J | 0.032 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.146 | J | 0.113 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.013 | J | 0.013 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.026 | J | 0.025 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.024 | J | 0.024 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.061 | J | 0.062 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.006 | J | 0.007 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.036 | J | 0.033 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.027 | J | 0.028 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | ND | | ND | | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.002 | J | 0.002 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.005 | J | 0.005 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **71A-1** | | **71A-2** | | | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/14/2010** | | **12/14/2010** | | **12/14/2010** | | | |
| **EERC Run Number** | **2613A03.D** | | **2613A04.D** | | **2613A02.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH6a** | | **CH6a** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | | |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.273 | J | 0.224 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.042 | J | 0.037 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.045 | J | 0.037 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.144 | J | 0.123 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.015 | J | 0.012 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.032 | J | 0.021 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.024 | J | 0.020 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | 0.020 | J | 0.016 | J | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.066 | J | 0.059 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.006 | J | 0.007 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.024 | J | 0.032 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.034 | J | 0.032 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.026 | J | 0.028 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.006 | J | 0.004 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.003 | J | 0.003 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.005 | J | 0.004 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*701-777-5000*

| **EERC ID** | **72A-1** | | **72A-2** | | | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/14/2010** | | **12/14/2010** | | **12/14/2010** | | | |
| **EERC Run Number** | **2613A07.D** | | **2613A08.D** | | **2613A06.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH6b** | | **CH6b** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | | |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.195 | J | 0.202 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.027 | J | 0.023 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.026 | J | 0.028 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.108 | J | 0.088 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | ND | | ND | | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.013 | J | 0.014 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.021 | J | 0.020 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.018 | J | 0.018 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.055 | J | 0.049 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.005 | J | 0.005 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.029 | J | 0.024 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.034 | J | 0.033 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.031 | J | 0.029 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.006 | J | 0.006 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.003 | J | 0.004 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.006 | J | 0.006 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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| **EERC ID** | **73A-1** | | **73A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/14/2010** | | **12/14/2010** | | **12/14/2010** | | | |
| **EERC Run Number** | **2613A11.D** | | **2613A12.D** | | **2613A10.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH7a** | | **CH7a** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.50** | | **1.50** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 1.272 | J | 1.223 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.197 | J | 0.201 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.162 | J | 0.164 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.297 | J | 0.306 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | 0.248 | J | 0.235 | J | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.039 | J | 0.049 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.441 | J | 0.454 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.229 | J | 0.232 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | 0.067 | J | 0.074 | J | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.500 | J | 0.530 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.032 | J | 0.033 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.089 | J | 0.083 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.107 | J | 0.114 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.094 | J | 0.096 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.017 | J | 0.015 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.002 | J | 0.003 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.006 | J | 0.006 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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| **EERC ID** | **74A-1** | | **74A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/15/2010** | | **12/15/2010** | | **12/15/2010** | | | |
| **EERC Run Number** | **2614A03.D** | | **2614A04.D** | | **2614A02.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH7b** | | **CH7b** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.497 | J | 0.454 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.070 | J | 0.063 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.069 | J | 0.063 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.160 | J | 0.153 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | 0.184 | J | 0.151 | J | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.026 | J | 0.025 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.065 | J | 0.061 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.046 | J | 0.044 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | 0.043 | J | 0.039 | J | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.136 | J | 0.123 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.011 | J | 0.013 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.062 | J | 0.048 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | 0.178 | J | 0.159 | J | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.075 | J | 0.061 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.074 | J | 0.053 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.024 | J | 0.019 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | ND | | ND | | ND | | 0.066 | 0.001 |
| chrysene | ND | | ND | | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*701-777-5000*

| **EERC ID** | **75A-1** | | **75A-2** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample Collection Date** | | | | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/15/2010** | | **12/15/2010** | | **12/15/2010** | | | |
| **EERC Run Number** | **2614A07.D** | | **2614A08.D** | | **2614A06.D** | | | |
| | | | | | **Fiber** | | | |
| **Sample Name** | **CH8** | | **CH8** | | **Water Blank** | | | |
| **Treatment** | **Pore Water** | | **Pore Water** | | **Pore Water** | | **Target detection limit ng/g** | **Actual (reporting) detection limit, ng/g** |
| **Sample Weight, g** | **1.50** | | **1.51** | | **1.50** | | | |
| **Matrix** | **Sediment** | | **Sediment** | | | | | |
| **Units** | **ng/g** | | **ng/g** | | **ng/g** | | | |
| naphthalene | 0.19 | J | 0.17 | J | ND | | 5.7 | 0.1 |
| 2-methylnaphthalene | 0.03 | J | 0.03 | J | ND | | 2.4 | 0.05 |
| 1-methylnaphthalene | 0.03 | J | 0.03 | J | ND | | 2.4 | 0.05 |
| C2 naphthalenes | 0.11 | J | 0.12 | J | ND | | 0.89 | 0.15 |
| C3 naphthalenes | 0.13 | J | 0.13 | J | ND | | 0.33 | 0.05 |
| C4 naphthalenes | ND | | ND | | ND | | 0.12 | 0.15 |
| acenaphthylene | 0.02 | J | 0.02 | J | ND | | 9 | 0.2 |
| acenaphthene | 0.03 | J | 0.03 | J | ND | | 1.6 | 0.1 |
| fluorene | 0.02 | J | 0.02 | J | ND | | 1.2 | 0.04 |
| C1 fluorenes | ND | | ND | | ND | | 0.41 | 0.02 |
| C2 fluorenes | ND | | ND | | ND | | 0.16 | 0.05 |
| C3 fluorenes | ND | | ND | | ND | | 0.06 | 0.06 |
| phenanthrene | 0.07 | J | 0.07 | J | ND | | 0.56 | 0.1 |
| anthracene | 0.01 | J | 0.01 | J | ND | | 0.61 | 0.05 |
| C1 phenanthrenes/anthracenes | 0.03 | J | 0.03 | J | ND | | 0.22 | 0.02 |
| C2 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.09 | 0.05 |
| C3 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.04 | 0.04 |
| C4 phenanthrenes/anthracenes | ND | | ND | | ND | | 0.02 | 0.02 |
| fluoranthene | 0.04 | J | 0.05 | J | ND | | 0.21 | 0.01 |
| pyrene | 0.03 | J | 0.04 | J | ND | | 0.3 | 0.01 |
| C1 fluoranthenes/pyrenes | 0.01 | J | 0.01 | J | ND | | 0.14 | 0.01 |
| benz[a]anthracene | 0.00 | J | 0.00 | J | ND | | 0.066 | 0.001 |
| chrysene | 0.01 | J | 0.01 | J | ND | | 0.06 | 0.001 |
| C1 chrysenes | ND | | ND | | ND | | 0.025 | 0.005 |
| C2 chrysenes | ND | | ND | | ND | | 0.014 | 0.01 |
| C3 chrysenes | ND | | ND | | ND | | 0.005 | 0.01 |
| C4 chrysenes | ND | | ND | | ND | | 0.002 | 0.01 |
| benzo[b+k]fluoranthene | ND | | ND | | ND | | 0.019 | 0.005 |
| benzo[e]pyrene | ND | | ND | | ND | | 0.028 | 0.005 |
| benzo[a]pyrene | ND | | ND | | ND | | 0.026 | 0.008 |
| perylene | ND | | ND | | ND | | 0.026 | 0.004 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | ND | | 0.008 | 0.001 |
| dibenz[ah]anthracene | ND | | ND | | ND | | 0.008 | 0.002 |
| benzo[ghi]perylene | ND | | ND | | ND | | 0.013 | 0.001 |

Target detection limits are those required by ASTM D7363 (C2 chyrsenes and larger PAHs, not applicable).
Actual experimental detection limits (reporting limits) are determined based on the signal to noise requirements stated in D7363.
ND = not detected.

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*701-777-5000*

| EERC ID | 76C-1 | | | | |
|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | |
| EERC Run Date | 12/21/2010 | | 12/21/2010 | | |
| EERC Run Number | 2874A04.D | | 2874A20.D | | |
| | | | | | |
| Sample Name | PB1 | | Soxhlet Blank | | |
| Treatment | Soxhlet | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
| Sample Weight, g (dry) | 1.38 | | 1.0 | | |
| Matrix | Sediment | | | | |
| Units | ug/g | | ug/g | | |
| naphthalene | ND | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.01 | J | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.01 | J | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.10 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.12 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.18 | J | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.01 | J | ND | | 0.13 | 0.010 |
| acenaphthene | ND | | ND | | 0.14 | 0.020 |
| fluorene | ND | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.08 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.08 | J | ND | | 0.18 | 0.040 |
| anthracene | 0.02 | J | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.09 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 0.73 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 0.31 | J | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 0.10 | | ND | | 0.21 | 0.040 |
| pyrene | 0.09 | J | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.05 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.03 | J | ND | | 0.25 | 0.005 |
| chrysene | 0.03 | J | ND | | 0.25 | 0.005 |
| C1 chrysenes | ND | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 0.07 | J | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.02 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 0.04 | J | ND | | 0.28 | 0.010 |
| perylene | 0.01 | J | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.01 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | ND | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.02 | J | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 2.2 | |
| Total EPA PAHs (16) | 0.5 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 86.3% | |
| benzo[b]fluoranthene-d12 | 86.1% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **77C-1** | | | | |
|---|---|---|---|---|---|
| **Sample Collection Date** | **11/9/2010** | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | | | |
| **EERC Run Date** | **12/21/2010** | | **12/21/2010** | | |
| **EERC Run Number** | **2874A05.D** | | **2874A20.D** | | |
| | | | | | |
| **Sample Name** | **PB2** | | **Soxhlet Blank** | | |
| **Treatment** | **Soxhlet** | | | | **Target detection limit ug/g** | **Actual (reporting) detection limit, ug/g** |
| **Sample Weight, g (dry)** | **1.33** | | **1.0** | | |
| **Matrix** | **Sediment** | | | | |
| **Units** | **ug/g** | | **ug/g** | | |
| naphthalene | ND | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.01 | J | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.01 | J | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.09 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.12 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.18 | J | ND | | 0.19 | 0.040 |
| acenaphthylene | ND | | ND | | 0.13 | 0.010 |
| acenaphthene | ND | | ND | | 0.14 | 0.020 |
| fluorene | ND | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.09 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.08 | J | ND | | 0.18 | 0.040 |
| anthracene | 0.02 | J | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.09 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 0.78 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 0.31 | J | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 0.08 | J | ND | | 0.21 | 0.040 |
| pyrene | 0.07 | J | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.03 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.02 | J | ND | | 0.25 | 0.005 |
| chrysene | 0.03 | J | ND | | 0.25 | 0.005 |
| C1 chrysenes | ND | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 0.05 | J | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.02 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 0.02 | J | ND | | 0.28 | 0.010 |
| perylene | 0.01 | J | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | ND | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.01 | J | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 2.1 | |
| Total EPA PAHs (16) | 0.4 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 90.3% | |
| benzo[b]fluoranthene-d12 | 97.1% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| **EERC ID** | **78C-1** | | | | |
|---|---|---|---|---|---|
| **Sample Collection Date** | **11/9/2010** | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | | | |
| **EERC Run Date** | **12/21/2010** | | **12/21/2010** | | |
| **EERC Run Number** | **2874A06.D** | | **2874A20.D** | | |
| | | | | | |
| **Sample Name** | **PB3** | | **Soxhlet Blank** | | |
| **Treatment** | **Soxhlet** | | | | **Target detection limit ug/g** | **Actual (reporting) detection limit, ug/g** |
| **Sample Weight, g (dry)** | **1.36** | | **1.0** | | |
| **Matrix** | **Sediment** | | | | |
| **Units** | **ug/g** | | **ug/g** | | |
| naphthalene | ND | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.01 | J | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.01 | J | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.06 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.09 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.16 | J | ND | | 0.19 | 0.040 |
| acenaphthylene | ND | | ND | | 0.13 | 0.010 |
| acenaphthene | ND | | ND | | 0.14 | 0.020 |
| fluorene | ND | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.09 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.06 | J | ND | | 0.18 | 0.040 |
| anthracene | 0.02 | J | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.16 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 0.84 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 0.22 | J | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 0.07 | J | ND | | 0.21 | 0.040 |
| pyrene | 0.05 | J | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.03 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.01 | J | ND | | 0.25 | 0.005 |
| chrysene | 0.02 | J | ND | | 0.25 | 0.005 |
| C1 chrysenes | ND | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 0.03 | J | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.01 | J | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 0.01 | J | ND | | 0.28 | 0.010 |
| perylene | 0.01 | J | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | ND | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | ND | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.01 | J | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 2.0 | |
| Total EPA PAHs (16) | 0.3 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 88.1% | |
| benzo[b]fluoranthene-d12 | 93.6% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| EERC ID | 79C-1 | | | | | |
|---|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | | |
| EERC Run Date | 12/21/2010 | | 12/21/2010 | | | |
| EERC Run Number | 2874A07.D | | 2874A20.D | | | |
| | | | | | | |
| Sample Name | PB4 | | Soxhlet Blank | | | |
| Treatment | Soxhlet | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
| Sample Weight, g (dry) | 1.41 | | 1.0 | | | |
| Matrix | Sediment | | | | | |
| Units | ug/g | | ug/g | | | |
| naphthalene | 0.02 | J | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.02 | J | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.01 | J | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.09 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.11 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.18 | J | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.04 | J | ND | | 0.13 | 0.010 |
| acenaphthene | ND | | ND | | 0.14 | 0.020 |
| fluorene | 0.03 | J | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.09 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.09 | J | ND | | 0.18 | 0.040 |
| anthracene | 0.04 | J | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.10 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 0.83 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 0.33 | J | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 0.15 | | ND | | 0.21 | 0.040 |
| pyrene | 0.13 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.07 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.05 | J | ND | | 0.25 | 0.005 |
| chrysene | 0.06 | J | ND | | 0.25 | 0.005 |
| C1 chrysenes | ND | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 0.09 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.04 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 0.07 | | ND | | 0.28 | 0.010 |
| perylene | 0.04 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.01 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | ND | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.02 | J | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 2.7 | |
| Total EPA PAHs (16) | 0.8 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 91.8% | |
| benzo[b]fluoranthene-d12 | 88.8% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| EERC ID | 65C-1 | | | | | |
|---|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | | |
| EERC Run Date | 12/20/2010 | | 12/20/2010 | | | |
| EERC Run Number | 2873A01.D | | 2873A20.D | | | |
| | | | | | | |
| Sample Name | CH1 | | Soxhlet Blank | | | |
| Treatment | Soxhlet | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
| Sample Weight, g (dry) | 0.96 | | 1.0 | | | |
| Matrix | Sediment | | | | | |
| Units | ug/g | | ug/g | | | |
| naphthalene | 0.56 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.21 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.18 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.53 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.37 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.52 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.15 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.23 | | ND | | 0.14 | 0.020 |
| fluorene | 0.27 | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.45 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | 0.43 | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 1.13 | | ND | | 0.18 | 0.040 |
| anthracene | 0.47 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.68 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.52 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.45 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 2.53 | | ND | | 0.21 | 0.040 |
| pyrene | 1.97 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.94 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 1.14 | | ND | | 0.25 | 0.005 |
| chrysene | 1.39 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.81 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | 1.44 | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 3.21 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 1.03 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.32 | | ND | | 0.28 | 0.010 |
| perylene | 0.39 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.90 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.15 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.94 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 29 | |
| Total EPA PAHs (16) | 16 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 84.5% | |
| benzo[b]fluoranthene-d12 | 87.8% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| **EERC ID** | **66C-1** | | | | | |
|---|---|---|---|---|---|---|
| **Sample Collection Date** | **11/9/2010** | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/20/2010** | | **12/20/2010** | | | |
| **EERC Run Number** | **2873A02.D** | | **2873A20.D** | | | |
| | | | | | | |
| **Sample Name** | **CH2** | | **Soxhlet Blank** | | | |
| **Treatment** | **Soxhlet** | | | | **Target detection limit ug/g** | **Actual (reporting) detection limit, ug/g** |
| **Sample Weight, g (dry)** | **0.88** | | **1.0** | | | |
| **Matrix** | **Sediment** | | | | | |
| **Units** | **ug/g** | | **ug/g** | | | |
| naphthalene | 0.17 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.11 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.09 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.54 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.42 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.57 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.14 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.09 | | ND | | 0.14 | 0.020 |
| fluorene | 0.12 | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.45 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.86 | | ND | | 0.18 | 0.040 |
| anthracene | 0.38 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.55 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.26 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.62 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | 0.58 | | ND | | 0.27 | 0.050 |
| fluoranthene | 2.18 | | ND | | 0.21 | 0.040 |
| pyrene | 1.75 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.87 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 1.35 | | ND | | 0.25 | 0.005 |
| chrysene | 1.27 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.66 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.81 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.84 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.21 | | ND | | 0.28 | 0.010 |
| perylene | 0.36 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.94 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.17 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.90 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 25 | |
| Total EPA PAHs (16) | 14 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 83.5% | |
| benzo[b]fluoranthene-d12 | 80.4% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
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*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **67C-1** | | | | |
|---|---|---|---|---|---|
| **Sample Collection Date** | **11/9/2010** | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | | | |
| **EERC Run Date** | **12/20/2010** | | **12/20/2010** | | |
| **EERC Run Number** | **2873A03.D** | | **2873A20.D** | | |
| | | | | | |
| **Sample Name** | **CH3** | | **Soxhlet Blank** | | |
| **Treatment** | **Soxhlet** | | | | **Target detection limit ug/g** | **Actual (reporting) detection limit, ug/g** |
| **Sample Weight, g (dry)** | **0.78** | | **1.0** | | |
| **Matrix** | **Sediment** | | | | |
| **Units** | **ug/g** | | **ug/g** | | |
| naphthalene | 0.21 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.17 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.15 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.65 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.53 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | ND | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.28 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.13 | | ND | | 0.14 | 0.020 |
| fluorene | 0.21 | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.45 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | 0.58 | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 1.39 | | ND | | 0.18 | 0.040 |
| anthracene | 0.65 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.94 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 3.10 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.54 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 3.09 | | ND | | 0.21 | 0.040 |
| pyrene | 2.39 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 1.32 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 1.43 | | ND | | 0.25 | 0.005 |
| chrysene | 1.62 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 2.02 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | 1.78 | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 3.71 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 1.08 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.57 | | ND | | 0.28 | 0.010 |
| perylene | 0.45 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 1.25 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.21 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 1.14 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 34 | |
| Total EPA PAHs (16) | 19 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 85.1% | |
| benzo[b]fluoranthene-d12 | 82.2% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| EERC ID | 68C-1 | | | | |
|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | |
| EERC Run Date | 12/20/2010 | | 12/20/2010 | | |
| EERC Run Number | 2873A04.D | | 2873A20.D | | |
| | | | | | |
| Sample Name | CH4 | | Soxhlet Blank | | |
| Treatment | Soxhlet | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
| Sample Weight, g (dry) | 1.03 | | 1.0 | | |
| Matrix | Sediment | | | | |
| Units | ug/g | | ug/g | | |
| naphthalene | 0.09 | J | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.10 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.09 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.44 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.41 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.57 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.13 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.05 | J | ND | | 0.14 | 0.020 |
| fluorene | 0.07 | J | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.26 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.60 | | ND | | 0.18 | 0.040 |
| anthracene | 0.28 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.47 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 1.97 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.35 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 1.70 | | ND | | 0.21 | 0.040 |
| pyrene | 1.35 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.71 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.74 | | ND | | 0.25 | 0.005 |
| chrysene | 1.01 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.32 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | 1.06 | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.38 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.72 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 0.92 | | ND | | 0.28 | 0.010 |
| perylene | 0.28 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.74 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.09 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.75 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 21 | |
| Total EPA PAHs (16) | 11 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 86.0% | |
| benzo[b]fluoranthene-d12 | 81.9% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| EERC ID | 69C-1 | | | | |
|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | |
| EERC Run Date | 12/20/2010 | | 12/20/2010 | | |
| EERC Run Number | 2873A05.D | | 2873A20.D | | |
| | | | | | |
| Sample Name | CH5 | | Soxhlet Blank | | |
| Treatment | Soxhlet | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
| Sample Weight, g (dry) | 0.99 | | 1.0 | | |
| Matrix | Sediment | | | | |
| Units | ug/g | | ug/g | | |
| naphthalene | 0.11 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.10 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.08 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.41 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.36 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.49 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.12 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.05 | J | ND | | 0.14 | 0.020 |
| fluorene | 0.08 | J | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.33 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.70 | | ND | | 0.18 | 0.040 |
| anthracene | 0.28 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.48 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.09 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.09 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 1.95 | | ND | | 0.21 | 0.040 |
| pyrene | 1.53 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.78 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.85 | | ND | | 0.25 | 0.005 |
| chrysene | 1.16 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.49 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.76 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.83 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.10 | | ND | | 0.28 | 0.010 |
| perylene | 0.32 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.87 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.13 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.86 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 21 | |
| Total EPA PAHs (16) | 13 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 88.1% | |
| benzo[b]fluoranthene-d12 | 83.6% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| EERC ID | 70C-1 | | | | |
|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | |
| EERC Run Date | 12/20/2010 | | 12/20/2010 | | |
| EERC Run Number | 2873A06.D | | 2873A20.D | | |
| | | | | | |
| Sample Name | CH5 Dup | | Soxhlet Blank | | |
| Treatment | Soxhlet | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
| Sample Weight, g (dry) | 0.96 | | 1.0 | | |
| Matrix | Sediment | | | | |
| Units | ug/g | | ug/g | | |
| naphthalene | 0.11 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.10 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.09 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.37 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.33 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.52 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.13 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.05 | J | ND | | 0.14 | 0.020 |
| fluorene | 0.08 | J | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.28 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.70 | | ND | | 0.18 | 0.040 |
| anthracene | 0.29 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.48 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.11 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.31 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 1.90 | | ND | | 0.21 | 0.040 |
| pyrene | 1.50 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.73 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.84 | | ND | | 0.25 | 0.005 |
| chrysene | 1.13 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.23 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.71 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.82 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.08 | | ND | | 0.28 | 0.010 |
| perylene | 0.36 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.81 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.13 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.86 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 21 | |
| Total EPA PAHs (16) | 12 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 88.6% | |
| benzo[b]fluoranthene-d12 | 84.0% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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| EERC ID | 71C-1 | | | | |
|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | |
| EERC Run Date | 12/20/2010 | | 12/20/2010 | | |
| EERC Run Number | 2873A07.D | | 2873A20.D | | |
| | | | | | |
| Sample Name | CH6a | | Soxhlet Blank | | |
| Treatment | Soxhlet | | | | |
| Sample Weight, g (dry) | 0.96 | | 1.0 | | |
| Matrix | Sediment | | | | |
| Units | ug/g | | ug/g | | |

| | | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
|---|---|---|---|---|---|---|
| naphthalene | 0.13 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.11 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.09 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.44 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.44 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.54 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.15 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.06 | J | ND | | 0.14 | 0.020 |
| fluorene | 0.08 | J | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.28 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.75 | | ND | | 0.18 | 0.040 |
| anthracene | 0.32 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.56 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.34 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.32 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 2.06 | | ND | | 0.21 | 0.040 |
| pyrene | 1.65 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.82 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.92 | | ND | | 0.25 | 0.005 |
| chrysene | 1.25 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.54 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.87 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.86 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.14 | | ND | | 0.28 | 0.010 |
| perylene | 0.37 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.92 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.11 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.92 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 23 | |
| Total EPA PAHs (16) | 13 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 86.1% | |
| benzo[b]fluoranthene-d12 | 80.1% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

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*701-777-5000*

| EERC ID | 72C-1 | | | | |
|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | |
| EERC Run Date | 12/20/2010 | | 12/20/2010 | | |
| EERC Run Number | 2873A08.D | | 2873A20.D | | |
| | | | | | |
| Sample Name | CH6b | | Soxhlet Blank | | |
| Treatment | Soxhlet | | | | |
| Sample Weight, g (dry) | 1.01 | | 1.0 | | |
| Matrix | Sediment | | | | |
| Units | ug/g | | ug/g | | |
| naphthalene | 0.12 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.10 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.07 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.36 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.32 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.45 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.12 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.06 | J | ND | | 0.14 | 0.020 |
| fluorene | 0.08 | J | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.29 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.73 | | ND | | 0.18 | 0.040 |
| anthracene | 0.27 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.52 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.00 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.05 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 1.85 | | ND | | 0.21 | 0.040 |
| pyrene | 1.47 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.75 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.82 | | ND | | 0.25 | 0.005 |
| chrysene | 1.07 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.17 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.50 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.75 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.02 | | ND | | 0.28 | 0.010 |
| perylene | 0.31 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.74 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.12 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.75 | | ND | | 0.32 | 0.010 |

| Total NOAA PAHs | 20 | |
|---|---|---|
| Total EPA PAHs (16) | 12 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 87.6% | |
| benzo[b]fluoranthene-d12 | 84.0% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| EERC ID | 73C-1 | | | | |
|---|---|---|---|---|---|
| Sample Collection Date | 11/9/2010 | | | | |
| EERC Sample Receipt Date | 12/10/2010 | | | | |
| EERC Run Date | 12/21/2010 | | 12/21/2010 | | |
| EERC Run Number | 2874A01.D | | 2874A20.D | | |
| | | | | | |
| Sample Name | CH7a | | Soxhlet Blank | | |
| Treatment | Soxhlet | | | | Target detection limit ug/g | Actual (reporting) detection limit, ug/g |
| Sample Weight, g (dry) | 1.08 | | 1.0 | | |
| Matrix | Sediment | | | | |
| Units | ug/g | | ug/g | | |
| naphthalene | 0.51 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.23 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.14 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.43 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.28 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.33 | J | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.12 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.27 | | ND | | 0.14 | 0.020 |
| fluorene | 0.29 | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.55 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 2.29 | | ND | | 0.18 | 0.040 |
| anthracene | 0.50 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.94 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.40 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.13 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 3.20 | | ND | | 0.21 | 0.040 |
| pyrene | 2.44 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 1.01 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 1.23 | | ND | | 0.25 | 0.005 |
| chrysene | 1.32 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.48 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.95 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.85 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.28 | | ND | | 0.28 | 0.010 |
| perylene | 0.37 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.71 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.12 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.78 | | ND | | 0.32 | 0.010 |

| | | |
|---|---|---|
| Total NOAA PAHs | 28 | |
| Total EPA PAHs (16) | 18 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 82.8% | |
| benzo[b]fluoranthene-d12 | 79.0% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **74C-1** | | | | | |
|---|---|---|---|---|---|---|
| **Sample Collection Date** | **11/9/2010** | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/21/2010** | | **12/21/2010** | | | |
| **EERC Run Number** | **2874A02.D** | | **2874A20.D** | | | |
| | | | | | | |
| **Sample Name** | **CH7b** | | **Soxhlet Blank** | | | |
| **Treatment** | **Soxhlet** | | | | **Target detection limit ug/g** | **Actual (reporting) detection limit, ug/g** |
| **Sample Weight, g (dry)** | **1** | | **1.0** | | | |
| **Matrix** | **Sediment** | | | | | |
| **Units** | **ug/g** | | **ug/g** | | | |
| naphthalene | 0.18 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.12 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.09 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.38 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.39 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.50 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.14 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.09 | | ND | | 0.14 | 0.020 |
| fluorene | 0.12 | | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.41 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 1.03 | | ND | | 0.18 | 0.040 |
| anthracene | 0.36 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.65 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.73 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.61 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 2.19 | | ND | | 0.21 | 0.040 |
| pyrene | 1.71 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.92 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.93 | | ND | | 0.25 | 0.005 |
| chrysene | 1.20 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.40 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.76 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.81 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 1.11 | | ND | | 0.28 | 0.010 |
| perylene | 0.32 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.79 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.12 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.82 | | ND | | 0.32 | 0.010 |

| Total NOAA PAHs | 24 | |
|---|---|---|
| Total EPA PAHs (16) | 14 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 83.9% | |
| benzo[b]fluoranthene-d12 | 81.7% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

*Energy and Environmental Research Center, GC/MS Lab*
*University of North Dakota, Campus Box 9018*
*15 North 23rd Street, Grand Forks, ND 58202*
*701-777-5000*

| **EERC ID** | **75C-1** | | | | | |
|---|---|---|---|---|---|---|
| **Sample Collection Date** | **11/9/2010** | | | | | |
| **EERC Sample Receipt Date** | **12/10/2010** | | | | | |
| **EERC Run Date** | **12/21/2010** | | **12/21/2010** | | | |
| **EERC Run Number** | **2874A03.D** | | **2874A20.D** | | | |
| | | | | | | |
| **Sample Name** | **CH8** | | **Soxhlet Blank** | | | |
| **Treatment** | **Soxhlet** | | | | **Target detection limit ug/g** | **Actual (reporting) detection limit, ug/g** |
| **Sample Weight, g (dry)** | **1.04** | | **1.0** | | | |
| **Matrix** | **Sediment** | | | | | |
| **Units** | **ug/g** | | **ug/g** | | | |
| naphthalene | 0.13 | | ND | | 0.11 | 0.020 |
| 2-methylnaphthalene | 0.10 | | ND | | 0.13 | 0.010 |
| 1-methylnaphthalene | 0.08 | | ND | | 0.13 | 0.005 |
| C2 naphthalenes | 0.37 | | ND | | 0.15 | 0.030 |
| C3 naphthalenes | 0.32 | | ND | | 0.17 | 0.040 |
| C4 naphthalenes | 0.48 | | ND | | 0.19 | 0.040 |
| acenaphthylene | 0.11 | | ND | | 0.13 | 0.010 |
| acenaphthene | 0.06 | J | ND | | 0.14 | 0.020 |
| fluorene | 0.09 | J | ND | | 0.16 | 0.020 |
| C1 fluorenes | 0.27 | | ND | | 0.18 | 0.040 |
| C2 fluorenes | ND | | ND | | 0.2 | 0.040 |
| C3 fluorenes | ND | | ND | | 0.23 | 0.040 |
| phenanthrene | 0.66 | | ND | | 0.18 | 0.040 |
| anthracene | 0.25 | | ND | | 0.17 | 0.020 |
| C1 phenanthrenes/anthracenes | 0.46 | | ND | | 0.2 | 0.040 |
| C2 phenanthrenes/anthracenes | 2.05 | | ND | | 0.22 | 0.100 |
| C3 phenanthrenes/anthracenes | 1.26 | | ND | | 0.24 | 0.050 |
| C4 phenanthrenes/anthracenes | ND | | ND | | 0.27 | 0.050 |
| fluoranthene | 1.59 | | ND | | 0.21 | 0.040 |
| pyrene | 1.24 | | ND | | 0.21 | 0.030 |
| C1 fluoranthenes/pyrenes | 0.68 | | ND | | 0.23 | 0.020 |
| benz[a]anthracene | 0.70 | | ND | | 0.25 | 0.005 |
| chrysene | 0.83 | | ND | | 0.25 | 0.005 |
| C1 chrysenes | 1.04 | | ND | | 0.27 | 0.100 |
| C2 chrysenes | ND | | ND | | 0.3 | 0.100 |
| C3 chrysenes | ND | | ND | | 0.33 | 0.200 |
| C4 chrysenes | ND | | ND | | 0.36 | 0.200 |
| benzo[b+k]fluoranthene | 2.05 | | ND | | 0.29 | 0.020 |
| benzo[e]pyrene | 0.60 | | ND | | 0.28 | 0.005 |
| benzo[a]pyrene | 0.82 | | ND | | 0.28 | 0.010 |
| perylene | 0.25 | | ND | | 0.28 | 0.010 |
| indeno[1,2,3-cd]pyrene | 0.59 | | ND | | 0.33 | 0.010 |
| dibenz[ah]anthracene | 0.10 | | ND | | 0.33 | 0.010 |
| benzo[ghi]perylene | 0.60 | | ND | | 0.32 | 0.010 |

| Total NOAA PAHs | 18 | |
|---|---|---|
| Total EPA PAHs (16) | 10 | |

| Surrogate recoveries | | |
|---|---|---|
| biphenyl-d10 | 87.1% | |
| benzo[b]fluoranthene-d12 | 82.9% | |

Target detection limits are those required to detect concentrations corresponding to 1/34 of an EPA toxic unit..
Actual experimental detection limits (reporting limits) are determined based a minimum 3:1 signal to noise.
ND = not detected.

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | DISCRETE CHEMISTRY | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)* [signature]

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | DISCRETE CHEMISTRY | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-1 | 11/9/10 | 1400 | | X | | 1 | X | |
| CH-2 | ↓ | 1345 | | X | | 1 | X | |
| PB-1 | ↓ | 0900 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| [signature] | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | [signature] | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | DISCRETE CHEMISTRY | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | DISCRETE CHEMISTRY | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CH-3 | 11/9/10 | 1325 | | X | | 1 | X | | | | | | |
| CH-4 | ↓ | 1255 | | X | | 1 | X | | | | | | |
| CH-5 DUP | ↓ | 1240 | | X | | 1 | X | | | | | | |
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| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | DISSOLVED CHEMISTRY | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)* [signature]

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | DISSOLVED CHEMISTRY | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-5 | 11/9/10 | 1240 | | X | | 1 | X | |
| CH-6A | ↓ | 1225 | | X | | 1 | X | |
| CH-6B | ↓ | 1215 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| [signature] | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | [signature] | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: (Signature)

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | DISSOLVED CHEMISTRY | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CH-7A | 11/9/10 | 1200 | | X | | 1 | X | | | | | | |
| CH-7B | " | 1145 | | X | | 1 | X | | | | | | |
| CH-8 | " | 1130 | | X | | 1 | X | | | | | | |

| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Relinquished by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE B/U | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)* J. Miller

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE B/U | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-7A | 11/9/10 | 1200 | | X | | 1 | X | DMU-2 |
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| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| J. Miller | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BV | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| PB-1 | 11/9/10 | 0900 | | X | | 2 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13271

U.S. ARMY CORPS OF ENGINEERS

# CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BU | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BU | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-8 | 11/9/10 | 1130 | | X | | 1 | X | DMU-2 |
| CH-5 | 11/9/10 | 1240 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment, Copy to Coordinator Field Files

13270

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-5 | 11/9/10 | 1240 | | X | | 1 | X | DMU-1 |
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| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13259

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-6B | 11/9/10 | 1215 | | X | | 1 | X | DMU-2 |
| CH-4 | 11/9/10 | 1255 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13262

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-2 | 11/9/10 | 1345 | | X | | 1 | X | DMU-1 |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13253

U.S. ARMY CORPS OF ENGINEERS

# CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE SAMPLE BY | REMARKS |
|---|---|---|---|---|
| | CLEVECAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE SAMPLE BY | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-1 | 11/9/10 | 1400 | | X | | 1 | X | DMU-1 SAMPLE |
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| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13251

U.S. ARMY CORPS OF ENGINEERS

# CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | Composite BU | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | Composite BU | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-7B | 11/9/10 | 1145 | | X | | 1 | X | DMU-2 |
| CH-6A | 11/9/10 | 1225 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13267

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-3 | 11/9/10 | 1325 | | X | | 1 | X | DMU-1 |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13255

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BV | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-1 | 11/9/10 | 1400 | | X | | 1 | X | DMU-1 |
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| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13252

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-4 | 11/9/10 | 1255 | | X | | 1 | X | DMU-1 |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Laboratory by: | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Coordinator Field Files

13257

U.S. ARMY CORPS OF ENGINEERS

# CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME |
|---|---|
| | CLEVELAND BU |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BLD | REMARKS |
|---|---|---|---|---|---|---|---|---|
| BS-3 | 11/10 | 1230 | | X | | 1 | X | |
| BS-4 | 11/10 | 1240 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13277

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BU | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BU | REMARKS |
|---|---|---|---|---|---|---|---|---|
| PB-2 | 11/9/10 | 0915 | | X | | 2 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13272

U.S. ARMY CORPS OF ENGINEERS

# CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME |
|---|---|
| | CLEVELAND BU |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BU | REMARKS |
|---|---|---|---|---|---|---|---|---|
| PB-4 | 11/9 | 0945 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13275

U.S. ARMY CORPS OF ENGINEERS

# CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BU | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BU | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-2 | 11/9/10 | 1345 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13254

U.S. ARMY CORPS OF ENGINEERS

# CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BV | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE | REMARKS |
|---|---|---|---|---|---|---|---|---|
| BS-1 | 11/10 | 1210 | | X | | 1 | X | |
| BS-2 | 11/10 | 1230 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13276

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| PB-3 | 11/4 | 0930 | | X | | 1 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13274

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|
| | CLOVELAND BU | | | |

SAMPLERS (Signature)

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | COMPOSITE BIO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CH-3 | 11/9/10 | 1325 | | X | | 1 | X | DMU-1 |

| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Relinquished by: (Signature) | Date / Time | Received for laboratory by: (Signature) | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13256

# Appendix D2: Elutriate Analytical Laboratory Test Data

**Appendix D-2a- Cleveland Harbor 2010 Metals, Pesticides, PCBs, SVOCs, VOCs, and General Chemistry**

## Cleveland Harbor 2010 Metals Filtered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | mg/L | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Antimony | 7440-36-0 | mg/L | 0.0015 J | 0.0011 J | 0.0016 J | 0.001 U |
| Arsenic | 7440-38-2 | mg/L | 0.005 | 0.0041 | 0.0071 | 0.001 U |
| Barium | 7440-39-3 | mg/L | 0.0337 | 0.0236 | 0.0373 | 0.0196 |
| Beryllium | 7440-41-7 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Cadmium | 7440-43-9 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Calcium | 7440-70-2 | mg/L | 40.8 | 28 | 39.3 | 32.1 |
| Chromium | 7440-47-3 | mg/L | 0.0047 | 0.0027 | 0.005 | 0.0041 |
| Cobalt | 7440-48-4 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 |
| Copper | 7440-50-8 | mg/L | 0.0013 J | 0.0014 J | 0.0013 J | 0.0027 |
| Iron | 7439-89-6 | mg/L | 0.02 U | 0.0542 | 0.064 | 0.02 U |
| Lead | 7439-92-1 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Magnesium | 7439-95-4 | mg/L | 9.74 | 5.55 | 9.57 | 8.53 |
| Manganese | 7439-96-5 | mg/L | 0.646 | 0.604 | 0.408 | 0.02 U |
| Mercury | 7439-97-6 | mg/L | 0.000013 B | 0.00001 B | 0.00001 B | 0.000005 U |
| Nickel | 7440-02-0 | mg/L | 0.0053 | 0.0034 | 0.0049 | 0.0024 |
| Phosphorus | 7723-14-0 | mg/L | 0.02 U | 0.02 U | 6 | 0.02 U |
| Potassium | 7440-09-7 | mg/L | 8.35 | 3.38 | 8.32 | 1.69 |
| Selenium | 7782-49-2 | mg/L | 0.001 J | 0.001 U | 0.0012 J | 0.001 U |
| Silver | 7440-22-4 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Sodium | 7440-23-5 | mg/L | 30.5 | 11.6 | 29.6 | 12.4 |
| Thallium | 7440-28-0 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Vanadium | 7440-62-2 | mg/L | 0.0023 | 0.0013 J | 0.0026 | 0.0015 J |
| Zinc | 7440-66-6 | mg/L | 0.0021 | 0.003 | 0.0034 | 0.0047 |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 Metals Unfiltered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Aluminum | 7429-90-5 | mg/L | 4.76 | 3.64 | 4.57 | 2.77 |
| Antimony | 7440-36-0 | mg/L | 0.0016 J | 0.0012 J | 0.0015 J | 0.001 U |
| Arsenic | 7440-38-2 | mg/L | 0.0107 | 0.01 | 0.0164 | 0.0036 |
| Barium | 7440-39-3 | mg/L | 0.0741 | 0.068 | 0.11 | 0.048 |
| Beryllium | 7440-41-7 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Cadmium | 7440-43-9 | mg/L | 0.0011 J | 0.0011 J | 0.002 J | 0.001 U |
| Calcium | 7440-70-2 | mg/L | 42.7 | 30 | 42.8 | 36.3 |
| Chromium | 7440-47-3 | mg/L | 0.0128 | 0.0107 | 0.0201 | 0.0078 |
| Cobalt | 7440-48-4 | mg/L | 0.003 | 0.0031 | 0.0053 | 0.0021 |
| Copper | 7440-50-8 | mg/L | 0.0386 | 0.0383 | 0.0606 | 0.0141 |
| Iron | 7439-89-6 | mg/L | 5.94 | 6.53 | 9.67 | 3.61 |
| Lead | 7439-92-1 | mg/L | 0.048 | 0.0528 | 0.0798 | 0.0133 |
| Magnesium | 7439-95-4 | mg/L | 10.6 | 6.12 | 10.5 | 9.75 |
| Manganese | 7439-96-5 | mg/L | 0.906 | 0.869 | 0.827 | 0.206 |
| Mercury | 7439-97-6 | mg/L | 0.000049 B | 0.000098 B | 0.000127 B | 0.000005 U |
| Nickel | 7440-02-0 | mg/L | 0.0136 | 0.0111 | 0.0175 | 0.0065 |
| Phosphorus | 7723-14-0 | mg/L | 0.452 | 0.426 | 0.692 | 0.166 |
| Potassium | 7440-09-7 | mg/L | 9.91 | 4.36 | 9.3 | 2.88 |
| Selenium | 7782-49-2 | mg/L | 0.0014 J | 0.001 U | 0.0016 J | 0.001 U |
| Silver | 7440-22-4 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Sodium | 7440-23-5 | mg/L | 29.7 | 11.6 | 29.2 | 12.3 |
| Thallium | 7440-28-0 | mg/L | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Vanadium | 7440-62-2 | mg/L | 0.0112 | 0.0095 | 0.0137 | 0.0077 |
| Zinc | 7440-66-6 | mg/L | 0.141 | 0.16 | 0.25 | 0.0419 |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

Cleveland Harbor 2010 Organochlorine Pesticides Filtered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Aldrin | 309-00-2 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| alpha-BHC | 319-84-6 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| beta-BHC | 319-85-7 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| delta-BHC | 319-86-8 | ug/L | 0.008 | 0.0006 U | 0.0006 U | 0.0003 U |
| gamma-BHC (Lindane) | 58-89-9 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| alpha-Chlordane | 5103-71-9 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| gamma-Chlordane | 5566-34-7 | ug/L | 0.014 | 0.019 | 0.0006 U | 0.0003 U |
| Chlordane- isomer mixture | 12789-03-6 | ug/L | 0.014 | 0.019 | 0 | 0 |
| 4,4´-DDD | 72-54-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| 4,4´-DDE | 72-55-9 | ug/L | 0.0005 U | 0.013 | 0.0006 U | 0.0003 U |
| 4,4´-DDT | 50-29-3 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| DDT, Total | DDT, Total | ug/L | 0 | 0.013 | 0 | 0 |
| Dieldrin | 60-57-1 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan I | 959-98-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan II | 33213-65-9 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan sulfate | 1031-07-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin | 72-20-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin aldehyde | 7421-93-4 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin ketone | 53494-70-5 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Heptachlor | 76-44-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Heptachlor epoxide | 1024-57-3 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Methoxychlor | 72-43-5 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |

DMU-1- Composite of CH1 - CH3
DMU-1S- Course Material from composite of CH1 - CH3
DMU-2- Composite of CH4- CH8

## Cleveland Harbor 2010 Organochlorine Pesticides Unfiltered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Aldrin | 309-00-2 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| alpha-BHC | 319-84-6 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| beta-BHC | 319-85-7 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| delta-BHC | 319-86-8 | ug/L | 0.01 | 0.005 | 0.0006 U | 0.0003 U |
| gamma-BHC (Lindane) | 58-89-9 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| alpha-Chlordane | 5103-71-9 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| gamma-Chlordane | 5566-34-7 | ug/L | 0.031 | 0.026 | 0.05 | 0.0003 U |
| Chlordane- isomer mixture | 12789-03-6 | ug/L | 0.031 | 0.026 | 0.05 | 0 |
| 4,4´-DDD | 72-54-8 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| 4,4´-DDE | 72-55-9 | ug/L | 0.012 | 0.014 | 0.012 | 0.0003 U |
| 4,4´-DDT | 50-29-3 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| DDT, Total | DDT, Total | ug/L | 0.012 | 0.014 | 0.012 | 0 |
| Dieldrin | 60-57-1 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan I | 959-98-8 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan II | 33213-65-9 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan sulfate | 1031-07-8 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin | 72-20-8 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin aldehyde | 7421-93-4 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin ketone | 53494-70-5 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Heptachlor | 76-44-8 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Heptachlor epoxide | 1024-57-3 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Methoxychlor | 72-43-5 | ug/L | 0.0006 U | 0.0006 U | 0.0006 U | 0.0003 U |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 Organochlorine Pesticides Filtered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Aldrin | 309-00-2 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| alpha-BHC | 319-84-6 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| beta-BHC | 319-85-7 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| delta-BHC | 319-86-8 | ug/L | 0.008 | 0.0006 U | 0.0006 U | 0.0003 U |
| gamma-BHC (Lindane) | 58-89-9 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| alpha-Chlordane | 5103-71-9 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| gamma-Chlordane | 5566-34-7 | ug/L | 0.014 | 0.019 | 0.0006 U | 0.0003 U |
| Chlordane- isomer mixture | 12789-03-6 | ug/L | 0.014 | 0.019 | 0 | 0 |
| 4,4´-DDD | 72-54-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| 4,4´-DDE | 72-55-9 | ug/L | 0.0005 U | 0.013 | 0.0006 U | 0.0003 U |
| 4,4´-DDT | 50-29-3 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| DDT, Total | DDT, Total | ug/L | 0 | 0.013 | 0 | 0 |
| Dieldrin | 60-57-1 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan I | 959-98-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan II | 33213-65-9 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endosulfan sulfate | 1031-07-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin | 72-20-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin aldehyde | 7421-93-4 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Endrin ketone | 53494-70-5 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Heptachlor | 76-44-8 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Heptachlor epoxide | 1024-57-3 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |
| Methoxychlor | 72-43-5 | ug/L | 0.0005 U | 0.0006 U | 0.0006 U | 0.0003 U |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 Polychlorinated Biphenyls (PCBs) Unfiltered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| PCB-1016 | 12674-11-2 | ug/L | 0.02 U | 0.02 U | 0.02 U | 0.008 U |
| PCB-1221 | 11104-28-2 | ug/L | 0.02 U | 0.02 U | 0.02 U | 0.008 U |
| PCB-1232 | 11141-16-5 | ug/L | 0.02 U | 0.02 U | 0.02 U | 0.008 U |
| PCB-1242 | 53469-21-9 | ug/L | 0.02 U | 0.02 U | 0.02 U | 0.008 U |
| PCB-1248 | 12672-29-6 | ug/L | 0.02 U | 0.02 U | 0.02 U | 0.008 U |
| PCB-1254 | 11097-69-1 | ug/L | 0.02 U | 0.02 U | 0.02 U | 0.008 U |
| PCB-1260 | 11096-82-5 | ug/L | 0.02 U | 0.02 U | 0.02 U | 0.008 U |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Filtered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 1,2-Dichlorobenzene | 95-50-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 1,3-Dichlorobenzene | 541-73-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 1,4-Dichlorobenzene | 106-46-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4,5-Trichlorophenol | 95-95-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4,6-Trichlorophenol | 88-06-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dichlorophenol | 120-83-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dimethylphenol | 105-67-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dinitrophenol | 51-28-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dinitrotoluene | 121-14-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,6-Dinitrotoluene | 606-20-2 | ug/L | 0.49 | 0.49 | 0.08 U | 0.14 J |
| 2-Chloronaphthalene | 91-58-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Chlorophenol | 95-57-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Methylphenol | 95-48-7 | ug/L | 0.08 U | 0.08 U | 0.09 J | 0.08 U |
| 2-Nitroaniline | 88-74-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Nitrophenol | 88-75-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 3,3´-Dichlorobenzidine | 91-94-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 3-Nitroaniline | 99-09-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Bromophenyl phenyl ether | 101-55-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Chloro-3-methylphenol | 59-50-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Chloroaniline | 106-47-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Methylphenol | 106-44-5 | ug/L | 0.08 U | 0.08 U | 0.13 J | 0.08 U |
| 4-Nitroaniline | 100-01-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Nitrophenol | 100-02-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Acenaphthene | 83-32-9 | ug/L | 0.34 | 0.49 | 0.23 J | 0.08 U |
| Acenaphthylene | 208-96-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Aniline | 62-53-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Anthracene | 120-12-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzidine | 92-87-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzo (a) anthracene | 56-55-3 | ug/L | 0.08 U | 0.08 U | 0.11 J | 0.08 U |
| Benzo (a) pyrene | 50-32-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzo (b) fluoranthene | 205-99-2 | ug/L | 0.08 U | 0.08 U | 0.13 J | 0.08 U |
| Benzo (g,h,i) perylene | 191-24-2 | ug/L | 0.08 U | 0.08 U | 0.12 J | 0.08 U |
| Benzo (k) fluoranthene | 207-08-9 | ug/L | 0.08 U | 0.08 U | 0.11 J | 0.08 U |
| Benzoic acid | 65-85-0 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzyl alcohol | 100-51-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-chloroethoxy)methane | 111-91-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-chloroethyl)ether | 111-44-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-chloroisopropyl)ether | 39638-32-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | ug/L | 1.16 B | 1.14 B | 1.26 B | 0.53 B |

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Filtered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Butyl benzyl phthalate | 85-68-7 | ug/L | 0.14 J | 0.14 J | 0.08 U | 0.1 J |
| Chrysene | 218-01-9 | ug/L | 0.08 U | 0.08 U | 0.16 J | 0.08 U |
| Dibenz (a,h) anthracene | 53-70-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Dibenzofuran | 132-64-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Diethyl phthalate | 84-66-2 | ug/L | 0.83 | 0.95 | 0.11 J | 3.51 |
| Dimethyl phthalate | 131-11-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Di-n-butyl phthalate | 84-74-2 | ug/L | 0.92 B | 1.03 B | 0.51 B | 0.67 B |
| Di-n-octyl phthalate | 117-84-0 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Fluoranthene | 206-44-0 | ug/L | 0.08 U | 0.1 J | 0.38 | 0.08 U |
| Fluorene | 86-73-7 | ug/L | 0.08 U | 0.15 J | 0.08 U | 0.08 U |
| Hexachlorobenzene | 118-74-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Hexachlorobutadiene | 87-68-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Hexachlorocyclopentadiene | 77-47-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Hexachloroethane | 67-72-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | 0.08 U | 0.08 U | 0.17 J | 0.08 U |
| Isophorone | 78-59-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Naphthalene | 91-20-3 | ug/L | 0.18 J | 0.33 | 0.08 U | 0.08 U |
| Nitrobenzene | 98-95-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| N-Nitrosodimethylamine | 62-75-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| N-Nitrosodi-n-propylamine | 621-64-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| N-Nitrosodiphenylamine | 86-30-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Pentachlorophenol | 87-86-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Phenanthrene | 85-01-8 | ug/L | 0.08 U | 0.13 J | 0.1 J | 0.08 U |
| Phenol | 108-95-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Pyrene | 129-00-0 | ug/L | 0.08 U | 0.08 U | 0.17 J | 0.08 U |
| Pyridine | 110-86-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Unfiltered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 1,2-Dichlorobenzene | 95-50-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 1,3-Dichlorobenzene | 541-73-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 1,4-Dichlorobenzene | 106-46-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4,5-Trichlorophenol | 95-95-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4,6-Trichlorophenol | 88-06-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dichlorophenol | 120-83-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dimethylphenol | 105-67-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dinitrophenol | 51-28-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,4-Dinitrotoluene | 121-14-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2,6-Dinitrotoluene | 606-20-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Chloronaphthalene | 91-58-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Chlorophenol | 95-57-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Methylphenol | 95-48-7 | ug/L | 0.08 U | 0.08 U | 0.08 UJ | 0.08 U |
| 2-Nitroaniline | 88-74-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 2-Nitrophenol | 88-75-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 3,3´-Dichlorobenzidine | 91-94-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 3-Nitroaniline | 99-09-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Bromophenyl phenyl ether | 101-55-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Chloro-3-methylphenol | 59-50-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Chloroaniline | 106-47-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Methylphenol | 106-44-5 | ug/L | 0.08 U | 0.08 U | 0.09 J | 0.08 U |
| 4-Nitroaniline | 100-01-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4-Nitrophenol | 100-02-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Acenaphthene | 83-32-9 | ug/L | 0.08 U | 0.27 | 0.08 U | 0.08 U |
| Acenaphthylene | 208-96-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Aniline | 62-53-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Anthracene | 120-12-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzidine | 92-87-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzo (a) anthracene | 56-55-3 | ug/L | 0.08 J | 0.08 U | 0.08 U | 0.08 U |
| Benzo (a) pyrene | 50-32-8 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzo (b) fluoranthene | 205-99-2 | ug/L | 0.13 J | 0.08 U | 0.08 U | 0.08 U |
| Benzo (g,h,i) perylene | 191-24-2 | ug/L | 0.12 J | 0.08 U | 0.08 U | 0.08 U |
| Benzo (k) fluoranthene | 207-08-9 | ug/L | 0.1 J | 0.08 U | 0.08 U | 0.08 U |
| Benzoic acid | 65-85-0 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Benzyl alcohol | 100-51-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-chloroethoxy)methane | 111-91-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-chloroethyl)ether | 111-44-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-chloroisopropyl)ether | 39638-32-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | ug/L | 1.25 B | 0.83 B | 0.82 B | 0.08 U |

## Cleveland Harbor 2010 Semivolatile Organic Compounds (SVOC) Unfiltered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Butyl benzyl phthalate | 85-68-7 | ug/L | 0.17 J | 0.08 U | 0.1 J | 0.08 U |
| Chrysene | 218-01-9 | ug/L | 0.15 J | 0.1 J | 0.08 U | 0.08 U |
| Dibenz (a,h) anthracene | 53-70-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Dibenzofuran | 132-64-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Diethyl phthalate | 84-66-2 | ug/L | 0.08 U | 0.11 J | 0.87 | 0.08 U |
| Dimethyl phthalate | 131-11-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Di-n-butyl phthalate | 84-74-2 | ug/L | 0.4 B | 0.41 B | 0.83 B | 0.08 U |
| Di-n-octyl phthalate | 117-84-0 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Fluoranthene | 206-44-0 | ug/L | 0.21 J | 0.19 J | 0.08 U | 0.08 U |
| Fluorene | 86-73-7 | ug/L | 0.08 U | 0.12 J | 0.08 U | 0.08 U |
| Hexachlorobenzene | 118-74-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Hexachlorobutadiene | 87-68-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Hexachlorocyclopentadiene | 77-47-4 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Hexachloroethane | 67-72-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | 0.15 J | 0.08 U | 0.08 U | 0.08 U |
| Isophorone | 78-59-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Naphthalene | 91-20-3 | ug/L | 0.08 J | 0.13 J | 0.08 U | 0.08 U |
| Nitrobenzene | 98-95-3 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| N-Nitrosodimethylamine | 62-75-9 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| N-Nitrosodi-n-propylamine | 621-64-7 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| N-Nitrosodiphenylamine | 86-30-6 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Pentachlorophenol | 87-86-5 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Phenanthrene | 85-01-8 | ug/L | 0.08 J | 0.1 J | 0.08 U | 0.08 U |
| Phenol | 108-95-2 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| Pyrene | 129-00-0 | ug/L | 0.2 J | 0.15 J | 0.08 U | 0.08 U |
| Pyridine | 110-86-1 | ug/L | 0.08 U | 0.08 U | 0.08 U | 0.08 U |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Filterd Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 630-20-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 71-55-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-Trichloroethane | 79-00-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | 75-34-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 75-35-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | 563-58-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | 87-61-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | 96-18-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-Chloropropane | 96-12-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromoethane | 106-93-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | 95-50-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene-d4 | 2199-69-1 | ug/L | 27 | 26 | 27 | 27 |
| 1,2-Dichloroethane | 107-06-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane-d4 | 17060-07-0 | ug/L | 23 | 22 | 23 | 23 |
| 1,2-Dichloroethene, Total | 540-59-0 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | 78-87-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | 108-67-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | 541-73-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | 142-28-9 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 106-46-7 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dioxane | 123-91-1 | ug/L | 50 U | 50 U | 50 U | 50 U |
| 2,2-Dichloropropane | 594-20-7 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone | 78-93-3 | ug/L | 5.7 | 6.5 H | 8.5 | 5 U |
| 2-Chloroethyl vinyl ether | 110-75-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 2-Chlorotoluene | 95-49-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone | 591-78-6 | ug/L | 5 U | 5 U | 5 U | 5 U |
| 4-Chlorotoluene | 106-43-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 4-Isopropyltoluene | 99-87-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-pentanone | 108-10-1 | ug/L | 5 U | 5 U | 5 U | 5 U |
| Acetone | 67-64-1 | ug/L | 81 | 160 | 54 | 6.4 |
| Benzene | 71-43-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromobenzene | 108-86-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromochloromethane | 74-97-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 75-27-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromofluorobenzene | 460-00-4 | ug/L | 26 | 25 | 26 | 26 |
| Bromoform | 75-25-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | 74-83-9 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Carbon disulfide | 75-15-0 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Carbon tetrachloride | 56-23-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | 108-90-7 | ug/L | 1 U | 1 U | 1 U | 1 U |

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Filterd Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Chloroethane | 75-00-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Chloroform | 67-66-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Chloromethane | 74-87-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| cis-1,2-Dichloroethene | 156-59-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 10061-01-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Cyclohexane | 110-82-7 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 124-48-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Dibromomethane | 74-95-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane | 75-71-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 100-41-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Freon TF | 76-13-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | 87-68-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Isobutyl alcohol | 78-83-1 | ug/L | 50 U | 50 U | 50 U | 50 U |
| Isopropylbenzene | 98-82-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| m&p-Xylene | 179601-23-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methyl acetate | 79-20-9 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methyl iodide | 74-88-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methyl t-butyl ether | 1634-04-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methylcyclohexane | 108-87-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methylene Chloride | 75-09-2 | ug/L | 60 | 89 | 70 | 57 |
| Naphthalene | 91-20-3 | ug/L | 0.37 JB | 0.5 JB | 0.2 JB | 1 U |
| n-Butylbenzene | 104-51-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 103-65-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | 95-47-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| sec-Butylbenzene | 135-98-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Styrene | 100-42-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 98-06-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 127-18-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Tetrahydrofuran | 109-99-9 | ug/L | 14 U | 14 U | 14 U | 14 U |
| Toluene | 108-88-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Toluene-d8 | 2037-26-5 | ug/L | 27 | 26 | 27 | 26 |
| trans-1,2-Dichloroethene | 156-60-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 10061-02-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | 79-01-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Trichlorofluoromethane | 75-69-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Vinyl acetate | 108-05-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Vinyl chloride | 75-01-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Xylenes, Total | 1330-20-7 | ug/L | 1 U | 1 U | 1 U | 1 U |

**DMMU-1- Composite of CH1 - CH3**

**DMMU-1S- Course Material from composite of CH1 - CH3**

**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Unfilterd Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 630-20-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 71-55-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-Trichloroethane | 79-00-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | 75-34-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 75-35-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloropropene | 563-58-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | 87-61-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichloropropane | 96-18-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-Chloropropane | 96-12-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromoethane | 106-93-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene | 95-50-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichlorobenzene-d4 | 2199-69-1 | ug/L | 29 X | 26 | 27 | 26 |
| 1,2-Dichloroethane | 107-06-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane-d4 | 17060-07-0 | ug/L | 24 | 23 | 22 | 22 |
| 1,2-Dichloroethene, Total | 540-59-0 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | 78-87-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,3,5-Trimethylbenzene | 108-67-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | 541-73-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichloropropane | 142-28-9 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 106-46-7 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dioxane | 123-91-1 | ug/L | 50 U | 50 U | 50 U | 50 U |
| 2,2-Dichloropropane | 594-20-7 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone | 78-93-3 | ug/L | 7.2 | 7.5 | 9.7 | 5 U |
| 2-Chloroethyl vinyl ether | 110-75-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 2-Chlorotoluene | 95-49-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone | 591-78-6 | ug/L | 5 U | 5 U | 5 U | 5 U |
| 4-Chlorotoluene | 106-43-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 4-Isopropyltoluene | 99-87-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-pentanone | 108-10-1 | ug/L | 5 U | 5 U | 5 U | 5 U |
| Acetone | 67-64-1 | ug/L | 79 | 170 | 56 | 2.9 J |
| Benzene | 71-43-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromobenzene | 108-86-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromochloromethane | 74-97-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 75-27-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromofluorobenzene | 460-00-4 | ug/L | 28 | 26 | 26 | 25 |
| Bromoform | 75-25-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | 74-83-9 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Carbon disulfide | 75-15-0 | ug/L | 1 U | 0.16 JB | 1 U | 1 U |
| Carbon tetrachloride | 56-23-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | 108-90-7 | ug/L | 1 U | 1 U | 1 U | 1 U |

## Cleveland Harbor 2010 Volatile Organic Compounds (VOCs) Unfilterd Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Chloroethane | 75-00-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Chloroform | 67-66-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Chloromethane | 74-87-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| cis-1,2-Dichloroethene | 156-59-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 10061-01-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Cyclohexane | 110-82-7 | ug/L | 1 U | 1 U | 1 U | 0.33 J |
| Dibromochloromethane | 124-48-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Dibromomethane | 74-95-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane | 75-71-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 100-41-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Freon TF | 76-13-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Hexachlorobutadiene | 87-68-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Isobutyl alcohol | 78-83-1 | ug/L | 50 U | 50 U | 50 U | 50 U |
| Isopropylbenzene | 98-82-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| m&p-Xylene | 179601-23-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methyl acetate | 79-20-9 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methyl iodide | 74-88-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methyl t-butyl ether | 1634-04-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methylcyclohexane | 108-87-2 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Methylene Chloride | 75-09-2 | ug/L | 4.2 | 6 | 6.3 | 0.64 J |
| Naphthalene | 91-20-3 | ug/L | 1 U | 1 U | 1 U | 1 U |
| n-Butylbenzene | 104-51-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 103-65-1 | ug/L | 1 U | 1 U | 1 U | 1 U |
| o-Xylene | 95-47-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| sec-Butylbenzene | 135-98-8 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Styrene | 100-42-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 98-06-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 127-18-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Tetrahydrofuran | 109-99-9 | ug/L | 14 U | 14 U | 14 U | 14 U |
| Toluene | 108-88-3 | ug/L | 0.78 J | 0.69 J | 1.3 | 1 U |
| Toluene-d8 | 2037-26-5 | ug/L | 29 X | 27 | 26 | 26 |
| trans-1,2-Dichloroethene | 156-60-5 | ug/L | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 10061-02-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | 79-01-6 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Trichlorofluoromethane | 75-69-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Vinyl acetate | 108-05-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Vinyl chloride | 75-01-4 | ug/L | 1 U | 1 U | 1 U | 1 U |
| Xylenes, Total | 1330-20-7 | ug/L | 1 U | 1 U | 1 U | 1 U |

**DMMU-1- Composite of CH1 - CH3**

**DMMU-1S- Course Material from composite of CH1 - CH3**

**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 General Chemistry Filtered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Ammonia | 7664-41-7 | ug/L | 8400 DB | 2000 DB | 11700 DB | 210 B |
| Cyanide, Total | 57-12-5 | ug/L | 7 J | 4 J | 5.6 J | 10 B |
| Dissolved Organic Carbon | 7440-44-0 | ug/L | 14500 | 7900 | 12700 | 4100 |
| Total Dissolved Solids | Total Dissolved Solids | ug/L | 373000 | 191000 | 440000 | 172000 |
| Total Solids | Total Solids | ug/L | 422000 | 212000 | 474000 | 184000 |
| Total Suspended Solids | Total Suspended Solids | ug/L | 250 | 250 | 250 | 250 |
| Turbidity | Turbidity | ug/L | 1 U | 1 U | 1 U | 1 U |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

## Cleveland Harbor 2010 General Chemistry Unfiltered Elutriate Data

| ANALYTE | CARSN | UNIT | DMMU-1 | DMMU-1S | DMMU-2 | Lake Water |
|---|---|---|---|---|---|---|
| Ammonia | 7664-41-7 | mg/L | 95 | 4900 | 79 | 130 |
| Cyanide, Total | 57-12-5 | mg/L | 5.1 | 3 | 4.6 | 10 |
| Total Dissolved Solids | Total Dissolved Solids | mg/L | 229000 | 396000 | 527000 | 80000 |
| Total Organic Carbon | 7440-44-0 | mg/L | 28000 | 12300 | 23600 | 2500 |
| Total Solids | Total Solids | mg/L | 424000 | 540000 | 698000 | 258000 |
| Total Suspended Solids | Total Suspended Solids | mg/L | 195000 | 144000 | 171000 | 178000 |
| Turbidity | Turbidity | mg/L | 305 | 261 | 532 | 201 |

**DMMU-1- Composite of CH1 - CH3**
**DMMU-1S- Course Material from composite of CH1 - CH3**
**DMMU-2- Composite of CH4- CH8**

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

12 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (filtered) | 0111204-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (filtered) | 0111204-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 Coarse/Sieved - Elutriate (filtered) | 0111204-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water (filtered) | 0111204-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000013** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |
| Aluminum | ND | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Calcium** | **40.8** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| Iron | ND | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Magnesium** | **9.74** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Manganese** | **0.646** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| Phosphorus | ND | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Potassium** | **8.35** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **30.5** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.0015** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0050** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.0337** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Cadmium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Chromium** | **0.0047** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Cobalt | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Copper** | **0.0013** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| Lead | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Nickel** | **0.0053** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0010** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0023** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.0021** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.00001** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |
| Aluminum | ND | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Calcium** | **39.3** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Iron** | **0.0640** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **9.57** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Manganese** | **0.408** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **6.00** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Potassium** | **8.32** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **29.6** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.0016** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0071** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.0373** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Cadmium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Chromium** | **0.0050** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Cobalt | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Copper** | **0.0013** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| Lead | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Nickel** | **0.0049** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0012** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0026** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.0034** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.00001** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |
| Aluminum | ND | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Calcium** | **28.0** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Iron** | **0.0542** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **5.55** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Manganese** | **0.604** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| Phosphorus | ND | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Potassium** | **3.38** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **11.6** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.0011** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0041** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.0236** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Cadmium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Chromium** | **0.0027** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Cobalt | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Copper** | **0.0014** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| Lead | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Nickel** | **0.0034** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Selenium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0013** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Zinc** | **0.0030** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

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## Cleveland Site Water (filtered)

**0111204-04 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| Aluminum | ND | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Calcium** | **32.1** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| Iron | ND | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Magnesium** | **8.53** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| Manganese | ND | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| Phosphorus | ND | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | U |
| **Potassium** | **1.69** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **12.4** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Arsenic | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Barium** | **0.0196** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Cadmium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Chromium** | **0.0041** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Cobalt | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Copper** | **0.0027** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Lead | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Nickel** | **0.0024** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Selenium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0015** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Zinc** | **0.0047** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Blank (B011037-BLK1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00001 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000047 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 6.10E-6 | 0.000005 | mg/L | | | | | | | |
| **LCS (B011037-BS1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000233 | 0.000005 | mg/L | 2.000E-4 | | 116 | 75-125 | | | B |
| **LCS (B011037-BS2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000222 | 0.000005 | mg/L | 2.000E-4 | | 111 | 75-125 | | | B |
| **LCS (B011037-BS3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000224 | 0.000005 | mg/L | 2.000E-4 | | 112 | 75-125 | | | B |
| **LCS (B011037-BS4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000226 | 0.000005 | mg/L | 2.000E-4 | | 113 | 75-125 | | | B |
| **LCS (B011037-BS5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000228 | 0.000005 | mg/L | 2.000E-4 | | 114 | 75-125 | | | B |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Duplicate (B011037-DUP1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000014 | 0.000005 | mg/L | | 8.10E-6 | | | 52.0 | 25 | B |
| **Duplicate (B011037-DUP2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000027 | 0.000005 | mg/L | | 3.30E-5 | | | 19.7 | 25 | B |
| **Duplicate (B011037-DUP3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000049 | 0.000005 | mg/L | | 0.000054 | | | 9.41 | 25 | B |
| **Duplicate (B011037-DUP4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000045 | 0.000005 | mg/L | | 4.90E-5 | | | 7.30 | 25 | B |
| **Duplicate (B011037-DUP5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000021 | 0.000005 | mg/L | | 1.30E-5 | | | 49.4 | 25 | B |
| **Duplicate (B011037-DUP6)** | | **Source: 0102202-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000011 | 0.000005 | mg/L | | 1.10E-5 | | | 3.03 | 25 | B |
| **Matrix Spike (B011037-MS1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000209 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 101 | 75-125 | | | B |
| **Matrix Spike (B011037-MS2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000168 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 90.1 | 75-125 | | | B |
| **Matrix Spike (B011037-MS3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000289 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 118 | 75-125 | | | B |
| **Matrix Spike (B011037-MS4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00027 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 111 | 75-125 | | | B |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Matrix Spike (B011037-MS5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | | | B |
| **Matrix Spike (B011037-MS6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000239 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.7 | 75-125 | | | B |
| **Matrix Spike Dup (B011037-MSD1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000236 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 114 | 75-125 | 12.6 | 25 | B |
| **Matrix Spike Dup (B011037-MSD2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000182 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 99.4 | 75-125 | 9.81 | 25 | B |
| **Matrix Spike Dup (B011037-MSD3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000292 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 119 | 75-125 | 0.962 | 25 | B |
| **Matrix Spike Dup (B011037-MSD4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000241 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 96.1 | 75-125 | 14.0 | 25 | B |
| **Matrix Spike Dup (B011037-MSD5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | 0.243 | 25 | B |
| **Matrix Spike Dup (B011037-MSD6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00024 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.9 | 75-125 | 0.205 | 25 | B |
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B012026-BLK1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | ND | 0.0010 | mg/L | | | | | | | U |
| Arsenic | ND | 0.0010 | mg/L | | | | | | | U |
| Barium | ND | 0.0010 | mg/L | | | | | | | U |
| Beryllium | ND | 0.0010 | mg/L | | | | | | | U |
| Cadmium | ND | 0.0010 | mg/L | | | | | | | U |
| Chromium | ND | 0.0010 | mg/L | | | | | | | U |
| Cobalt | ND | 0.0010 | mg/L | | | | | | | U |
| Copper | ND | 0.0010 | mg/L | | | | | | | U |
| Lead | ND | 0.0010 | mg/L | | | | | | | U |
| Nickel | ND | 0.0010 | mg/L | | | | | | | U |
| Selenium | ND | 0.0010 | mg/L | | | | | | | U |
| Silver | ND | 0.0010 | mg/L | | | | | | | U |
| Thallium | ND | 0.0010 | mg/L | | | | | | | U |
| Vanadium | ND | 0.0010 | mg/L | | | | | | | U |
| Zinc | ND | 0.0010 | mg/L | | | | | | | U |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **LCS (B012026-BS1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0244 | 0.0010 | mg/L | 0.02500 | | 97.5 | 80-120 | | | |
| Arsenic | 0.0259 | 0.0010 | mg/L | 0.02500 | | 104 | 80-120 | | | |
| Barium | 0.0251 | 0.0010 | mg/L | 0.02500 | | 100 | 80-120 | | | |
| Beryllium | 0.0258 | 0.0010 | mg/L | 0.02500 | | 103 | 80-120 | | | |
| Cadmium | 0.0251 | 0.0010 | mg/L | 0.02500 | | 100 | 80-120 | | | |
| Chromium | 0.0254 | 0.0010 | mg/L | 0.02500 | | 102 | 80-120 | | | |
| Cobalt | 0.0266 | 0.0010 | mg/L | 0.02500 | | 106 | 80-120 | | | |
| Copper | 0.0251 | 0.0010 | mg/L | 0.02500 | | 100 | 80-120 | | | |
| Lead | 0.0248 | 0.0010 | mg/L | 0.02500 | | 99.3 | 80-120 | | | |
| Nickel | 0.0256 | 0.0010 | mg/L | 0.02500 | | 102 | 80-120 | | | |
| Selenium | 0.0262 | 0.0010 | mg/L | 0.02500 | | 105 | 80-120 | | | |
| Silver | 0.0318 | 0.0010 | mg/L | 0.02500 | | 127 | 80-120 | | | |
| Thallium | 0.0243 | 0.0010 | mg/L | 0.02500 | | 97.4 | 80-120 | | | |
| Vanadium | 0.0285 | 0.0010 | mg/L | 0.02500 | | 114 | 80-120 | | | |
| Zinc | 0.0252 | 0.0010 | mg/L | 0.02500 | | 101 | 80-120 | | | |
| **Duplicate (B012026-DUP1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0015 | 0.0020 | mg/L | | 0.0016 | | | 3.87 | 20 | J |
| Arsenic | 0.0107 | 0.0020 | mg/L | | 0.0107 | | | 0.788 | 20 | |
| Barium | 0.0741 | 0.0020 | mg/L | | 0.0741 | | | 0.0976 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | 0.0011 | 0.0020 | mg/L | | 0.0011 | | | 2.20 | 20 | J |
| Chromium | 0.0131 | 0.0020 | mg/L | | 0.0128 | | | 2.30 | 20 | |
| Cobalt | 0.0031 | 0.0020 | mg/L | | 0.0030 | | | 3.26 | 20 | |
| Copper | 0.0397 | 0.0020 | mg/L | | 0.0386 | | | 2.66 | 20 | |
| Lead | 0.0476 | 0.0020 | mg/L | | 0.0480 | | | 0.790 | 20 | |
| Nickel | 0.0141 | 0.0020 | mg/L | | 0.0136 | | | 3.47 | 20 | |
| Selenium | 0.0013 | 0.0020 | mg/L | | 0.0014 | | | 7.94 | 20 | J |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0114 | 0.0020 | mg/L | | 0.0112 | | | 1.76 | 20 | |
| Zinc | 0.142 | 0.0020 | mg/L | | 0.141 | | | 0.452 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Duplicate (B012026-DUP2)** | | **Source: 0111203-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Arsenic | 0.0035 | 0.0020 | mg/L | | 0.0036 | | | 3.70 | 20 | |
| Barium | 0.0457 | 0.0020 | mg/L | | 0.0480 | | | 4.75 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Chromium | 0.0081 | 0.0020 | mg/L | | 0.0078 | | | 2.99 | 20 | |
| Cobalt | 0.0022 | 0.0020 | mg/L | | 0.0021 | | | 2.08 | 20 | |
| Copper | 0.0139 | 0.0020 | mg/L | | 0.0141 | | | 1.53 | 20 | |
| Lead | 0.0096 | 0.0020 | mg/L | | 0.0133 | | | 32.8 | 20 | |
| Nickel | 0.0067 | 0.0020 | mg/L | | 0.0065 | | | 2.00 | 20 | |
| Selenium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0083 | 0.0020 | mg/L | | 0.0077 | | | 7.86 | 20 | |
| Zinc | 0.0406 | 0.0020 | mg/L | | 0.0419 | | | 3.18 | 20 | |
| **Duplicate (B012026-DUP3)** | | **Source: 0111204-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0015 | 0.0020 | mg/L | | 0.0015 | | | 1.65 | 20 | J |
| Arsenic | 0.0052 | 0.0020 | mg/L | | 0.0050 | | | 2.91 | 20 | |
| Barium | 0.0340 | 0.0020 | mg/L | | 0.0337 | | | 1.04 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Chromium | 0.0045 | 0.0020 | mg/L | | 0.0047 | | | 4.37 | 20 | |
| Cobalt | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Copper | 0.0015 | 0.0020 | mg/L | | 0.0013 | | | 14.4 | 20 | J |
| Lead | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Nickel | 0.0054 | 0.0020 | mg/L | | 0.0053 | | | 2.77 | 20 | |
| Selenium | 0.0011 | 0.0020 | mg/L | | 0.0010 | | | 6.93 | 20 | J |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0022 | 0.0020 | mg/L | | 0.0023 | | | 2.26 | 20 | |
| Zinc | 0.0059 | 0.0020 | mg/L | | 0.0021 | | | 94.7 | 20 | |

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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Duplicate (B012026-DUP4)** | | **Source: 0111204-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Arsenic | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Barium | 0.0201 | 0.0020 | mg/L | | 0.0196 | | | 2.28 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Chromium | 0.0042 | 0.0020 | mg/L | | 0.0041 | | | 2.07 | 20 | |
| Cobalt | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Copper | 0.0027 | 0.0020 | mg/L | | 0.0027 | | | 0.680 | 20 | |
| Lead | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Nickel | 0.0026 | 0.0020 | mg/L | | 0.0024 | | | 7.74 | 20 | |
| Selenium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0015 | 0.0020 | mg/L | | 0.0015 | | | 0.800 | 20 | J |
| Zinc | 0.0053 | 0.0020 | mg/L | | 0.0047 | | | 11.3 | 20 | |
| **Matrix Spike (B012026-MS1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0177 | 0.0020 | mg/L | 0.02000 | 0.0016 | 80.7 | 80-120 | | | |
| Arsenic | 0.0325 | 0.0020 | mg/L | 0.02000 | 0.0107 | 109 | 80-120 | | | |
| Barium | 0.0921 | 0.0020 | mg/L | 0.02000 | 0.0741 | 90.4 | 80-120 | | | |
| Beryllium | 0.0214 | 0.0020 | mg/L | 0.02000 | ND | 107 | 80-120 | | | |
| Cadmium | 0.0239 | 0.0020 | mg/L | 0.02000 | 0.0011 | 114 | 80-120 | | | |
| Chromium | 0.0330 | 0.0020 | mg/L | 0.02000 | 0.0128 | 101 | 80-120 | | | |
| Cobalt | 0.0250 | 0.0020 | mg/L | 0.02000 | 0.0030 | 110 | 80-120 | | | |
| Copper | 0.0593 | 0.0020 | mg/L | 0.02000 | 0.0386 | 103 | 80-120 | | | |
| Lead | 0.0680 | 0.0020 | mg/L | 0.02000 | 0.0480 | 99.9 | 80-120 | | | |
| Nickel | 0.0348 | 0.0020 | mg/L | 0.02000 | 0.0136 | 106 | 80-120 | | | |
| Selenium | 0.0202 | 0.0020 | mg/L | 0.02000 | 0.0014 | 93.9 | 80-120 | | | |
| Silver | 0.0043 | 0.0020 | mg/L | 0.02000 | ND | 21.5 | 80-120 | | | |
| Thallium | 0.0209 | 0.0020 | mg/L | 0.02000 | ND | 104 | 80-120 | | | |
| Vanadium | 0.0343 | 0.0020 | mg/L | 0.02000 | 0.0112 | 115 | 80-120 | | | |
| Zinc | 0.163 | 0.0020 | mg/L | 0.02000 | 0.141 | 110 | 80-120 | | | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Matrix Spike (B012026-MS2)** | | **Source: 0111203-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0188 | 0.0020 | mg/L | 0.02000 | ND | 94.2 | 80-120 | | | |
| Arsenic | 0.0240 | 0.0020 | mg/L | 0.02000 | 0.0036 | 102 | 80-120 | | | |
| Barium | 0.0666 | 0.0020 | mg/L | 0.02000 | 0.0480 | 93.0 | 80-120 | | | |
| Beryllium | 0.0189 | 0.0020 | mg/L | 0.02000 | ND | 94.6 | 80-120 | | | |
| Cadmium | 0.0197 | 0.0020 | mg/L | 0.02000 | ND | 98.6 | 80-120 | | | |
| Chromium | 0.0275 | 0.0020 | mg/L | 0.02000 | 0.0078 | 98.4 | 80-120 | | | |
| Cobalt | 0.0227 | 0.0020 | mg/L | 0.02000 | 0.0021 | 103 | 80-120 | | | |
| Copper | 0.0332 | 0.0020 | mg/L | 0.02000 | 0.0141 | 95.2 | 80-120 | | | |
| Lead | 0.0295 | 0.0020 | mg/L | 0.02000 | 0.0133 | 80.9 | 80-120 | | | |
| Nickel | 0.0263 | 0.0020 | mg/L | 0.02000 | 0.0065 | 98.7 | 80-120 | | | |
| Selenium | 0.0190 | 0.0020 | mg/L | 0.02000 | ND | 94.8 | 80-120 | | | |
| Silver | 0.0077 | 0.0020 | mg/L | 0.02000 | ND | 38.7 | 80-120 | | | |
| Thallium | 0.0191 | 0.0020 | mg/L | 0.02000 | ND | 95.4 | 80-120 | | | |
| Vanadium | 0.0302 | 0.0020 | mg/L | 0.02000 | 0.0077 | 113 | 80-120 | | | |
| Zinc | 0.0593 | 0.0020 | mg/L | 0.02000 | 0.0419 | 86.8 | 80-120 | | | |
| **Matrix Spike (B012026-MS3)** | | **Source: 0111204-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0207 | 0.0020 | mg/L | 0.02000 | 0.0015 | 95.8 | 80-120 | | | |
| Arsenic | 0.0289 | 0.0020 | mg/L | 0.02000 | 0.0050 | 120 | 80-120 | | | |
| Barium | 0.0530 | 0.0020 | mg/L | 0.02000 | 0.0337 | 96.8 | 80-120 | | | |
| Beryllium | 0.0211 | 0.0020 | mg/L | 0.02000 | ND | 105 | 80-120 | | | |
| Cadmium | 0.0226 | 0.0020 | mg/L | 0.02000 | ND | 113 | 80-120 | | | |
| Chromium | 0.0255 | 0.0020 | mg/L | 0.02000 | 0.0047 | 104 | 80-120 | | | |
| Cobalt | 0.0224 | 0.0020 | mg/L | 0.02000 | ND | 112 | 80-120 | | | |
| Copper | 0.0217 | 0.0020 | mg/L | 0.02000 | 0.0013 | 102 | 80-120 | | | |
| Lead | 0.0222 | 0.0020 | mg/L | 0.02000 | ND | 111 | 80-120 | | | |
| Nickel | 0.0262 | 0.0020 | mg/L | 0.02000 | 0.0053 | 105 | 80-120 | | | |
| Selenium | 0.0278 | 0.0020 | mg/L | 0.02000 | 0.0010 | 134 | 80-120 | | | |
| Silver | 0.0165 | 0.0020 | mg/L | 0.02000 | ND | 82.7 | 80-120 | | | |
| Thallium | 0.0211 | 0.0020 | mg/L | 0.02000 | ND | 106 | 80-120 | | | |
| Vanadium | 0.0258 | 0.0020 | mg/L | 0.02000 | 0.0023 | 118 | 80-120 | | | |
| Zinc | 0.0260 | 0.0020 | mg/L | 0.02000 | 0.0021 | 119 | 80-120 | | | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Matrix Spike (B012026-MS4)** | | **Source: 0111204-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0212 | 0.0020 | mg/L | 0.02000 | ND | 106 | 80-120 | | | |
| Arsenic | 0.0234 | 0.0020 | mg/L | 0.02000 | ND | 117 | 80-120 | | | |
| Barium | 0.0416 | 0.0020 | mg/L | 0.02000 | 0.0196 | 110 | 80-120 | | | |
| Beryllium | 0.0204 | 0.0020 | mg/L | 0.02000 | ND | 102 | 80-120 | | | |
| Cadmium | 0.0201 | 0.0020 | mg/L | 0.02000 | ND | 101 | 80-120 | | | |
| Chromium | 0.0244 | 0.0020 | mg/L | 0.02000 | 0.0041 | 101 | 80-120 | | | |
| Cobalt | 0.0209 | 0.0020 | mg/L | 0.02000 | ND | 105 | 80-120 | | | |
| Copper | 0.0224 | 0.0020 | mg/L | 0.02000 | 0.0027 | 98.3 | 80-120 | | | |
| Lead | 0.0204 | 0.0020 | mg/L | 0.02000 | ND | 102 | 80-120 | | | |
| Nickel | 0.0230 | 0.0020 | mg/L | 0.02000 | 0.0024 | 103 | 80-120 | | | |
| Selenium | 0.0243 | 0.0020 | mg/L | 0.02000 | ND | 122 | 80-120 | | | |
| Silver | 0.0199 | 0.0020 | mg/L | 0.02000 | ND | 99.3 | 80-120 | | | |
| Thallium | 0.0205 | 0.0020 | mg/L | 0.02000 | ND | 102 | 80-120 | | | |
| Vanadium | 0.0243 | 0.0020 | mg/L | 0.02000 | 0.0015 | 114 | 80-120 | | | |
| Zinc | 0.0270 | 0.0020 | mg/L | 0.02000 | 0.0047 | 111 | 80-120 | | | |
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B012027-BLK1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | ND | 0.100 | mg/L | | | | | | | U |
| Calcium | ND | 0.100 | mg/L | | | | | | | U |
| Iron | ND | 0.0400 | mg/L | | | | | | | U |
| Magnesium | ND | 0.100 | mg/L | | | | | | | U |
| Manganese | ND | 0.0400 | mg/L | | | | | | | U |
| Phosphorus | ND | 0.0400 | mg/L | | | | | | | U |
| Potassium | ND | 0.100 | mg/L | | | | | | | U |
| Sodium | ND | 0.100 | mg/L | | | | | | | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **LCS (B012027-BS1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 2.17 | 0.100 | mg/L | 2.500 | | 86.7 | 80-120 | | | |
| Calcium | 2.37 | 0.100 | mg/L | 2.500 | | 94.9 | 80-120 | | | |
| Iron | 2.49 | 0.0400 | mg/L | 2.500 | | 99.4 | 80-120 | | | |
| Magnesium | 2.31 | 0.100 | mg/L | 2.500 | | 92.4 | 80-120 | | | |
| Manganese | 2.34 | 0.0400 | mg/L | 2.500 | | 93.6 | 80-120 | | | |
| Phosphorus | 2.33 | 0.0400 | mg/L | 2.500 | | 93.3 | 80-120 | | | |
| Potassium | 2.34 | 0.100 | mg/L | 2.500 | | 93.8 | 80-120 | | | |
| Sodium | 2.29 | 0.100 | mg/L | 2.500 | | 91.5 | 80-120 | | | |
| **Duplicate (B012027-DUP1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 4.80 | 0.100 | mg/L | | 4.76 | | | 0.912 | 20 | |
| Calcium | 42.9 | 0.100 | mg/L | | 42.7 | | | 0.454 | 20 | |
| Iron | 5.99 | 0.0400 | mg/L | | 5.94 | | | 0.818 | 20 | |
| Magnesium | 10.7 | 0.100 | mg/L | | 10.6 | | | 1.13 | 20 | |
| Manganese | 0.905 | 0.0400 | mg/L | | 0.906 | | | 0.0594 | 20 | |
| Phosphorus | 0.456 | 0.0400 | mg/L | | 0.452 | | | 0.881 | 20 | |
| Potassium | 10.1 | 0.100 | mg/L | | 9.91 | | | 1.77 | 20 | |
| Sodium | 29.9 | 0.100 | mg/L | | 29.7 | | | 0.596 | 20 | |
| **Duplicate (B012027-DUP2)** | | **Source: 0111203-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 2.71 | 0.100 | mg/L | | 2.77 | | | 2.50 | 20 | |
| Calcium | 35.6 | 0.100 | mg/L | | 36.3 | | | 1.89 | 20 | |
| Iron | 3.48 | 0.0400 | mg/L | | 3.61 | | | 3.56 | 20 | |
| Magnesium | 9.57 | 0.100 | mg/L | | 9.75 | | | 1.95 | 20 | |
| Manganese | 0.196 | 0.0400 | mg/L | | 0.206 | | | 4.78 | 20 | |
| Phosphorus | 0.152 | 0.0400 | mg/L | | 0.166 | | | 8.81 | 20 | |
| Potassium | 2.75 | 0.100 | mg/L | | 2.88 | | | 4.59 | 20 | |
| Sodium | 12.2 | 0.100 | mg/L | | 12.3 | | | 1.09 | 20 | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **Duplicate (B012027-DUP3)** | | **Source: 0111204-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | ND | 0.100 | mg/L | | ND | | | | 20 | U |
| Calcium | 40.7 | 0.100 | mg/L | | 40.8 | | | 0.221 | 20 | |
| Iron | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Magnesium | 9.69 | 0.100 | mg/L | | 9.74 | | | 0.488 | 20 | |
| Manganese | 0.641 | 0.0400 | mg/L | | 0.646 | | | 0.692 | 20 | |
| Phosphorus | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Potassium | 8.27 | 0.100 | mg/L | | 8.35 | | | 0.992 | 20 | |
| Sodium | 30.0 | 0.100 | mg/L | | 30.5 | | | 1.54 | 20 | |
| **Duplicate (B012027-DUP4)** | | **Source: 0111204-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | ND | 0.100 | mg/L | | ND | | | | 20 | U |
| Calcium | 32.0 | 0.100 | mg/L | | 32.1 | | | 0.438 | 20 | |
| Iron | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Magnesium | 8.53 | 0.100 | mg/L | | 8.53 | | | 0.0281 | 20 | |
| Manganese | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Phosphorus | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Potassium | 1.70 | 0.100 | mg/L | | 1.69 | | | 1.12 | 20 | |
| Sodium | 12.4 | 0.100 | mg/L | | 12.4 | | | 0.188 | 20 | |
| **Matrix Spike (B012027-MS1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 8.45 | 0.100 | mg/L | 4.000 | 4.76 | 92.2 | 80-120 | | | |
| Calcium | 45.5 | 0.100 | mg/L | 4.000 | 42.7 | 68.4 | 80-120 | | | |
| Iron | 9.95 | 0.0400 | mg/L | 4.000 | 5.94 | 100 | 80-120 | | | |
| Magnesium | 14.1 | 0.100 | mg/L | 4.000 | 10.6 | 88.5 | 80-120 | | | |
| Manganese | 4.62 | 0.0400 | mg/L | 4.000 | 0.906 | 92.9 | 80-120 | | | |
| Phosphorus | 4.24 | 0.0400 | mg/L | 4.000 | 0.452 | 94.7 | 80-120 | | | |
| Potassium | 13.0 | 0.100 | mg/L | 4.000 | 9.91 | 77.1 | 80-120 | | | |
| Sodium | 32.8 | 0.100 | mg/L | 4.000 | 29.7 | 76.6 | 80-120 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **Matrix Spike (B012027-MS2)** | **Source: 0111203-04** | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 6.29 | 0.100 | mg/L | 4.000 | 2.77 | 88.0 | 80-120 | | | |
| Calcium | 38.9 | 0.100 | mg/L | 4.000 | 36.3 | 67.1 | 80-120 | | | |
| Iron | 7.65 | 0.0400 | mg/L | 4.000 | 3.61 | 101 | 80-120 | | | |
| Magnesium | 13.2 | 0.100 | mg/L | 4.000 | 9.75 | 86.0 | 80-120 | | | |
| Manganese | 4.00 | 0.0400 | mg/L | 4.000 | 0.206 | 94.8 | 80-120 | | | |
| Phosphorus | 4.09 | 0.0400 | mg/L | 4.000 | 0.166 | 98.0 | 80-120 | | | |
| Potassium | 6.12 | 0.100 | mg/L | 4.000 | 2.88 | 80.9 | 80-120 | | | |
| Sodium | 16.0 | 0.100 | mg/L | 4.000 | 12.3 | 93.0 | 80-120 | | | |
| **Matrix Spike (B012027-MS3)** | **Source: 0111204-01** | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 3.66 | 0.100 | mg/L | 4.000 | ND | 91.5 | 80-120 | | | |
| Calcium | 43.6 | 0.100 | mg/L | 4.000 | 40.8 | 69.3 | 80-120 | | | |
| Iron | 3.98 | 0.0400 | mg/L | 4.000 | ND | 99.5 | 80-120 | | | |
| Magnesium | 13.6 | 0.100 | mg/L | 4.000 | 9.74 | 95.9 | 80-120 | | | |
| Manganese | 4.37 | 0.0400 | mg/L | 4.000 | 0.646 | 93.0 | 80-120 | | | |
| Phosphorus | 3.93 | 0.0400 | mg/L | 4.000 | ND | 98.2 | 80-120 | | | |
| Potassium | 12.3 | 0.100 | mg/L | 4.000 | 8.35 | 99.5 | 80-120 | | | |
| Sodium | 32.7 | 0.100 | mg/L | 4.000 | 30.5 | 55.5 | 80-120 | | | |
| **Matrix Spike (B012027-MS4)** | **Source: 0111204-04** | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 3.99 | 0.100 | mg/L | 4.000 | ND | 99.8 | 80-120 | | | |
| Calcium | 35.7 | 0.100 | mg/L | 4.000 | 32.1 | 90.2 | 80-120 | | | |
| Iron | 4.33 | 0.0400 | mg/L | 4.000 | ND | 108 | 80-120 | | | |
| Magnesium | 12.7 | 0.100 | mg/L | 4.000 | 8.53 | 103 | 80-120 | | | |
| Manganese | 4.19 | 0.0400 | mg/L | 4.000 | ND | 105 | 80-120 | | | |
| Phosphorus | 3.73 | 0.0400 | mg/L | 4.000 | ND | 93.3 | 80-120 | | | |
| Potassium | 5.82 | 0.100 | mg/L | 4.000 | 1.69 | 103 | 80-120 | | | |
| Sodium | 16.2 | 0.100 | mg/L | 4.000 | 12.4 | 95.2 | 80-120 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

12 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (Unfiltered) | 0111203-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (Unfiltered) | 0111203-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 - Coarse/Sieved (Unfiltered) | 0111203-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water | 0111203-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000049** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |
| **Aluminum** | **4.76** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Calcium** | **42.7** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Iron** | **5.94** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **10.6** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Manganese** | **0.906** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **0.452** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Potassium** | **9.91** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **29.7** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.0016** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0107** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.0741** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Cadmium** | **0.0011** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0128** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0030** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.0386** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.0480** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Nickel** | **0.0136** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0014** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0112** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.141** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.000127** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |
| **Aluminum** | **4.57** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Calcium** | **42.8** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Iron** | **9.67** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **10.5** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Manganese** | **0.827** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **0.692** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Potassium** | **9.30** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **29.2** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.0015** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0164** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.110** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Cadmium** | **0.0020** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0201** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0053** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.0606** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.0798** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Nickel** | **0.0175** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Selenium** | **0.0016** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0137** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.250** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.000098** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |
| **Aluminum** | **3.64** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Calcium** | **30.0** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Iron** | **6.53** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **6.12** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Manganese** | **0.869** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **0.426** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Potassium** | **4.36** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **11.6** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Antimony** | **0.0012** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Arsenic** | **0.0100** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.0680** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Cadmium** | **0.0011** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | J |
| **Chromium** | **0.0107** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0031** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.0383** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.0528** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Nickel** | **0.0111** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Selenium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0095** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.160** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Metals by EPA 6000/7000 Series Methods**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Aluminum** | **2.77** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Calcium** | **36.3** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Iron** | **3.61** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Magnesium** | **9.75** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Manganese** | **0.206** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Phosphorus** | **0.166** | 0.0400 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Potassium** | **2.88** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| **Sodium** | **12.3** | 0.100 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6010 | |
| Antimony | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Arsenic** | **0.0036** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Barium** | **0.0480** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Cadmium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Chromium** | **0.0078** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Cobalt** | **0.0021** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Copper** | **0.0141** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Lead** | **0.0133** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Nickel** | **0.0065** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| Selenium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Silver | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| Thallium | ND | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | U |
| **Vanadium** | **0.0077** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |
| **Zinc** | **0.0419** | 0.0020 | mg/L | 2 | 10-Dec-2010 | 10-Dec-2010 | SW 846/6020 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Blank (B011037-BLK1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00001 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000047 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 6.10E-6 | 0.000005 | mg/L | | | | | | | |
| **LCS (B011037-BS1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000233 | 0.000005 | mg/L | 2.000E-4 | | 116 | 75-125 | | | B |
| **LCS (B011037-BS2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000222 | 0.000005 | mg/L | 2.000E-4 | | 111 | 75-125 | | | B |
| **LCS (B011037-BS3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000224 | 0.000005 | mg/L | 2.000E-4 | | 112 | 75-125 | | | B |
| **LCS (B011037-BS4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000226 | 0.000005 | mg/L | 2.000E-4 | | 113 | 75-125 | | | B |
| **LCS (B011037-BS5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000228 | 0.000005 | mg/L | 2.000E-4 | | 114 | 75-125 | | | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Duplicate (B011037-DUP1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000014 | 0.000005 | mg/L | | 8.10E-6 | | | 52.0 | 25 | B |
| **Duplicate (B011037-DUP2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000027 | 0.000005 | mg/L | | 3.30E-5 | | | 19.7 | 25 | B |
| **Duplicate (B011037-DUP3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000049 | 0.000005 | mg/L | | 0.000054 | | | 9.41 | 25 | B |
| **Duplicate (B011037-DUP4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000045 | 0.000005 | mg/L | | 4.90E-5 | | | 7.30 | 25 | B |
| **Duplicate (B011037-DUP5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000021 | 0.000005 | mg/L | | 1.30E-5 | | | 49.4 | 25 | B |
| **Duplicate (B011037-DUP6)** | | **Source: 0102202-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000011 | 0.000005 | mg/L | | 1.10E-5 | | | 3.03 | 25 | B |
| **Matrix Spike (B011037-MS1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000209 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 101 | 75-125 | | | B |
| **Matrix Spike (B011037-MS2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000168 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 90.1 | 75-125 | | | B |
| **Matrix Spike (B011037-MS3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000289 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 118 | 75-125 | | | B |
| **Matrix Spike (B011037-MS4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00027 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 111 | 75-125 | | | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Matrix Spike (B011037-MS5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | | | B |
| **Matrix Spike (B011037-MS6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000239 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.7 | 75-125 | | | B |
| **Matrix Spike Dup (B011037-MSD1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000236 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 114 | 75-125 | 12.6 | 25 | B |
| **Matrix Spike Dup (B011037-MSD2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000182 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 99.4 | 75-125 | 9.81 | 25 | B |
| **Matrix Spike Dup (B011037-MSD3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000292 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 119 | 75-125 | 0.962 | 25 | B |
| **Matrix Spike Dup (B011037-MSD4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000241 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 96.1 | 75-125 | 14.0 | 25 | B |
| **Matrix Spike Dup (B011037-MSD5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | 0.243 | 25 | B |
| **Matrix Spike Dup (B011037-MSD6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00024 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.9 | 75-125 | 0.205 | 25 | B |
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B012026-BLK1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | ND | 0.0010 | mg/L | | | | | | | U |
| Arsenic | ND | 0.0010 | mg/L | | | | | | | U |
| Barium | ND | 0.0010 | mg/L | | | | | | | U |
| Beryllium | ND | 0.0010 | mg/L | | | | | | | U |
| Cadmium | ND | 0.0010 | mg/L | | | | | | | U |
| Chromium | ND | 0.0010 | mg/L | | | | | | | U |
| Cobalt | ND | 0.0010 | mg/L | | | | | | | U |
| Copper | ND | 0.0010 | mg/L | | | | | | | U |
| Lead | ND | 0.0010 | mg/L | | | | | | | U |
| Nickel | ND | 0.0010 | mg/L | | | | | | | U |
| Selenium | ND | 0.0010 | mg/L | | | | | | | U |
| Silver | ND | 0.0010 | mg/L | | | | | | | U |
| Thallium | ND | 0.0010 | mg/L | | | | | | | U |
| Vanadium | ND | 0.0010 | mg/L | | | | | | | U |
| Zinc | ND | 0.0010 | mg/L | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **LCS (B012026-BS1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0244 | 0.0010 | mg/L | 0.02500 | | 97.5 | 80-120 | | | |
| Arsenic | 0.0259 | 0.0010 | mg/L | 0.02500 | | 104 | 80-120 | | | |
| Barium | 0.0251 | 0.0010 | mg/L | 0.02500 | | 100 | 80-120 | | | |
| Beryllium | 0.0258 | 0.0010 | mg/L | 0.02500 | | 103 | 80-120 | | | |
| Cadmium | 0.0251 | 0.0010 | mg/L | 0.02500 | | 100 | 80-120 | | | |
| Chromium | 0.0254 | 0.0010 | mg/L | 0.02500 | | 102 | 80-120 | | | |
| Cobalt | 0.0266 | 0.0010 | mg/L | 0.02500 | | 106 | 80-120 | | | |
| Copper | 0.0251 | 0.0010 | mg/L | 0.02500 | | 100 | 80-120 | | | |
| Lead | 0.0248 | 0.0010 | mg/L | 0.02500 | | 99.3 | 80-120 | | | |
| Nickel | 0.0256 | 0.0010 | mg/L | 0.02500 | | 102 | 80-120 | | | |
| Selenium | 0.0262 | 0.0010 | mg/L | 0.02500 | | 105 | 80-120 | | | |
| Silver | 0.0318 | 0.0010 | mg/L | 0.02500 | | 127 | 80-120 | | | |
| Thallium | 0.0243 | 0.0010 | mg/L | 0.02500 | | 97.4 | 80-120 | | | |
| Vanadium | 0.0285 | 0.0010 | mg/L | 0.02500 | | 114 | 80-120 | | | |
| Zinc | 0.0252 | 0.0010 | mg/L | 0.02500 | | 101 | 80-120 | | | |
| **Duplicate (B012026-DUP1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0015 | 0.0020 | mg/L | | 0.0016 | | | 3.87 | 20 | J |
| Arsenic | 0.0107 | 0.0020 | mg/L | | 0.0107 | | | 0.788 | 20 | |
| Barium | 0.0741 | 0.0020 | mg/L | | 0.0741 | | | 0.0976 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | 0.0011 | 0.0020 | mg/L | | 0.0011 | | | 2.20 | 20 | J |
| Chromium | 0.0131 | 0.0020 | mg/L | | 0.0128 | | | 2.30 | 20 | |
| Cobalt | 0.0031 | 0.0020 | mg/L | | 0.0030 | | | 3.26 | 20 | |
| Copper | 0.0397 | 0.0020 | mg/L | | 0.0386 | | | 2.66 | 20 | |
| Lead | 0.0476 | 0.0020 | mg/L | | 0.0480 | | | 0.790 | 20 | |
| Nickel | 0.0141 | 0.0020 | mg/L | | 0.0136 | | | 3.47 | 20 | |
| Selenium | 0.0013 | 0.0020 | mg/L | | 0.0014 | | | 7.94 | 20 | J |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0114 | 0.0020 | mg/L | | 0.0112 | | | 1.76 | 20 | |
| Zinc | 0.142 | 0.0020 | mg/L | | 0.141 | | | 0.452 | 20 | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Duplicate (B012026-DUP2)** | | **Source: 0111203-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Arsenic | 0.0035 | 0.0020 | mg/L | | 0.0036 | | | 3.70 | 20 | |
| Barium | 0.0457 | 0.0020 | mg/L | | 0.0480 | | | 4.75 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Chromium | 0.0081 | 0.0020 | mg/L | | 0.0078 | | | 2.99 | 20 | |
| Cobalt | 0.0022 | 0.0020 | mg/L | | 0.0021 | | | 2.08 | 20 | |
| Copper | 0.0139 | 0.0020 | mg/L | | 0.0141 | | | 1.53 | 20 | |
| Lead | 0.0096 | 0.0020 | mg/L | | 0.0133 | | | 32.8 | 20 | |
| Nickel | 0.0067 | 0.0020 | mg/L | | 0.0065 | | | 2.00 | 20 | |
| Selenium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0083 | 0.0020 | mg/L | | 0.0077 | | | 7.86 | 20 | |
| Zinc | 0.0406 | 0.0020 | mg/L | | 0.0419 | | | 3.18 | 20 | |
| **Duplicate (B012026-DUP3)** | | **Source: 0111204-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0015 | 0.0020 | mg/L | | 0.0015 | | | 1.65 | 20 | J |
| Arsenic | 0.0052 | 0.0020 | mg/L | | 0.0050 | | | 2.91 | 20 | |
| Barium | 0.0340 | 0.0020 | mg/L | | 0.0337 | | | 1.04 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Chromium | 0.0045 | 0.0020 | mg/L | | 0.0047 | | | 4.37 | 20 | |
| Cobalt | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Copper | 0.0015 | 0.0020 | mg/L | | 0.0013 | | | 14.4 | 20 | J |
| Lead | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Nickel | 0.0054 | 0.0020 | mg/L | | 0.0053 | | | 2.77 | 20 | |
| Selenium | 0.0011 | 0.0020 | mg/L | | 0.0010 | | | 6.93 | 20 | J |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0022 | 0.0020 | mg/L | | 0.0023 | | | 2.26 | 20 | |
| Zinc | 0.0059 | 0.0020 | mg/L | | 0.0021 | | | 94.7 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Duplicate (B012026-DUP4)** | | **Source: 0111204-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Arsenic | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Barium | 0.0201 | 0.0020 | mg/L | | 0.0196 | | | 2.28 | 20 | |
| Beryllium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Cadmium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Chromium | 0.0042 | 0.0020 | mg/L | | 0.0041 | | | 2.07 | 20 | |
| Cobalt | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Copper | 0.0027 | 0.0020 | mg/L | | 0.0027 | | | 0.680 | 20 | |
| Lead | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Nickel | 0.0026 | 0.0020 | mg/L | | 0.0024 | | | 7.74 | 20 | |
| Selenium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Silver | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Thallium | ND | 0.0020 | mg/L | | ND | | | | 20 | U |
| Vanadium | 0.0015 | 0.0020 | mg/L | | 0.0015 | | | 0.800 | 20 | J |
| Zinc | 0.0053 | 0.0020 | mg/L | | 0.0047 | | | 11.3 | 20 | |
| **Matrix Spike (B012026-MS1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0177 | 0.0020 | mg/L | 0.02000 | 0.0016 | 80.7 | 80-120 | | | |
| Arsenic | 0.0325 | 0.0020 | mg/L | 0.02000 | 0.0107 | 109 | 80-120 | | | |
| Barium | 0.0921 | 0.0020 | mg/L | 0.02000 | 0.0741 | 90.4 | 80-120 | | | |
| Beryllium | 0.0214 | 0.0020 | mg/L | 0.02000 | ND | 107 | 80-120 | | | |
| Cadmium | 0.0239 | 0.0020 | mg/L | 0.02000 | 0.0011 | 114 | 80-120 | | | |
| Chromium | 0.0330 | 0.0020 | mg/L | 0.02000 | 0.0128 | 101 | 80-120 | | | |
| Cobalt | 0.0250 | 0.0020 | mg/L | 0.02000 | 0.0030 | 110 | 80-120 | | | |
| Copper | 0.0593 | 0.0020 | mg/L | 0.02000 | 0.0386 | 103 | 80-120 | | | |
| Lead | 0.0680 | 0.0020 | mg/L | 0.02000 | 0.0480 | 99.9 | 80-120 | | | |
| Nickel | 0.0348 | 0.0020 | mg/L | 0.02000 | 0.0136 | 106 | 80-120 | | | |
| Selenium | 0.0202 | 0.0020 | mg/L | 0.02000 | 0.0014 | 93.9 | 80-120 | | | |
| Silver | 0.0043 | 0.0020 | mg/L | 0.02000 | ND | 21.5 | 80-120 | | | |
| Thallium | 0.0209 | 0.0020 | mg/L | 0.02000 | ND | 104 | 80-120 | | | |
| Vanadium | 0.0343 | 0.0020 | mg/L | 0.02000 | 0.0112 | 115 | 80-120 | | | |
| Zinc | 0.163 | 0.0020 | mg/L | 0.02000 | 0.141 | 110 | 80-120 | | | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Matrix Spike (B012026-MS2)** | | **Source: 0111203-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0188 | 0.0020 | mg/L | 0.02000 | ND | 94.2 | 80-120 | | | |
| Arsenic | 0.0240 | 0.0020 | mg/L | 0.02000 | 0.0036 | 102 | 80-120 | | | |
| Barium | 0.0666 | 0.0020 | mg/L | 0.02000 | 0.0480 | 93.0 | 80-120 | | | |
| Beryllium | 0.0189 | 0.0020 | mg/L | 0.02000 | ND | 94.6 | 80-120 | | | |
| Cadmium | 0.0197 | 0.0020 | mg/L | 0.02000 | ND | 98.6 | 80-120 | | | |
| Chromium | 0.0275 | 0.0020 | mg/L | 0.02000 | 0.0078 | 98.4 | 80-120 | | | |
| Cobalt | 0.0227 | 0.0020 | mg/L | 0.02000 | 0.0021 | 103 | 80-120 | | | |
| Copper | 0.0332 | 0.0020 | mg/L | 0.02000 | 0.0141 | 95.2 | 80-120 | | | |
| Lead | 0.0295 | 0.0020 | mg/L | 0.02000 | 0.0133 | 80.9 | 80-120 | | | |
| Nickel | 0.0263 | 0.0020 | mg/L | 0.02000 | 0.0065 | 98.7 | 80-120 | | | |
| Selenium | 0.0190 | 0.0020 | mg/L | 0.02000 | ND | 94.8 | 80-120 | | | |
| Silver | 0.0077 | 0.0020 | mg/L | 0.02000 | ND | 38.7 | 80-120 | | | |
| Thallium | 0.0191 | 0.0020 | mg/L | 0.02000 | ND | 95.4 | 80-120 | | | |
| Vanadium | 0.0302 | 0.0020 | mg/L | 0.02000 | 0.0077 | 113 | 80-120 | | | |
| Zinc | 0.0593 | 0.0020 | mg/L | 0.02000 | 0.0419 | 86.8 | 80-120 | | | |
| **Matrix Spike (B012026-MS3)** | | **Source: 0111204-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0207 | 0.0020 | mg/L | 0.02000 | 0.0015 | 95.8 | 80-120 | | | |
| Arsenic | 0.0289 | 0.0020 | mg/L | 0.02000 | 0.0050 | 120 | 80-120 | | | |
| Barium | 0.0530 | 0.0020 | mg/L | 0.02000 | 0.0337 | 96.8 | 80-120 | | | |
| Beryllium | 0.0211 | 0.0020 | mg/L | 0.02000 | ND | 105 | 80-120 | | | |
| Cadmium | 0.0226 | 0.0020 | mg/L | 0.02000 | ND | 113 | 80-120 | | | |
| Chromium | 0.0255 | 0.0020 | mg/L | 0.02000 | 0.0047 | 104 | 80-120 | | | |
| Cobalt | 0.0224 | 0.0020 | mg/L | 0.02000 | ND | 112 | 80-120 | | | |
| Copper | 0.0217 | 0.0020 | mg/L | 0.02000 | 0.0013 | 102 | 80-120 | | | |
| Lead | 0.0222 | 0.0020 | mg/L | 0.02000 | ND | 111 | 80-120 | | | |
| Nickel | 0.0262 | 0.0020 | mg/L | 0.02000 | 0.0053 | 105 | 80-120 | | | |
| Selenium | 0.0278 | 0.0020 | mg/L | 0.02000 | 0.0010 | 134 | 80-120 | | | |
| Silver | 0.0165 | 0.0020 | mg/L | 0.02000 | ND | 82.7 | 80-120 | | | |
| Thallium | 0.0211 | 0.0020 | mg/L | 0.02000 | ND | 106 | 80-120 | | | |
| Vanadium | 0.0258 | 0.0020 | mg/L | 0.02000 | 0.0023 | 118 | 80-120 | | | |
| Zinc | 0.0260 | 0.0020 | mg/L | 0.02000 | 0.0021 | 119 | 80-120 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012026 - Default Prep Metals** | | | | | | | | | | |
| **Matrix Spike (B012026-MS4)** | | **Source: 0111204-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Antimony | 0.0212 | 0.0020 | mg/L | 0.02000 | ND | 106 | 80-120 | | | |
| Arsenic | 0.0234 | 0.0020 | mg/L | 0.02000 | ND | 117 | 80-120 | | | |
| Barium | 0.0416 | 0.0020 | mg/L | 0.02000 | 0.0196 | 110 | 80-120 | | | |
| Beryllium | 0.0204 | 0.0020 | mg/L | 0.02000 | ND | 102 | 80-120 | | | |
| Cadmium | 0.0201 | 0.0020 | mg/L | 0.02000 | ND | 101 | 80-120 | | | |
| Chromium | 0.0244 | 0.0020 | mg/L | 0.02000 | 0.0041 | 101 | 80-120 | | | |
| Cobalt | 0.0209 | 0.0020 | mg/L | 0.02000 | ND | 105 | 80-120 | | | |
| Copper | 0.0224 | 0.0020 | mg/L | 0.02000 | 0.0027 | 98.3 | 80-120 | | | |
| Lead | 0.0204 | 0.0020 | mg/L | 0.02000 | ND | 102 | 80-120 | | | |
| Nickel | 0.0230 | 0.0020 | mg/L | 0.02000 | 0.0024 | 103 | 80-120 | | | |
| Selenium | 0.0243 | 0.0020 | mg/L | 0.02000 | ND | 122 | 80-120 | | | |
| Silver | 0.0199 | 0.0020 | mg/L | 0.02000 | ND | 99.3 | 80-120 | | | |
| Thallium | 0.0205 | 0.0020 | mg/L | 0.02000 | ND | 102 | 80-120 | | | |
| Vanadium | 0.0243 | 0.0020 | mg/L | 0.02000 | 0.0015 | 114 | 80-120 | | | |
| Zinc | 0.0270 | 0.0020 | mg/L | 0.02000 | 0.0047 | 111 | 80-120 | | | |
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **Blank (B012027-BLK1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | ND | 0.100 | mg/L | | | | | | | U |
| Calcium | ND | 0.100 | mg/L | | | | | | | U |
| Iron | ND | 0.0400 | mg/L | | | | | | | U |
| Magnesium | ND | 0.100 | mg/L | | | | | | | U |
| Manganese | ND | 0.0400 | mg/L | | | | | | | U |
| Phosphorus | ND | 0.0400 | mg/L | | | | | | | U |
| Potassium | ND | 0.100 | mg/L | | | | | | | U |
| Sodium | ND | 0.100 | mg/L | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **LCS (B012027-BS1)** | | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 2.17 | 0.100 | mg/L | 2.500 | | 86.7 | 80-120 | | | |
| Calcium | 2.37 | 0.100 | mg/L | 2.500 | | 94.9 | 80-120 | | | |
| Iron | 2.49 | 0.0400 | mg/L | 2.500 | | 99.4 | 80-120 | | | |
| Magnesium | 2.31 | 0.100 | mg/L | 2.500 | | 92.4 | 80-120 | | | |
| Manganese | 2.34 | 0.0400 | mg/L | 2.500 | | 93.6 | 80-120 | | | |
| Phosphorus | 2.33 | 0.0400 | mg/L | 2.500 | | 93.3 | 80-120 | | | |
| Potassium | 2.34 | 0.100 | mg/L | 2.500 | | 93.8 | 80-120 | | | |
| Sodium | 2.29 | 0.100 | mg/L | 2.500 | | 91.5 | 80-120 | | | |
| **Duplicate (B012027-DUP1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 4.80 | 0.100 | mg/L | | 4.76 | | | 0.912 | 20 | |
| Calcium | 42.9 | 0.100 | mg/L | | 42.7 | | | 0.454 | 20 | |
| Iron | 5.99 | 0.0400 | mg/L | | 5.94 | | | 0.818 | 20 | |
| Magnesium | 10.7 | 0.100 | mg/L | | 10.6 | | | 1.13 | 20 | |
| Manganese | 0.905 | 0.0400 | mg/L | | 0.906 | | | 0.0594 | 20 | |
| Phosphorus | 0.456 | 0.0400 | mg/L | | 0.452 | | | 0.881 | 20 | |
| Potassium | 10.1 | 0.100 | mg/L | | 9.91 | | | 1.77 | 20 | |
| Sodium | 29.9 | 0.100 | mg/L | | 29.7 | | | 0.596 | 20 | |
| **Duplicate (B012027-DUP2)** | | **Source: 0111203-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 2.71 | 0.100 | mg/L | | 2.77 | | | 2.50 | 20 | |
| Calcium | 35.6 | 0.100 | mg/L | | 36.3 | | | 1.89 | 20 | |
| Iron | 3.48 | 0.0400 | mg/L | | 3.61 | | | 3.56 | 20 | |
| Magnesium | 9.57 | 0.100 | mg/L | | 9.75 | | | 1.95 | 20 | |
| Manganese | 0.196 | 0.0400 | mg/L | | 0.206 | | | 4.78 | 20 | |
| Phosphorus | 0.152 | 0.0400 | mg/L | | 0.166 | | | 8.81 | 20 | |
| Potassium | 2.75 | 0.100 | mg/L | | 2.88 | | | 4.59 | 20 | |
| Sodium | 12.2 | 0.100 | mg/L | | 12.3 | | | 1.09 | 20 | |

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| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **Duplicate (B012027-DUP3)** | | **Source: 0111204-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | ND | 0.100 | mg/L | | ND | | | | 20 | U |
| Calcium | 40.7 | 0.100 | mg/L | | 40.8 | | | 0.221 | 20 | |
| Iron | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Magnesium | 9.69 | 0.100 | mg/L | | 9.74 | | | 0.488 | 20 | |
| Manganese | 0.641 | 0.0400 | mg/L | | 0.646 | | | 0.692 | 20 | |
| Phosphorus | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Potassium | 8.27 | 0.100 | mg/L | | 8.35 | | | 0.992 | 20 | |
| Sodium | 30.0 | 0.100 | mg/L | | 30.5 | | | 1.54 | 20 | |
| **Duplicate (B012027-DUP4)** | | **Source: 0111204-04** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | ND | 0.100 | mg/L | | ND | | | | 20 | U |
| Calcium | 32.0 | 0.100 | mg/L | | 32.1 | | | 0.438 | 20 | |
| Iron | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Magnesium | 8.53 | 0.100 | mg/L | | 8.53 | | | 0.0281 | 20 | |
| Manganese | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Phosphorus | ND | 0.0400 | mg/L | | ND | | | | 20 | U |
| Potassium | 1.70 | 0.100 | mg/L | | 1.69 | | | 1.12 | 20 | |
| Sodium | 12.4 | 0.100 | mg/L | | 12.4 | | | 0.188 | 20 | |
| **Matrix Spike (B012027-MS1)** | | **Source: 0111203-01** | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 8.45 | 0.100 | mg/L | 4.000 | 4.76 | 92.2 | 80-120 | | | |
| Calcium | 45.5 | 0.100 | mg/L | 4.000 | 42.7 | 68.4 | 80-120 | | | |
| Iron | 9.95 | 0.0400 | mg/L | 4.000 | 5.94 | 100 | 80-120 | | | |
| Magnesium | 14.1 | 0.100 | mg/L | 4.000 | 10.6 | 88.5 | 80-120 | | | |
| Manganese | 4.62 | 0.0400 | mg/L | 4.000 | 0.906 | 92.9 | 80-120 | | | |
| Phosphorus | 4.24 | 0.0400 | mg/L | 4.000 | 0.452 | 94.7 | 80-120 | | | |
| Potassium | 13.0 | 0.100 | mg/L | 4.000 | 9.91 | 77.1 | 80-120 | | | |
| Sodium | 32.8 | 0.100 | mg/L | 4.000 | 29.7 | 76.6 | 80-120 | | | |

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| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012027 - Default Prep Metals** | | | | | | | | | | |
| **Matrix Spike (B012027-MS2)** | **Source: 0111203-04** | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 6.29 | 0.100 | mg/L | 4.000 | 2.77 | 88.0 | 80-120 | | | |
| Calcium | 38.9 | 0.100 | mg/L | 4.000 | 36.3 | 67.1 | 80-120 | | | |
| Iron | 7.65 | 0.0400 | mg/L | 4.000 | 3.61 | 101 | 80-120 | | | |
| Magnesium | 13.2 | 0.100 | mg/L | 4.000 | 9.75 | 86.0 | 80-120 | | | |
| Manganese | 4.00 | 0.0400 | mg/L | 4.000 | 0.206 | 94.8 | 80-120 | | | |
| Phosphorus | 4.09 | 0.0400 | mg/L | 4.000 | 0.166 | 98.0 | 80-120 | | | |
| Potassium | 6.12 | 0.100 | mg/L | 4.000 | 2.88 | 80.9 | 80-120 | | | |
| Sodium | 16.0 | 0.100 | mg/L | 4.000 | 12.3 | 93.0 | 80-120 | | | |
| **Matrix Spike (B012027-MS3)** | **Source: 0111204-01** | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 3.66 | 0.100 | mg/L | 4.000 | ND | 91.5 | 80-120 | | | |
| Calcium | 43.6 | 0.100 | mg/L | 4.000 | 40.8 | 69.3 | 80-120 | | | |
| Iron | 3.98 | 0.0400 | mg/L | 4.000 | ND | 99.5 | 80-120 | | | |
| Magnesium | 13.6 | 0.100 | mg/L | 4.000 | 9.74 | 95.9 | 80-120 | | | |
| Manganese | 4.37 | 0.0400 | mg/L | 4.000 | 0.646 | 93.0 | 80-120 | | | |
| Phosphorus | 3.93 | 0.0400 | mg/L | 4.000 | ND | 98.2 | 80-120 | | | |
| Potassium | 12.3 | 0.100 | mg/L | 4.000 | 8.35 | 99.5 | 80-120 | | | |
| Sodium | 32.7 | 0.100 | mg/L | 4.000 | 30.5 | 55.5 | 80-120 | | | |
| **Matrix Spike (B012027-MS4)** | **Source: 0111204-04** | | | Prepared & Analyzed: 10-Dec-2010 | | | | | | |
| Aluminum | 3.99 | 0.100 | mg/L | 4.000 | ND | 99.8 | 80-120 | | | |
| Calcium | 35.7 | 0.100 | mg/L | 4.000 | 32.1 | 90.2 | 80-120 | | | |
| Iron | 4.33 | 0.0400 | mg/L | 4.000 | ND | 108 | 80-120 | | | |
| Magnesium | 12.7 | 0.100 | mg/L | 4.000 | 8.53 | 103 | 80-120 | | | |
| Manganese | 4.19 | 0.0400 | mg/L | 4.000 | ND | 105 | 80-120 | | | |
| Phosphorus | 3.73 | 0.0400 | mg/L | 4.000 | ND | 93.3 | 80-120 | | | |
| Potassium | 5.82 | 0.100 | mg/L | 4.000 | 1.69 | 103 | 80-120 | | | |
| Sodium | 16.2 | 0.100 | mg/L | 4.000 | 12.4 | 95.2 | 80-120 | | | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

25 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (filtered) | 0111204-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (filtered) | 0111204-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 Coarse/Sieved - Elutriate (filtered) | 0111204-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water (filtered) | 0111204-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.000013** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.00001** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.00001** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| Mercury | ND | 0.000005 | mg/L | 1 | 12-Jan-2011 | 25-Jan-2011 | EPA 7471A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Blank (B011037-BLK1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00001 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000047 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 6.10E-6 | 0.000005 | mg/L | | | | | | | |
| **LCS (B011037-BS1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000233 | 0.000005 | mg/L | 2.000E-4 | | 116 | 75-125 | | | B |
| **LCS (B011037-BS2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000222 | 0.000005 | mg/L | 2.000E-4 | | 111 | 75-125 | | | B |
| **LCS (B011037-BS3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000224 | 0.000005 | mg/L | 2.000E-4 | | 112 | 75-125 | | | B |
| **LCS (B011037-BS4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000226 | 0.000005 | mg/L | 2.000E-4 | | 113 | 75-125 | | | B |
| **LCS (B011037-BS5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000228 | 0.000005 | mg/L | 2.000E-4 | | 114 | 75-125 | | | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Duplicate (B011037-DUP1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000014 | 0.000005 | mg/L | | 8.10E-6 | | | 52.0 | 25 | B |
| **Duplicate (B011037-DUP2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000027 | 0.000005 | mg/L | | 3.30E-5 | | | 19.7 | 25 | B |
| **Duplicate (B011037-DUP3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000049 | 0.000005 | mg/L | | 0.000054 | | | 9.41 | 25 | B |
| **Duplicate (B011037-DUP4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000045 | 0.000005 | mg/L | | 4.90E-5 | | | 7.30 | 25 | B |
| **Duplicate (B011037-DUP5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000021 | 0.000005 | mg/L | | 1.30E-5 | | | 49.4 | 25 | B |
| **Duplicate (B011037-DUP6)** | | **Source: 0102202-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000011 | 0.000005 | mg/L | | 1.10E-5 | | | 3.03 | 25 | B |
| **Matrix Spike (B011037-MS1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000209 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 101 | 75-125 | | | B |
| **Matrix Spike (B011037-MS2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000168 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 90.1 | 75-125 | | | B |
| **Matrix Spike (B011037-MS3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000289 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 118 | 75-125 | | | B |
| **Matrix Spike (B011037-MS4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00027 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 111 | 75-125 | | | B |

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Matrix Spike (B011037-MS5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | | | B |
| **Matrix Spike (B011037-MS6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000239 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.7 | 75-125 | | | B |
| **Matrix Spike Dup (B011037-MSD1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000236 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 114 | 75-125 | 12.6 | 25 | B |
| **Matrix Spike Dup (B011037-MSD2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000182 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 99.4 | 75-125 | 9.81 | 25 | B |
| **Matrix Spike Dup (B011037-MSD3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000292 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 119 | 75-125 | 0.962 | 25 | B |
| **Matrix Spike Dup (B011037-MSD4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000241 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 96.1 | 75-125 | 14.0 | 25 | B |
| **Matrix Spike Dup (B011037-MSD5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | 0.243 | 25 | B |
| **Matrix Spike Dup (B011037-MSD6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00024 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.9 | 75-125 | 0.205 | 25 | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

25 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (Unfiltered) | 0111203-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (Unfiltered) | 0111203-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 - Coarse/Sieved (Unfiltered) | 0111203-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water | 0111203-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.000049** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.000127** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.000098** | 0.000005 | mg/L | 1 | 06-Dec-2010 | 17-Dec-2010 | EPA 7471A | B |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| Mercury | ND | 0.000005 | mg/L | 1 | 12-Jan-2011 | 25-Jan-2011 | EPA 7471A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Blank (B011037-BLK1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00001 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000005 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000047 | 0.000005 | mg/L | | | | | | | |
| **Blank (B011037-BLK5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 6.10E-6 | 0.000005 | mg/L | | | | | | | |
| **LCS (B011037-BS1)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000233 | 0.000005 | mg/L | 2.000E-4 | | 116 | 75-125 | | | B |
| **LCS (B011037-BS2)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000222 | 0.000005 | mg/L | 2.000E-4 | | 111 | 75-125 | | | B |
| **LCS (B011037-BS3)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000224 | 0.000005 | mg/L | 2.000E-4 | | 112 | 75-125 | | | B |
| **LCS (B011037-BS4)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000226 | 0.000005 | mg/L | 2.000E-4 | | 113 | 75-125 | | | B |
| **LCS (B011037-BS5)** | | | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000228 | 0.000005 | mg/L | 2.000E-4 | | 114 | 75-125 | | | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Duplicate (B011037-DUP1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000014 | 0.000005 | mg/L | | 8.10E-6 | | | 52.0 | 25 | B |
| **Duplicate (B011037-DUP2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000027 | 0.000005 | mg/L | | 3.30E-5 | | | 19.7 | 25 | B |
| **Duplicate (B011037-DUP3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000049 | 0.000005 | mg/L | | 0.000054 | | | 9.41 | 25 | B |
| **Duplicate (B011037-DUP4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000045 | 0.000005 | mg/L | | 4.90E-5 | | | 7.30 | 25 | B |
| **Duplicate (B011037-DUP5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000021 | 0.000005 | mg/L | | 1.30E-5 | | | 49.4 | 25 | B |
| **Duplicate (B011037-DUP6)** | | **Source: 0102202-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000011 | 0.000005 | mg/L | | 1.10E-5 | | | 3.03 | 25 | B |
| **Matrix Spike (B011037-MS1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000209 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 101 | 75-125 | | | B |
| **Matrix Spike (B011037-MS2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000168 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 90.1 | 75-125 | | | B |
| **Matrix Spike (B011037-MS3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000289 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 118 | 75-125 | | | B |
| **Matrix Spike (B011037-MS4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00027 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 111 | 75-125 | | | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011037 - EPA 1631** | | | | | | | | | | |
| **Matrix Spike (B011037-MS5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | | | B |
| **Matrix Spike (B011037-MS6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000239 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.7 | 75-125 | | | B |
| **Matrix Spike Dup (B011037-MSD1)** | | **Source: 0101501-05** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000236 | 0.000005 | mg/L | 2.000E-4 | 8.10E-6 | 114 | 75-125 | 12.6 | 25 | B |
| **Matrix Spike Dup (B011037-MSD2)** | | **Source: 0101503-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000182 | 0.000005 | mg/L | 1.500E-4 | 3.30E-5 | 99.4 | 75-125 | 9.81 | 25 | B |
| **Matrix Spike Dup (B011037-MSD3)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000292 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 119 | 75-125 | 0.962 | 25 | B |
| **Matrix Spike Dup (B011037-MSD4)** | | **Source: 0111203-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000241 | 0.000005 | mg/L | 2.000E-4 | 4.90E-5 | 96.1 | 75-125 | 14.0 | 25 | B |
| **Matrix Spike Dup (B011037-MSD5)** | | **Source: 0111204-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.000229 | 0.000005 | mg/L | 2.000E-4 | 1.30E-5 | 108 | 75-125 | 0.243 | 25 | B |
| **Matrix Spike Dup (B011037-MSD6)** | | **Source: 0102201-01** | | Prepared: 06-Dec-2010 Analyzed: 17-Dec-2010 | | | | | | |
| Mercury | 0.00024 | 0.000005 | mg/L | 2.000E-4 | 0.000054 | 92.9 | 75-125 | 0.205 | 25 | B |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

27 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (filtered) | 0111204-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (filtered) | 0111204-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 Coarse/Sieved - Elutriate (filtered) | 0111204-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water (filtered) | 0111204-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **delta-BHC** | **0.008** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Dieldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **gamma-Chlordane** | **0.014** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Heptachlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *42.8 %* | *25-140* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *91.8 %* | *30-135* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.4 %* | *25-140* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *79.7 %* | *30-135* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **4,4´-DDE** | **0.013** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| 4,4´-DDT | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **0.019** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Heptachlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *45.7 %* | *25-140* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *97.5 %* | *30-135* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *65.2 %* | *25-140* | | *13-Jan-2011* | *21-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *120 %* | *30-135* | | *13-Jan-2011* | *21-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **Blank (B011028-BLK1)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| 4,4´-DDD | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDE | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDT | ND | 0.001 | ug/L | | | | | | | U |
| Aldrin | ND | 0.001 | ug/L | | | | | | | U |
| alpha-BHC | ND | 0.001 | ug/L | | | | | | | U |
| alpha-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| beta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| delta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| Dieldrin | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan I | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan II | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan sulfate | ND | 0.001 | ug/L | | | | | | | U |
| Endrin | ND | 0.001 | ug/L | | | | | | | U |
| Endrin aldehyde | ND | 0.001 | ug/L | | | | | | | U |
| Endrin ketone | ND | 0.001 | ug/L | | | | | | | U |
| gamma-BHC (Lindane) | ND | 0.001 | ug/L | | | | | | | U |
| gamma-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor epoxide | ND | 0.001 | ug/L | | | | | | | U |
| Methoxychlor | ND | 0.001 | ug/L | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0255* | | *ug/L* | *0.05000* | | *51.0* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0490* | | *ug/L* | *0.05000* | | *97.9* | *30-135* | | | |
| **LCS (B011028-BS2)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| 4,4'-DDD [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 91.3 | 25-150 | | | |
| 4,4´-DDE | 0.014 | 0.001 | ug/L | 0.02000 | | 68.4 | 35-140 | | | |
| 4,4'-DDT [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 82.7 | 45-140 | | | |
| Aldrin [2C] | 0.008 | 0.001 | ug/L | 0.02000 | | 40.8 | 25-140 | | | |
| alpha-BHC [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 73.9 | 60-130 | | | |
| alpha-Chlordane [2C] | 0.014 | 0.001 | ug/L | 0.02000 | | 69.0 | 65-125 | | | |
| beta-BHC | 0.015 | 0.001 | ug/L | 0.02000 | | 74.1 | 65-125 | | | |
| delta-BHC [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 87.0 | 45-135 | | | |
| Dieldrin | 0.011 | 0.001 | ug/L | 0.02000 | | 53.4 | 60-130 | | | |
| Endrin | 0.015 | 0.001 | ug/L | 0.02000 | | 73.1 | 55-135 | | | |
| Endrin aldehyde | 0.016 | 0.001 | ug/L | 0.02000 | | 82.5 | 55-135 | | | |
| Endrin ketone [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 85.4 | 75-125 | | | |
| gamma-BHC [Lindane] [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 74.3 | 24-125 | | | |
| gamma-Chlordane | 0.012 | 0.001 | ug/L | 0.02000 | | 60.8 | 60-125 | | | |
| Heptachlor | 0.013 | 0.001 | ug/L | 0.02000 | | 62.9 | 40-130 | | | |
| Heptachlor epoxide [2C] | 0.014 | 0.001 | ug/L | 0.02000 | | 69.5 | 60-130 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **LCS (B011028-BS2)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| Methoxychlor | 0.016 | 0.001 | ug/L | 0.02000 | | 81.2 | 55-150 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0209* | | *ug/L* | *0.05000* | | *41.8* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0516* | | *ug/L* | *0.05000* | | *103* | *30-135* | | | |
| **LCS Dup (B011028-BSD2)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| 4,4'-DDD [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 91.3 | 25-150 | 0.00548 | 30 | |
| 4,4´-DDE | 0.013 | 0.001 | ug/L | 0.02000 | | 63.0 | 35-140 | 8.20 | 30 | |
| 4,4'-DDT [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 84.4 | 45-140 | 2.11 | 30 | |
| Aldrin [2C] | 0.008 | 0.001 | ug/L | 0.02000 | | 40.1 | 25-140 | 1.84 | 30 | |
| alpha-BHC [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 77.2 | 60-130 | 4.39 | 30 | |
| alpha-Chlordane [2C] | 0.013 | 0.001 | ug/L | 0.02000 | | 64.0 | 65-125 | 7.57 | 30 | |
| beta-BHC [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 75.2 | 65-125 | 4.59 | 30 | |
| delta-BHC [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 90.5 | 45-135 | 3.85 | 30 | |
| Dieldrin | 0.011 | 0.001 | ug/L | 0.02000 | | 53.4 | 60-130 | 0.0749 | 30 | |
| Endrin | 0.015 | 0.001 | ug/L | 0.02000 | | 76.0 | 55-135 | 3.92 | 30 | |
| Endrin aldehyde [2C] | 0.016 | 0.001 | ug/L | 0.02000 | | 80.9 | 55-135 | 1.54 | 30 | |
| Endrin ketone [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 85.2 | 75-125 | 0.223 | 30 | |
| gamma-BHC [Lindane] [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 74.8 | 24-125 | 0.671 | 30 | |
| gamma-Chlordane | 0.012 | 0.001 | ug/L | 0.02000 | | 60.5 | 60-125 | 0.404 | 30 | |
| Heptachlor | 0.013 | 0.001 | ug/L | 0.02000 | | 67.1 | 40-130 | 6.44 | 30 | |
| Heptachlor epoxide [2C] | 0.014 | 0.001 | ug/L | 0.02000 | | 68.1 | 60-130 | 1.98 | 30 | |
| Methoxychlor | 0.017 | 0.001 | ug/L | 0.02000 | | 82.9 | 55-150 | 2.08 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0208* | | *ug/L* | *0.05000* | | *41.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0574* | | *ug/L* | *0.05000* | | *115* | *30-135* | | | |
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| 4,4´-DDD | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDE | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDT | ND | 0.001 | ug/L | | | | | | | U |
| Aldrin | ND | 0.001 | ug/L | | | | | | | U |
| alpha-BHC | ND | 0.001 | ug/L | | | | | | | U |
| alpha-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| beta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| delta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| Dieldrin | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan I | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan II | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan sulfate | ND | 0.001 | ug/L | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| Endrin | ND | 0.001 | ug/L | | | | | | | U |
| Endrin aldehyde | ND | 0.001 | ug/L | | | | | | | U |
| Endrin ketone | ND | 0.001 | ug/L | | | | | | | U |
| gamma-BHC (Lindane) | ND | 0.001 | ug/L | | | | | | | U |
| gamma-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor epoxide | ND | 0.001 | ug/L | | | | | | | U |
| Methoxychlor | ND | 0.001 | ug/L | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0367* | | *ug/L* | *0.05000* | | *73.4* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0806* | | *ug/L* | *0.05000* | | *161* | *30-135* | | | |
| **LCS (B101033-BS3)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| 4,4´-DDD | 0.018 | 0.001 | ug/L | 0.02000 | | 89.8 | 25-150 | | | |
| 4,4´-DDE | 0.015 | 0.001 | ug/L | 0.02000 | | 74.2 | 35-140 | | | |
| 4,4'-DDT [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 90.5 | 45-140 | | | |
| Aldrin | 0.012 | 0.001 | ug/L | 0.02000 | | 61.2 | 25-140 | | | |
| alpha-BHC [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 83.3 | 60-130 | | | |
| alpha-Chlordane [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 73.4 | 65-125 | | | |
| beta-BHC | 0.017 | 0.001 | ug/L | 0.02000 | | 87.1 | 65-125 | | | |
| delta-BHC | 0.019 | 0.001 | ug/L | 0.02000 | | 95.0 | 45-135 | | | |
| Dieldrin | 0.016 | 0.001 | ug/L | 0.02000 | | 82.2 | 60-130 | | | |
| Endrin | 0.018 | 0.001 | ug/L | 0.02000 | | 92.2 | 55-135 | | | |
| Endrin aldehyde | 0.021 | 0.001 | ug/L | 0.02000 | | 105 | 55-135 | | | |
| Endrin ketone | 0.025 | 0.001 | ug/L | 0.02000 | | 127 | 75-125 | | | |
| gamma-BHC [Lindane] [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 84.2 | 24-125 | | | |
| gamma-Chlordane | 0.015 | 0.001 | ug/L | 0.02000 | | 74.7 | 60-125 | | | |
| Heptachlor | 0.019 | 0.001 | ug/L | 0.02000 | | 94.6 | 40-130 | | | |
| Heptachlor epoxide [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 77.4 | 60-130 | | | |
| Methoxychlor | 0.024 | 0.001 | ug/L | 0.02000 | | 120 | 55-150 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0338* | | *ug/L* | *0.05000* | | *67.6* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0672* | | *ug/L* | *0.05000* | | *134* | *30-135* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B101033-BSD3)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| 4,4´-DDD | 0.021 | 0.001 | ug/L | 0.02000 | | 104 | 25-150 | 14.8 | 30 | |
| 4,4´-DDE | 0.019 | 0.001 | ug/L | 0.02000 | | 92.8 | 35-140 | 22.3 | 30 | |
| 4,4'-DDT [2C] | 0.020 | 0.001 | ug/L | 0.02000 | | 98.3 | 45-140 | 8.23 | 30 | |
| Aldrin | 0.013 | 0.001 | ug/L | 0.02000 | | 65.9 | 25-140 | 7.30 | 30 | |
| alpha-BHC | 0.017 | 0.001 | ug/L | 0.02000 | | 83.2 | 60-130 | 8.09 | 30 | |
| alpha-Chlordane [2C] | 0.016 | 0.001 | ug/L | 0.02000 | | 80.6 | 65-125 | 9.32 | 30 | |
| beta-BHC | 0.019 | 0.001 | ug/L | 0.02000 | | 93.3 | 65-125 | 6.97 | 30 | |
| delta-BHC | 0.021 | 0.001 | ug/L | 0.02000 | | 107 | 45-135 | 11.5 | 30 | |
| Dieldrin | 0.018 | 0.001 | ug/L | 0.02000 | | 89.6 | 60-130 | 8.63 | 30 | |
| Endrin | 0.022 | 0.001 | ug/L | 0.02000 | | 108 | 55-135 | 15.4 | 30 | |
| Endrin aldehyde | 0.021 | 0.001 | ug/L | 0.02000 | | 106 | 55-135 | 1.43 | 30 | |
| Endrin ketone | 0.025 | 0.001 | ug/L | 0.02000 | | 123 | 75-125 | 2.90 | 30 | |
| gamma-BHC (Lindane) | 0.018 | 0.001 | ug/L | 0.02000 | | 90.3 | 25-125 | 12.1 | 30 | |
| gamma-Chlordane | 0.016 | 0.001 | ug/L | 0.02000 | | 79.8 | 60-125 | 6.67 | 30 | |
| Heptachlor [2C] | 0.019 | 0.001 | ug/L | 0.02000 | | 93.9 | 40-130 | 12.3 | 30 | |
| Heptachlor epoxide [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 85.3 | 60-130 | 9.70 | 30 | |
| Methoxychlor | 0.025 | 0.001 | ug/L | 0.02000 | | 126 | 55-150 | 5.30 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0347* | | *ug/L* | *0.05000* | | *69.4* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0832* | | *ug/L* | *0.05000* | | *166* | *30-135* | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

27 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (Unfiltered) | 0111203-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (Unfiltered) | 0111203-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 - Coarse/Sieved (Unfiltered) | 0111203-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water | 0111203-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **4,4´-DDE** | **0.012** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| 4,4´-DDT | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **delta-BHC [2C]** | **0.010** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Dieldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **gamma-Chlordane** | **0.031** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Heptachlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *31.4 %* | *25-140* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *82.9 %* | *30-135* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **4,4´-DDE** | **0.012** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| 4,4´-DDT | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **gamma-Chlordane** | **0.050** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Heptachlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.5 %* | *25-140* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *73.3 %* | *30-135* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **4,4´-DDE** | **0.014** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| 4,4´-DDT | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **delta-BHC** | **0.005** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Dieldrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| **gamma-Chlordane** | **0.026** | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | |
| Heptachlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.002 | ug/L | 1 | 22-Nov-2010 | 26-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *27.2 %* | *25-140* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *85.5 %* | *30-135* | | *22-Nov-2010* | *26-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Aldrin | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endrin | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.001 | ug/L | 1 | 13-Jan-2011 | 21-Jan-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *69.5 %* | *25-140* | | *13-Jan-2011* | *21-Jan-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *122 %* | *30-135* | | *13-Jan-2011* | *21-Jan-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **Blank (B011028-BLK1)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| 4,4´-DDD | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDE | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDT | ND | 0.001 | ug/L | | | | | | | U |
| Aldrin | ND | 0.001 | ug/L | | | | | | | U |
| alpha-BHC | ND | 0.001 | ug/L | | | | | | | U |
| alpha-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| beta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| delta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| Dieldrin | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan I | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan II | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan sulfate | ND | 0.001 | ug/L | | | | | | | U |
| Endrin | ND | 0.001 | ug/L | | | | | | | U |
| Endrin aldehyde | ND | 0.001 | ug/L | | | | | | | U |
| Endrin ketone | ND | 0.001 | ug/L | | | | | | | U |
| gamma-BHC (Lindane) | ND | 0.001 | ug/L | | | | | | | U |
| gamma-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor epoxide | ND | 0.001 | ug/L | | | | | | | U |
| Methoxychlor | ND | 0.001 | ug/L | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0255* | | *ug/L* | *0.05000* | | *51.0* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0490* | | *ug/L* | *0.05000* | | *97.9* | *30-135* | | | |
| **LCS (B011028-BS2)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| 4,4'-DDD [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 91.3 | 25-150 | | | |
| 4,4´-DDE | 0.014 | 0.001 | ug/L | 0.02000 | | 68.4 | 35-140 | | | |
| 4,4'-DDT [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 82.7 | 45-140 | | | |
| Aldrin [2C] | 0.008 | 0.001 | ug/L | 0.02000 | | 40.8 | 25-140 | | | |
| alpha-BHC [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 73.9 | 60-130 | | | |
| alpha-Chlordane [2C] | 0.014 | 0.001 | ug/L | 0.02000 | | 69.0 | 65-125 | | | |
| beta-BHC | 0.015 | 0.001 | ug/L | 0.02000 | | 74.1 | 65-125 | | | |
| delta-BHC [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 87.0 | 45-135 | | | |
| Dieldrin | 0.011 | 0.001 | ug/L | 0.02000 | | 53.4 | 60-130 | | | |
| Endrin | 0.015 | 0.001 | ug/L | 0.02000 | | 73.1 | 55-135 | | | |
| Endrin aldehyde | 0.016 | 0.001 | ug/L | 0.02000 | | 82.5 | 55-135 | | | |
| Endrin ketone [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 85.4 | 75-125 | | | |
| gamma-BHC [Lindane] [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 74.3 | 24-125 | | | |
| gamma-Chlordane | 0.012 | 0.001 | ug/L | 0.02000 | | 60.8 | 60-125 | | | |
| Heptachlor | 0.013 | 0.001 | ug/L | 0.02000 | | 62.9 | 40-130 | | | |
| Heptachlor epoxide [2C] | 0.014 | 0.001 | ug/L | 0.02000 | | 69.5 | 60-130 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **LCS (B011028-BS2)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| Methoxychlor | 0.016 | 0.001 | ug/L | 0.02000 | | 81.2 | 55-150 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0209* | | *ug/L* | *0.05000* | | *41.8* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0516* | | *ug/L* | *0.05000* | | *103* | *30-135* | | | |
| **LCS Dup (B011028-BSD2)** | | | | Prepared: 22-Nov-2010 Analyzed: 26-Jan-2011 | | | | | | |
| 4,4'-DDD [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 91.3 | 25-150 | 0.00548 | 30 | |
| 4,4´-DDE | 0.013 | 0.001 | ug/L | 0.02000 | | 63.0 | 35-140 | 8.20 | 30 | |
| 4,4'-DDT [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 84.4 | 45-140 | 2.11 | 30 | |
| Aldrin [2C] | 0.008 | 0.001 | ug/L | 0.02000 | | 40.1 | 25-140 | 1.84 | 30 | |
| alpha-BHC [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 77.2 | 60-130 | 4.39 | 30 | |
| alpha-Chlordane [2C] | 0.013 | 0.001 | ug/L | 0.02000 | | 64.0 | 65-125 | 7.57 | 30 | |
| beta-BHC [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 75.2 | 65-125 | 4.59 | 30 | |
| delta-BHC [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 90.5 | 45-135 | 3.85 | 30 | |
| Dieldrin | 0.011 | 0.001 | ug/L | 0.02000 | | 53.4 | 60-130 | 0.0749 | 30 | |
| Endrin | 0.015 | 0.001 | ug/L | 0.02000 | | 76.0 | 55-135 | 3.92 | 30 | |
| Endrin aldehyde [2C] | 0.016 | 0.001 | ug/L | 0.02000 | | 80.9 | 55-135 | 1.54 | 30 | |
| Endrin ketone [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 85.2 | 75-125 | 0.223 | 30 | |
| gamma-BHC [Lindane] [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 74.8 | 24-125 | 0.671 | 30 | |
| gamma-Chlordane | 0.012 | 0.001 | ug/L | 0.02000 | | 60.5 | 60-125 | 0.404 | 30 | |
| Heptachlor | 0.013 | 0.001 | ug/L | 0.02000 | | 67.1 | 40-130 | 6.44 | 30 | |
| Heptachlor epoxide [2C] | 0.014 | 0.001 | ug/L | 0.02000 | | 68.1 | 60-130 | 1.98 | 30 | |
| Methoxychlor | 0.017 | 0.001 | ug/L | 0.02000 | | 82.9 | 55-150 | 2.08 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0208* | | *ug/L* | *0.05000* | | *41.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0574* | | *ug/L* | *0.05000* | | *115* | *30-135* | | | |
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| 4,4´-DDD | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDE | ND | 0.001 | ug/L | | | | | | | U |
| 4,4´-DDT | ND | 0.001 | ug/L | | | | | | | U |
| Aldrin | ND | 0.001 | ug/L | | | | | | | U |
| alpha-BHC | ND | 0.001 | ug/L | | | | | | | U |
| alpha-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| beta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| delta-BHC | ND | 0.001 | ug/L | | | | | | | U |
| Dieldrin | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan I | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan II | ND | 0.001 | ug/L | | | | | | | U |
| Endosulfan sulfate | ND | 0.001 | ug/L | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| Endrin | ND | 0.001 | ug/L | | | | | | | U |
| Endrin aldehyde | ND | 0.001 | ug/L | | | | | | | U |
| Endrin ketone | ND | 0.001 | ug/L | | | | | | | U |
| gamma-BHC (Lindane) | ND | 0.001 | ug/L | | | | | | | U |
| gamma-Chlordane | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor | ND | 0.001 | ug/L | | | | | | | U |
| Heptachlor epoxide | ND | 0.001 | ug/L | | | | | | | U |
| Methoxychlor | ND | 0.001 | ug/L | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0367* | | *ug/L* | *0.05000* | | *73.4* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0806* | | *ug/L* | *0.05000* | | *161* | *30-135* | | | |
| **LCS (B101033-BS3)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| 4,4´-DDD | 0.018 | 0.001 | ug/L | 0.02000 | | 89.8 | 25-150 | | | |
| 4,4´-DDE | 0.015 | 0.001 | ug/L | 0.02000 | | 74.2 | 35-140 | | | |
| 4,4'-DDT [2C] | 0.018 | 0.001 | ug/L | 0.02000 | | 90.5 | 45-140 | | | |
| Aldrin | 0.012 | 0.001 | ug/L | 0.02000 | | 61.2 | 25-140 | | | |
| alpha-BHC [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 83.3 | 60-130 | | | |
| alpha-Chlordane [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 73.4 | 65-125 | | | |
| beta-BHC | 0.017 | 0.001 | ug/L | 0.02000 | | 87.1 | 65-125 | | | |
| delta-BHC | 0.019 | 0.001 | ug/L | 0.02000 | | 95.0 | 45-135 | | | |
| Dieldrin | 0.016 | 0.001 | ug/L | 0.02000 | | 82.2 | 60-130 | | | |
| Endrin | 0.018 | 0.001 | ug/L | 0.02000 | | 92.2 | 55-135 | | | |
| Endrin aldehyde | 0.021 | 0.001 | ug/L | 0.02000 | | 105 | 55-135 | | | |
| Endrin ketone | 0.025 | 0.001 | ug/L | 0.02000 | | 127 | 75-125 | | | |
| gamma-BHC [Lindane] [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 84.2 | 24-125 | | | |
| gamma-Chlordane | 0.015 | 0.001 | ug/L | 0.02000 | | 74.7 | 60-125 | | | |
| Heptachlor | 0.019 | 0.001 | ug/L | 0.02000 | | 94.6 | 40-130 | | | |
| Heptachlor epoxide [2C] | 0.015 | 0.001 | ug/L | 0.02000 | | 77.4 | 60-130 | | | |
| Methoxychlor | 0.024 | 0.001 | ug/L | 0.02000 | | 120 | 55-150 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0338* | | *ug/L* | *0.05000* | | *67.6* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0672* | | *ug/L* | *0.05000* | | *134* | *30-135* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B101033-BSD3)** | | | | Prepared: 13-Jan-2011 Analyzed: 21-Jan-2011 | | | | | | |
| 4,4´-DDD | 0.021 | 0.001 | ug/L | 0.02000 | | 104 | 25-150 | 14.8 | 30 | |
| 4,4´-DDE | 0.019 | 0.001 | ug/L | 0.02000 | | 92.8 | 35-140 | 22.3 | 30 | |
| 4,4'-DDT [2C] | 0.020 | 0.001 | ug/L | 0.02000 | | 98.3 | 45-140 | 8.23 | 30 | |
| Aldrin | 0.013 | 0.001 | ug/L | 0.02000 | | 65.9 | 25-140 | 7.30 | 30 | |
| alpha-BHC | 0.017 | 0.001 | ug/L | 0.02000 | | 83.2 | 60-130 | 8.09 | 30 | |
| alpha-Chlordane [2C] | 0.016 | 0.001 | ug/L | 0.02000 | | 80.6 | 65-125 | 9.32 | 30 | |
| beta-BHC | 0.019 | 0.001 | ug/L | 0.02000 | | 93.3 | 65-125 | 6.97 | 30 | |
| delta-BHC | 0.021 | 0.001 | ug/L | 0.02000 | | 107 | 45-135 | 11.5 | 30 | |
| Dieldrin | 0.018 | 0.001 | ug/L | 0.02000 | | 89.6 | 60-130 | 8.63 | 30 | |
| Endrin | 0.022 | 0.001 | ug/L | 0.02000 | | 108 | 55-135 | 15.4 | 30 | |
| Endrin aldehyde | 0.021 | 0.001 | ug/L | 0.02000 | | 106 | 55-135 | 1.43 | 30 | |
| Endrin ketone | 0.025 | 0.001 | ug/L | 0.02000 | | 123 | 75-125 | 2.90 | 30 | |
| gamma-BHC (Lindane) | 0.018 | 0.001 | ug/L | 0.02000 | | 90.3 | 25-125 | 12.1 | 30 | |
| gamma-Chlordane | 0.016 | 0.001 | ug/L | 0.02000 | | 79.8 | 60-125 | 6.67 | 30 | |
| Heptachlor [2C] | 0.019 | 0.001 | ug/L | 0.02000 | | 93.9 | 40-130 | 12.3 | 30 | |
| Heptachlor epoxide [2C] | 0.017 | 0.001 | ug/L | 0.02000 | | 85.3 | 60-130 | 9.70 | 30 | |
| Methoxychlor | 0.025 | 0.001 | ug/L | 0.02000 | | 126 | 55-150 | 5.30 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0347* | | *ug/L* | *0.05000* | | *69.4* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0832* | | *ug/L* | *0.05000* | | *166* | *30-135* | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

27 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (filtered) | 0111204-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (filtered) | 0111204-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 Coarse/Sieved - Elutriate (filtered) | 0111204-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water (filtered) | 0111204-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **Blank (B011028-BLK1)** | | | | Prepared: 22-Nov-2010 Analyzed: 27-Jan-2011 | | | | | | |
| PCB-1016 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1221 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1232 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1242 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1248 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1254 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1260 | ND | 0.03 | ug/L | | | | | | | U |
| **LCS (B011028-BS3)** | | | | Prepared: 22-Nov-2010 Analyzed: 27-Jan-2011 | | | | | | |
| PCB-1016 | 0.2 | 0.03 | ug/L | 0.2480 | | 79.8 | 25-145 | | | |
| PCB 1260 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 88.7 | 0-200 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0279* | | *ug/L* | *0.05000* | | *55.8* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0473* | | *ug/L* | *0.05000* | | *94.6* | *40-125* | | | |
| **LCS Dup (B011028-BSD3)** | | | | Prepared: 22-Nov-2010 Analyzed: 27-Jan-2011 | | | | | | |
| PCB 1016 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 77.0 | 0-200 | 2.07 | 200 | |
| PCB 1260 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 97.2 | 0-200 | 9.11 | 200 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0263* | | *ug/L* | *0.05000* | | *52.6* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0503* | | *ug/L* | *0.05000* | | *101* | *40-125* | | | |
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 25-Jan-2011 | | | | | | |
| PCB-1016 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1221 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1232 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1242 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1248 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1254 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1260 | ND | 0.03 | ug/L | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **LCS (B101033-BS2)** | | | | Prepared: 13-Jan-2011 Analyzed: 25-Jan-2011 | | | | | | |
| PCB 1016 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 79.0 | 0-200 | | | |
| PCB-1260 | 0.2 | 0.03 | ug/L | 0.2480 | | 79.8 | 30-145 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0283* | | *ug/L* | *0.05000* | | *56.6* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0785* | | *ug/L* | *0.05000* | | *157* | *40-125* | | | |
| **LCS Dup (B101033-BSD2)** | | | | Prepared: 13-Jan-2011 Analyzed: 25-Jan-2011 | | | | | | |
| PCB 1016 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 81.5 | 0-200 | 3.02 | 200 | |
| PCB-1260 | 0.2 | 0.03 | ug/L | 0.2480 | | 73.0 | 30-145 | 8.97 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0364* | | *ug/L* | *0.05000* | | *72.8* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0722* | | *ug/L* | *0.05000* | | *144* | *40-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

27 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (Unfiltered) | 0111203-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (Unfiltered) | 0111203-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 - Coarse/Sieved (Unfiltered) | 0111203-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water | 0111203-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.05 | ug/L | 1 | 22-Nov-2010 | 27-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1221 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1232 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1242 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1248 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1254 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |
| PCB-1260 | ND | 0.03 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **Blank (B011028-BLK1)** | | | | Prepared: 22-Nov-2010 Analyzed: 27-Jan-2011 | | | | | | |
| PCB-1016 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1221 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1232 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1242 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1248 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1254 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1260 | ND | 0.03 | ug/L | | | | | | | U |
| **LCS (B011028-BS3)** | | | | Prepared: 22-Nov-2010 Analyzed: 27-Jan-2011 | | | | | | |
| PCB-1016 | 0.2 | 0.03 | ug/L | 0.2480 | | 79.8 | 25-145 | | | |
| PCB 1260 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 88.7 | 0-200 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0279* | | *ug/L* | *0.05000* | | *55.8* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0473* | | *ug/L* | *0.05000* | | *94.6* | *40-125* | | | |
| **LCS Dup (B011028-BSD3)** | | | | Prepared: 22-Nov-2010 Analyzed: 27-Jan-2011 | | | | | | |
| PCB 1016 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 77.0 | 0-200 | 2.07 | 200 | |
| PCB 1260 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 97.2 | 0-200 | 9.11 | 200 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0263* | | *ug/L* | *0.05000* | | *52.6* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0503* | | *ug/L* | *0.05000* | | *101* | *40-125* | | | |
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 25-Jan-2011 | | | | | | |
| PCB-1016 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1221 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1232 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1242 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1248 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1254 | ND | 0.03 | ug/L | | | | | | | U |
| PCB-1260 | ND | 0.03 | ug/L | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **LCS (B101033-BS2)** | | | | Prepared: 13-Jan-2011 Analyzed: 25-Jan-2011 | | | | | | |
| PCB 1016 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 79.0 | 0-200 | | | |
| PCB-1260 | 0.2 | 0.03 | ug/L | 0.2480 | | 79.8 | 30-145 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *0.0283* | | *ug/L* | *0.05000* | | *56.6* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0785* | | *ug/L* | *0.05000* | | *157* | *40-125* | | | |
| **LCS Dup (B101033-BSD2)** | | | | Prepared: 13-Jan-2011 Analyzed: 25-Jan-2011 | | | | | | |
| PCB 1016 [2C] | 0.2 | 0.03 | ug/L | 0.2480 | | 81.5 | 0-200 | 3.02 | 200 | |
| PCB-1260 | 0.2 | 0.03 | ug/L | 0.2480 | | 73.0 | 30-145 | 8.97 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.0364* | | *ug/L* | *0.05000* | | *72.8* | *25-140* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *0.0722* | | *ug/L* | *0.05000* | | *144* | *40-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 27-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

28 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (filtered) | 0111204-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (filtered) | 0111204-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 Coarse/Sieved - Elutriate (filtered) | 0111204-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water (filtered) | 0111204-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Naphthalene** | **0.18** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **2,6-Dinitrotoluene** | **0.49** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.34** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Diethyl phthalate** | **0.83** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenanthrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **0.92** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| **Fluoranthene** | **0.08** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **0.14** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Chrysene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Bis(2-ethylhexyl)phthalate** | **1.16** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *4.00 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *5.60 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *56.4 %* | *40-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | *45.6 %* | *50-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *58.2 %* | *40-125* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *70.0 %* | *50-135* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **2-Methylphenol** | **0.09** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **4-Methylphenol** | **0.13** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Naphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,6-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.23** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Diethyl phthalate** | **0.11** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.10** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **0.51** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| **Fluoranthene** | **0.38** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.17** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Butyl benzyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.11** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Chrysene** | **0.16** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Bis(2-ethylhexyl)phthalate** | **1.26** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **0.13** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Benzo (k) fluoranthene** | **0.11** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **0.17** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **0.12** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *2.60 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *5.60 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *15.2 %* | *40-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | *20.4 %* | *50-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *31.8 %* | *40-125* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *21.6 %* | *50-135* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Naphthalene** | **0.33** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **2-Methylnaphthalene** | **0.08** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **2,6-Dinitrotoluene** | **0.49** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.49** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Fluorene** | **0.15** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Diethyl phthalate** | **0.95** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.13** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **1.03** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| **Fluoranthene** | **0.10** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **0.14** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Chrysene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Bis(2-ethylhexyl)phthalate** | **1.14** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *3.20 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *6.40 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *67.6 %* | *40-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | *65.6 %* | *50-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *70.4 %* | *40-125* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *85.6 %* | *50-135* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Naphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| **2,6-Dinitrotoluene** | **0.14** | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | J |
| Acenaphthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| **Diethyl phthalate** | **3.51** | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Phenanthrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **0.67** | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | B |
| Fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **0.10** | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Chrysene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| **Bis(2-ethylhexyl)phthalate** | **0.53** | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | B |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 11-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *3.00 %* | *20-110* | | *14-Dec-2010* | *11-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *5.20 %* | *20-110* | | *14-Dec-2010* | *11-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *73.6 %* | *40-110* | | *14-Dec-2010* | *11-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | *74.8 %* | *50-110* | | *14-Dec-2010* | *11-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *55.8 %* | *40-125* | | *14-Dec-2010* | *11-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *71.2 %* | *50-135* | | *14-Dec-2010* | *11-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **Blank (B012029-BLK1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | | | | | | | |
| Phenol | ND | 0.25 | ug/L | | | | | | | |
| Aniline | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | | | | | | | |
| 2-Chlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| Benzyl alcohol | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | | | | | | | |
| 2-Methylphenol | ND | 0.25 | ug/L | | | | | | | |
| Hexachloroethane | ND | 0.25 | ug/L | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | | | | | | | |
| 4-Methylphenol | ND | 0.25 | ug/L | | | | | | | |
| Nitrobenzene | ND | 0.25 | ug/L | | | | | | | |
| Isophorone | ND | 0.25 | ug/L | | | | | | | |
| 2-Nitrophenol | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | | | | | | | |
| Benzoic acid | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| Naphthalene | ND | 0.25 | ug/L | | | | | | | |
| 4-Chloroaniline | ND | 0.25 | ug/L | | | | | | | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | | | | | | | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | | | | | | | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | | | | | | | |
| 2-Nitroaniline | ND | 0.25 | ug/L | | | | | | | |
| Acenaphthylene | ND | 0.25 | ug/L | | | | | | | |
| Dimethyl phthalate | ND | 0.25 | ug/L | | | | | | | |
| 2,6-Dinitrotoluene | ND | 0.25 | ug/L | | | | | | | |
| Acenaphthene | ND | 0.25 | ug/L | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | | | | | | | |
| Dibenzofuran | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | | | | | | | |
| 4-Nitrophenol | ND | 0.25 | ug/L | | | | | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **Blank (B012029-BLK1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| Fluorene | ND | 0.25 | ug/L | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | | | | | | | |
| Diethyl phthalate | 0.09 | 0.25 | ug/L | | | | | | | J |
| 4-Nitroaniline | ND | 0.25 | ug/L | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | | | | | | | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | | | | | | | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | | | | | | | |
| Hexachlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| Pentachlorophenol | ND | 0.25 | ug/L | | | | | | | |
| Phenanthrene | ND | 0.25 | ug/L | | | | | | | |
| Anthracene | ND | 0.25 | ug/L | | | | | | | |
| Di-n-butyl phthalate | 0.37 | 0.25 | ug/L | | | | | | | |
| Fluoranthene | ND | 0.25 | ug/L | | | | | | | |
| Benzidine | ND | 0.25 | ug/L | | | | | | | |
| Pyrene | ND | 0.25 | ug/L | | | | | | | |
| Butyl benzyl phthalate | ND | 0.25 | ug/L | | | | | | | |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | | | | | | | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | | | | | | | |
| Chrysene | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-ethylhexyl)phthalate | 0.67 | 0.25 | ug/L | | | | | | | |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | | | | | | | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | | | | | | | |
| Pyridine | ND | 0.25 | ug/L | | | | | | | |
| *Surrogate: 2-Fluorophenol* | *0.170* | | *ug/L* | *5.000* | | *3.40* | *20-110* | | | |
| *Surrogate: Phenol-d5* | *0.250* | | *ug/L* | *5.000* | | *5.00* | *20-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *ND* | | *ug/L* | *2.500* | | | *40-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.74* | | *ug/L* | *2.500* | | *69.6* | *50-110* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *2.47* | | *ug/L* | *5.000* | | *49.4* | *40-125* | | | |
| *Surrogate: Terphenyl-dl4* | *1.96* | | *ug/L* | *2.500* | | *78.4* | *50-135* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS (B012029-BS1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 2.500 | | | 25-110 | | | |
| Phenol | 0.100 | 0.25 | ug/L | 2.500 | | 4.00 | 5-150 | | | J |
| Aniline | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 75-125 | | | |
| Bis(2-chloroethyl)ether | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 35-110 | | | |
| 2-Chlorophenol | 0.720 | 0.25 | ug/L | 2.500 | | 28.8 | 35-105 | | | |
| 1,3-Dichlorobenzene | 1.00 | 0.25 | ug/L | 2.500 | | 40.0 | 30-100 | | | |
| 1,4-Dichlorobenzene | 1.01 | 0.25 | ug/L | 2.500 | | 40.4 | 30-100 | | | |
| 1,2-Dichlorobenzene | 0.960 | 0.25 | ug/L | 2.500 | | 38.4 | 35-100 | | | |
| Benzyl alcohol | 0.780 | 0.25 | ug/L | 2.500 | | 31.2 | 30-110 | | | |
| Bis(2-chloroisopropyl)ether | 1.28 | 0.25 | ug/L | 2.500 | | 51.2 | 25-130 | | | |
| 2-Methylphenol | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 40-110 | | | |
| Hexachloroethane | 1.03 | 0.25 | ug/L | 2.500 | | 41.2 | 30-95 | | | |
| N-Nitrosodi-n-propylamine | 1.09 | 0.25 | ug/L | 2.500 | | 43.6 | 35-130 | | | |
| 4-Methylphenol | 0.950 | 0.25 | ug/L | 2.500 | | 38.0 | 30-110 | | | |
| Nitrobenzene | 1.02 | 0.25 | ug/L | 2.500 | | 40.8 | 45-110 | | | |
| Isophorone | 1.43 | 0.25 | ug/L | 2.500 | | 57.2 | 50-110 | | | |
| 2-Nitrophenol | 1.82 | 0.25 | ug/L | 2.500 | | 72.8 | 40-115 | | | |
| 2,4-Dimethylphenol | 0.750 | 0.25 | ug/L | 2.500 | | 30.0 | 30-110 | | | |
| Benzoic acid | ND | 0.25 | ug/L | 2.500 | | | 75-125 | | | |
| Bis(2-chloroethoxy)methane | 1.68 | 0.25 | ug/L | 2.500 | | 67.2 | 45-105 | | | |
| 2,4-Dichlorophenol | 1.35 | 0.25 | ug/L | 2.500 | | 54.0 | 50-105 | | | |
| 1,2,4-Trichlorobenzene | 1.32 | 0.25 | ug/L | 2.500 | | 52.8 | 35-105 | | | |
| Naphthalene | 1.35 | 0.25 | ug/L | 2.500 | | 54.0 | 40-100 | | | |
| 4-Chloroaniline | 1.35 | 0.25 | ug/L | 2.500 | | 54.0 | 15-110 | | | |
| Hexachlorobutadiene | 1.58 | 0.25 | ug/L | 2.500 | | 63.2 | 25-105 | | | |
| 4-Chloro-3-methylphenol | 1.39 | 0.25 | ug/L | 2.500 | | 55.6 | 45-110 | | | |
| 2-Methylnaphthalene | 1.40 | 0.25 | ug/L | 2.500 | | 56.0 | 45-105 | | | |
| Hexachlorocyclopentadiene | 2.14 | 0.25 | ug/L | 2.500 | | 85.6 | 75-125 | | | |
| 2,4,6-Trichlorophenol | 2.82 | 0.25 | ug/L | 2.500 | | 113 | 50-115 | | | |
| 2,4,5-Trichlorophenol | 3.11 | 0.25 | ug/L | 2.500 | | 124 | 50-110 | | | |
| 2-Chloronaphthalene | 2.49 | 0.25 | ug/L | 2.500 | | 99.6 | 50-105 | | | |
| 2-Nitroaniline | 2.87 | 0.25 | ug/L | 2.500 | | 115 | 50-115 | | | |
| Acenaphthylene | 1.77 | 0.25 | ug/L | 2.500 | | 70.8 | 50-105 | | | |
| Dimethyl phthalate | 2.16 | 0.25 | ug/L | 2.500 | | 86.4 | 25-125 | | | |
| 2,6-Dinitrotoluene | 3.69 | 0.25 | ug/L | 2.500 | | 148 | 50-115 | | | |
| Acenaphthene | 2.38 | 0.25 | ug/L | 2.500 | | 95.2 | 45-110 | | | |
| 3-Nitroaniline | 3.00 | 0.25 | ug/L | 2.500 | | 120 | 20-125 | | | |
| 2,4-Dinitrophenol | 2.03 | 0.25 | ug/L | 2.500 | | 81.2 | 15-140 | | | |
| Dibenzofuran | 3.17 | 0.25 | ug/L | 2.500 | | 127 | 55-105 | | | |
| 2,4-Dinitrotoluene | 3.55 | 0.25 | ug/L | 2.500 | | 142 | 50-120 | | | |
| 4-Nitrophenol | 1.07 | 0.25 | ug/L | 2.500 | | 42.8 | 5-150 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS (B012029-BS1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| Fluorene | 3.12 | 0.25 | ug/L | 2.500 | | 125 | 50-110 | | | |
| 4-Chlorophenyl phenyl ether | 2.08 | 0.25 | ug/L | 2.500 | | 83.2 | 50-110 | | | |
| Diethyl phthalate | 3.86 | 0.25 | ug/L | 2.500 | | 154 | 40-120 | | | |
| 4-Nitroaniline | 2.56 | 0.25 | ug/L | 2.500 | | 102 | 35-120 | | | |
| 4,6-Dinitro-2-methylphenol | 1.87 | 0.25 | ug/L | 2.500 | | 74.8 | 40-130 | | | |
| N-Nitrosodiphenylamine | 1.78 | 0.25 | ug/L | 2.500 | | 71.2 | 50-110 | | | |
| 4-Bromophenyl phenyl ether | 2.43 | 0.25 | ug/L | 2.500 | | 97.2 | 50-115 | | | |
| Hexachlorobenzene | 1.45 | 0.25 | ug/L | 2.500 | | 58.0 | 50-110 | | | |
| Pentachlorophenol | 1.95 | 0.25 | ug/L | 2.500 | | 78.0 | 40-115 | | | |
| Phenanthrene | 1.62 | 0.25 | ug/L | 2.500 | | 64.8 | 50-115 | | | |
| Anthracene | 1.98 | 0.25 | ug/L | 2.500 | | 79.2 | 55-110 | | | |
| Di-n-butyl phthalate | 2.39 | 0.25 | ug/L | 2.500 | | 95.6 | 55-115 | | | B |
| Fluoranthene | 2.25 | 0.25 | ug/L | 2.500 | | 90.0 | 55-115 | | | |
| Benzidine | 0.0800 | 0.25 | ug/L | 2.500 | | 3.20 | 75-125 | | | J |
| Pyrene | 2.56 | 0.25 | ug/L | 2.500 | | 102 | 50-130 | | | |
| Butyl benzyl phthalate | 2.97 | 0.25 | ug/L | 2.500 | | 119 | 45-115 | | | |
| 3,3´-Dichlorobenzidine | 1.72 | 0.25 | ug/L | 2.500 | | 68.8 | 20-110 | | | |
| Benzo (a) anthracene | 2.76 | 0.25 | ug/L | 2.500 | | 110 | 55-110 | | | |
| Chrysene | 2.57 | 0.25 | ug/L | 2.500 | | 103 | 55-110 | | | |
| Bis(2-ethylhexyl)phthalate | 2.97 | 0.25 | ug/L | 2.500 | | 119 | 40-125 | | | B |
| Di-n-octyl phthalate | 1.97 | 0.25 | ug/L | 2.500 | | 78.8 | 35-135 | | | |
| Benzo (b) fluoranthene | 2.67 | 0.25 | ug/L | 2.500 | | 107 | 45-120 | | | |
| Benzo (k) fluoranthene | 2.81 | 0.25 | ug/L | 2.500 | | 112 | 45-125 | | | |
| Benzo (a) pyrene | 2.51 | 0.25 | ug/L | 2.500 | | 100 | 55-110 | | | |
| Indeno(1,2,3-cd)pyrene | 2.27 | 0.25 | ug/L | 2.500 | | 90.8 | 45-125 | | | |
| Dibenz (a,h) anthracene | 2.20 | 0.25 | ug/L | 2.500 | | 88.0 | 40-125 | | | |
| Benzo (g,h,i) perylene | 2.51 | 0.25 | ug/L | 2.500 | | 100 | 40-125 | | | |
| Pyridine | ND | 0.25 | ug/L | | | | 75-125 | | | |
| *Surrogate: 2-Fluorophenol* | *0.110* | | *ug/L* | *5.000* | | *2.20* | *20-110* | | | |
| *Surrogate: Phenol-d5* | *0.170* | | *ug/L* | *5.000* | | *3.40* | *20-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *1.08* | | *ug/L* | *2.500* | | *43.2* | *40-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.92* | | *ug/L* | *2.500* | | *76.8* | *50-110* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *3.34* | | *ug/L* | *5.000* | | *66.8* | *40-125* | | | |
| *Surrogate: Terphenyl-dl4* | *1.85* | | *ug/L* | *2.500* | | *74.0* | *50-135* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B012029-BSD1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 2.500 | | | 25-110 | | 20 | |
| Phenol | 0.210 | 0.25 | ug/L | 2.500 | | 8.40 | 5-150 | 71.0 | 20 | J |
| Aniline | 1.15 | 0.25 | ug/L | 2.500 | | 46.0 | 75-125 | 26.6 | 20 | |
| Bis(2-chloroethyl)ether | 1.15 | 0.25 | ug/L | 2.500 | | 46.0 | 35-110 | 26.6 | 20 | |
| 2-Chlorophenol | 0.980 | 0.25 | ug/L | 2.500 | | 39.2 | 35-105 | 30.6 | 20 | |
| 1,3-Dichlorobenzene | 1.17 | 0.25 | ug/L | 2.500 | | 46.8 | 30-100 | 15.7 | 20 | |
| 1,4-Dichlorobenzene | 1.17 | 0.25 | ug/L | 2.500 | | 46.8 | 30-100 | 14.7 | 20 | |
| 1,2-Dichlorobenzene | 1.13 | 0.25 | ug/L | 2.500 | | 45.2 | 35-100 | 16.3 | 20 | |
| Benzyl alcohol | 1.09 | 0.25 | ug/L | 2.500 | | 43.6 | 30-110 | 33.2 | 20 | |
| Bis(2-chloroisopropyl)ether | 1.47 | 0.25 | ug/L | 2.500 | | 58.8 | 25-130 | 13.8 | 20 | |
| 2-Methylphenol | 1.20 | 0.25 | ug/L | 2.500 | | 48.0 | 40-110 | 30.8 | 20 | |
| Hexachloroethane | 1.10 | 0.25 | ug/L | 2.500 | | 44.0 | 30-95 | 6.57 | 20 | |
| N-Nitrosodi-n-propylamine | 1.27 | 0.25 | ug/L | 2.500 | | 50.8 | 35-130 | 15.3 | 20 | |
| 4-Methylphenol | 1.24 | 0.25 | ug/L | 2.500 | | 49.6 | 30-110 | 26.5 | 20 | |
| Nitrobenzene | 1.27 | 0.25 | ug/L | 2.500 | | 50.8 | 45-110 | 21.8 | 20 | |
| Isophorone | 1.54 | 0.25 | ug/L | 2.500 | | 61.6 | 50-110 | 7.41 | 20 | |
| 2-Nitrophenol | 2.04 | 0.25 | ug/L | 2.500 | | 81.6 | 40-115 | 11.4 | 20 | |
| 2,4-Dimethylphenol | 1.00 | 0.25 | ug/L | 2.500 | | 40.0 | 30-110 | 28.6 | 20 | |
| Benzoic acid | ND | 0.25 | ug/L | 2.500 | | | 75-125 | | 20 | |
| Bis(2-chloroethoxy)methane | 1.84 | 0.25 | ug/L | 2.500 | | 73.6 | 45-105 | 9.09 | 20 | |
| 2,4-Dichlorophenol | 1.46 | 0.25 | ug/L | 2.500 | | 58.4 | 50-105 | 7.83 | 20 | |
| 1,2,4-Trichlorobenzene | 1.40 | 0.25 | ug/L | 2.500 | | 56.0 | 35-105 | 5.88 | 20 | |
| Naphthalene | 1.50 | 0.25 | ug/L | 2.500 | | 60.0 | 40-100 | 10.5 | 20 | |
| 4-Chloroaniline | 1.57 | 0.25 | ug/L | 2.500 | | 62.8 | 15-110 | 15.1 | 20 | |
| Hexachlorobutadiene | 1.62 | 0.25 | ug/L | 2.500 | | 64.8 | 25-105 | 2.50 | 20 | |
| 4-Chloro-3-methylphenol | 1.46 | 0.25 | ug/L | 2.500 | | 58.4 | 45-110 | 4.91 | 20 | |
| 2-Methylnaphthalene | 1.48 | 0.25 | ug/L | 2.500 | | 59.2 | 45-105 | 5.56 | 20 | |
| Hexachlorocyclopentadiene | 2.00 | 0.25 | ug/L | 2.500 | | 80.0 | 75-125 | 6.76 | 20 | |
| 2,4,6-Trichlorophenol | 2.67 | 0.25 | ug/L | 2.500 | | 107 | 50-115 | 5.46 | 20 | |
| 2,4,5-Trichlorophenol | 2.91 | 0.25 | ug/L | 2.500 | | 116 | 50-110 | 6.64 | 20 | |
| 2-Chloronaphthalene | 2.39 | 0.25 | ug/L | 2.500 | | 95.6 | 50-105 | 4.10 | 20 | |
| 2-Nitroaniline | 2.64 | 0.25 | ug/L | 2.500 | | 106 | 50-115 | 8.35 | 20 | |
| Acenaphthylene | 1.75 | 0.25 | ug/L | 2.500 | | 70.0 | 50-105 | 1.14 | 20 | |
| Dimethyl phthalate | 2.13 | 0.25 | ug/L | 2.500 | | 85.2 | 25-125 | 1.40 | 20 | |
| 2,6-Dinitrotoluene | 3.59 | 0.25 | ug/L | 2.500 | | 144 | 50-115 | 2.75 | 20 | |
| Acenaphthene | 2.32 | 0.25 | ug/L | 2.500 | | 92.8 | 45-110 | 2.55 | 20 | |
| 3-Nitroaniline | 2.92 | 0.25 | ug/L | 2.500 | | 117 | 20-125 | 2.70 | 20 | |
| 2,4-Dinitrophenol | 1.90 | 0.25 | ug/L | 2.500 | | 76.0 | 15-140 | 6.62 | 20 | |
| Dibenzofuran | 3.21 | 0.25 | ug/L | 2.500 | | 128 | 55-105 | 1.25 | 20 | |
| 2,4-Dinitrotoluene | 3.51 | 0.25 | ug/L | 2.500 | | 140 | 50-120 | 1.13 | 20 | |
| 4-Nitrophenol | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 5-150 | 19.5 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B012029-BSD1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| Fluorene | 3.07 | 0.25 | ug/L | 2.500 | | 123 | 50-110 | 1.62 | 20 | |
| 4-Chlorophenyl phenyl ether | 2.13 | 0.25 | ug/L | 2.500 | | 85.2 | 50-110 | 2.38 | 20 | |
| Diethyl phthalate | 3.81 | 0.25 | ug/L | 2.500 | | 152 | 40-120 | 1.30 | 20 | |
| 4-Nitroaniline | 2.44 | 0.25 | ug/L | 2.500 | | 97.6 | 35-120 | 4.80 | 20 | |
| 4,6-Dinitro-2-methylphenol | 1.79 | 0.25 | ug/L | 2.500 | | 71.6 | 40-130 | 4.37 | 20 | |
| N-Nitrosodiphenylamine | 1.86 | 0.25 | ug/L | 2.500 | | 74.4 | 50-110 | 4.40 | 20 | |
| 4-Bromophenyl phenyl ether | 2.36 | 0.25 | ug/L | 2.500 | | 94.4 | 50-115 | 2.92 | 20 | |
| Hexachlorobenzene | 1.53 | 0.25 | ug/L | 2.500 | | 61.2 | 50-110 | 5.37 | 20 | |
| Pentachlorophenol | 1.82 | 0.25 | ug/L | 2.500 | | 72.8 | 40-115 | 6.90 | 20 | |
| Phenanthrene | 1.67 | 0.25 | ug/L | 2.500 | | 66.8 | 50-115 | 3.04 | 20 | |
| Anthracene | 2.00 | 0.25 | ug/L | 2.500 | | 80.0 | 55-110 | 1.01 | 20 | |
| Di-n-butyl phthalate | 2.34 | 0.25 | ug/L | 2.500 | | 93.6 | 55-115 | 2.11 | 20 | B |
| Fluoranthene | 2.16 | 0.25 | ug/L | 2.500 | | 86.4 | 55-115 | 4.08 | 20 | |
| Benzidine | 0.110 | 0.25 | ug/L | 2.500 | | 4.40 | 75-125 | 31.6 | 20 | J |
| Pyrene | 2.88 | 0.25 | ug/L | 2.500 | | 115 | 50-130 | 11.8 | 20 | |
| Butyl benzyl phthalate | 3.03 | 0.25 | ug/L | 2.500 | | 121 | 45-115 | 2.00 | 20 | |
| 3,3´-Dichlorobenzidine | 2.12 | 0.25 | ug/L | 2.500 | | 84.8 | 20-110 | 20.8 | 20 | |
| Benzo (a) anthracene | 2.49 | 0.25 | ug/L | 2.500 | | 99.6 | 55-110 | 10.3 | 20 | |
| Chrysene | 2.83 | 0.25 | ug/L | 2.500 | | 113 | 55-110 | 9.63 | 20 | |
| Bis(2-ethylhexyl)phthalate | 2.90 | 0.25 | ug/L | 2.500 | | 116 | 40-125 | 2.39 | 20 | B |
| Di-n-octyl phthalate | 2.12 | 0.25 | ug/L | 2.500 | | 84.8 | 35-135 | 7.33 | 20 | |
| Benzo (b) fluoranthene | 2.73 | 0.25 | ug/L | 2.500 | | 109 | 45-120 | 2.22 | 20 | |
| Benzo (k) fluoranthene | 2.88 | 0.25 | ug/L | 2.500 | | 115 | 45-125 | 2.46 | 20 | |
| Benzo (a) pyrene | 2.45 | 0.25 | ug/L | 2.500 | | 98.0 | 55-110 | 2.42 | 20 | |
| Indeno(1,2,3-cd)pyrene | 2.34 | 0.25 | ug/L | 2.500 | | 93.6 | 45-125 | 3.04 | 20 | |
| Dibenz (a,h) anthracene | 2.37 | 0.25 | ug/L | 2.500 | | 94.8 | 40-125 | 7.44 | 20 | |
| Benzo (g,h,i) perylene | 2.52 | 0.25 | ug/L | 2.500 | | 101 | 40-125 | 0.398 | 20 | |
| Pyridine | ND | 0.25 | ug/L | | | | 75-125 | | 20 | |
| *Surrogate: 2-Fluorophenol* | *0.280* | | *ug/L* | *5.000* | | *5.60* | *20-110* | | | |
| *Surrogate: Phenol-d5* | *0.450* | | *ug/L* | *5.000* | | *9.00* | *20-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *1.18* | | *ug/L* | *2.500* | | *47.2* | *40-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.87* | | *ug/L* | *2.500* | | *74.8* | *50-110* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *3.57* | | *ug/L* | *5.000* | | *71.4* | *40-125* | | | |
| *Surrogate: Terphenyl-dl4* | *1.96* | | *ug/L* | *2.500* | | *78.4* | *50-135* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

28 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (Unfiltered) | 0111203-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (Unfiltered) | 0111203-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 - Coarse/Sieved (Unfiltered) | 0111203-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water | 0111203-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Naphthalene** | **0.08** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,6-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Diethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.08** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **0.40** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| **Fluoranthene** | **0.21** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.20** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Butyl benzyl phthalate** | **0.17** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.08** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Chrysene** | **0.15** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Bis(2-ethylhexyl)phthalate** | **1.25** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **0.13** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Benzo (k) fluoranthene** | **0.10** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Indeno(1,2,3-cd)pyrene** | **0.15** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **0.12** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *2.60 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *4.40 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *21.6 %* | *40-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | *13.6 %* | *50-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *19.6 %* | *40-125* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *26.4 %* | *50-135* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **2-Methylphenol** | **0.08** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **4-Methylphenol** | **0.09** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Naphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **2,6-Dinitrotoluene** | **0.68** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Diethyl phthalate** | **0.87** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenanthrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **0.83** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| Fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Butyl benzyl phthalate** | **0.10** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Chrysene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Bis(2-ethylhexyl)phthalate** | **0.82** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *%* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *%* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *24.4 %* | *40-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | *42.4 %* | *50-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *73.6 %* | *40-125* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *66.0 %* | *50-135* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Naphthalene** | **0.13** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,6-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.27** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Fluorene** | **0.12** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Diethyl phthalate** | **0.11** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.10** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Di-n-butyl phthalate** | **0.41** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| **Fluoranthene** | **0.19** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.15** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| Butyl benzyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.10** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | J |
| **Bis(2-ethylhexyl)phthalate** | **0.83** | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | B |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 10-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *3.20 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *5.80 %* | *20-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *34.4 %* | *40-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | *21.2 %* | *50-110* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | *32.4 %* | *40-125* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *25.2 %* | *50-135* | | *14-Dec-2010* | *10-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Semivolatile Organic Compounds by EPA Method 8270C**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Phenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Aniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2-Chlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzyl alcohol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Hexachloroethane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4-Methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Nitrobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Isophorone | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzoic acid | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Naphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4-Chloroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Dimethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2,6-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Acenaphthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Dibenzofuran | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4-Nitrophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Diethyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4-Nitroaniline | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Hexachlorobenzene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Pentachlorophenol | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Phenanthrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Di-n-butyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Butyl benzyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Chrysene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Bis(2-ethylhexyl)phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| Pyridine | ND | 0.25 | ug/L | 1 | 14-Dec-2010 | 28-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorophenol* | | *%* | *20-110* | | *14-Dec-2010* | *28-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Phenol-d5* | | *%* | *20-110* | | *14-Dec-2010* | *28-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Nitrobenzene-d5* | | *%* | *40-110* | | *14-Dec-2010* | *28-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Semivolatile Organic Compounds by EPA Method 8270C** | | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | | | % | *50-110* | *14-Dec-2010* | *28-Jan-2011* | *EPA 8270C* | |
| *Surrogate: 2,4,6-Tribromophenol* | | | % | *40-125* | *14-Dec-2010* | *28-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | | % | *50-135* | *14-Dec-2010* | *28-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **Blank (B012029-BLK1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | | | | | | | |
| Phenol | ND | 0.25 | ug/L | | | | | | | |
| Aniline | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 0.25 | ug/L | | | | | | | |
| 2-Chlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| Benzyl alcohol | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-chloroisopropyl)ether | ND | 0.25 | ug/L | | | | | | | |
| 2-Methylphenol | ND | 0.25 | ug/L | | | | | | | |
| Hexachloroethane | ND | 0.25 | ug/L | | | | | | | |
| N-Nitrosodi-n-propylamine | ND | 0.25 | ug/L | | | | | | | |
| 4-Methylphenol | ND | 0.25 | ug/L | | | | | | | |
| Nitrobenzene | ND | 0.25 | ug/L | | | | | | | |
| Isophorone | ND | 0.25 | ug/L | | | | | | | |
| 2-Nitrophenol | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dimethylphenol | ND | 0.25 | ug/L | | | | | | | |
| Benzoic acid | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-chloroethoxy)methane | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dichlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| Naphthalene | ND | 0.25 | ug/L | | | | | | | |
| 4-Chloroaniline | ND | 0.25 | ug/L | | | | | | | |
| Hexachlorobutadiene | ND | 0.25 | ug/L | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 0.25 | ug/L | | | | | | | |
| 2-Methylnaphthalene | ND | 0.25 | ug/L | | | | | | | |
| Hexachlorocyclopentadiene | ND | 0.25 | ug/L | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 0.25 | ug/L | | | | | | | |
| 2-Chloronaphthalene | ND | 0.25 | ug/L | | | | | | | |
| 2-Nitroaniline | ND | 0.25 | ug/L | | | | | | | |
| Acenaphthylene | ND | 0.25 | ug/L | | | | | | | |
| Dimethyl phthalate | ND | 0.25 | ug/L | | | | | | | |
| 2,6-Dinitrotoluene | ND | 0.25 | ug/L | | | | | | | |
| Acenaphthene | ND | 0.25 | ug/L | | | | | | | |
| 3-Nitroaniline | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dinitrophenol | ND | 0.25 | ug/L | | | | | | | |
| Dibenzofuran | ND | 0.25 | ug/L | | | | | | | |
| 2,4-Dinitrotoluene | ND | 0.25 | ug/L | | | | | | | |
| 4-Nitrophenol | ND | 0.25 | ug/L | | | | | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **Blank (B012029-BLK1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| Fluorene | ND | 0.25 | ug/L | | | | | | | |
| 4-Chlorophenyl phenyl ether | ND | 0.25 | ug/L | | | | | | | |
| Diethyl phthalate | 0.09 | 0.25 | ug/L | | | | | | | J |
| 4-Nitroaniline | ND | 0.25 | ug/L | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 0.25 | ug/L | | | | | | | |
| N-Nitrosodiphenylamine | ND | 0.25 | ug/L | | | | | | | |
| 4-Bromophenyl phenyl ether | ND | 0.25 | ug/L | | | | | | | |
| Hexachlorobenzene | ND | 0.25 | ug/L | | | | | | | |
| Pentachlorophenol | ND | 0.25 | ug/L | | | | | | | |
| Phenanthrene | ND | 0.25 | ug/L | | | | | | | |
| Anthracene | ND | 0.25 | ug/L | | | | | | | |
| Di-n-butyl phthalate | 0.37 | 0.25 | ug/L | | | | | | | |
| Fluoranthene | ND | 0.25 | ug/L | | | | | | | |
| Benzidine | ND | 0.25 | ug/L | | | | | | | |
| Pyrene | ND | 0.25 | ug/L | | | | | | | |
| Butyl benzyl phthalate | ND | 0.25 | ug/L | | | | | | | |
| 3,3´-Dichlorobenzidine | ND | 0.25 | ug/L | | | | | | | |
| Benzo (a) anthracene | ND | 0.25 | ug/L | | | | | | | |
| Chrysene | ND | 0.25 | ug/L | | | | | | | |
| Bis(2-ethylhexyl)phthalate | 0.67 | 0.25 | ug/L | | | | | | | |
| Di-n-octyl phthalate | ND | 0.25 | ug/L | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.25 | ug/L | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.25 | ug/L | | | | | | | |
| Benzo (a) pyrene | ND | 0.25 | ug/L | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 0.25 | ug/L | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.25 | ug/L | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.25 | ug/L | | | | | | | |
| Pyridine | ND | 0.25 | ug/L | | | | | | | |
| *Surrogate: 2-Fluorophenol* | *0.170* | | *ug/L* | *5.000* | | *3.40* | *20-110* | | | |
| *Surrogate: Phenol-d5* | *0.250* | | *ug/L* | *5.000* | | *5.00* | *20-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *ND* | | *ug/L* | *2.500* | | | *40-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.74* | | *ug/L* | *2.500* | | *69.6* | *50-110* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *2.47* | | *ug/L* | *5.000* | | *49.4* | *40-125* | | | |
| *Surrogate: Terphenyl-dl4* | *1.96* | | *ug/L* | *2.500* | | *78.4* | *50-135* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS (B012029-BS1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 2.500 | | | 25-110 | | | |
| Phenol | 0.100 | 0.25 | ug/L | 2.500 | | 4.00 | 5-150 | | | J |
| Aniline | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 75-125 | | | |
| Bis(2-chloroethyl)ether | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 35-110 | | | |
| 2-Chlorophenol | 0.720 | 0.25 | ug/L | 2.500 | | 28.8 | 35-105 | | | |
| 1,3-Dichlorobenzene | 1.00 | 0.25 | ug/L | 2.500 | | 40.0 | 30-100 | | | |
| 1,4-Dichlorobenzene | 1.01 | 0.25 | ug/L | 2.500 | | 40.4 | 30-100 | | | |
| 1,2-Dichlorobenzene | 0.960 | 0.25 | ug/L | 2.500 | | 38.4 | 35-100 | | | |
| Benzyl alcohol | 0.780 | 0.25 | ug/L | 2.500 | | 31.2 | 30-110 | | | |
| Bis(2-chloroisopropyl)ether | 1.28 | 0.25 | ug/L | 2.500 | | 51.2 | 25-130 | | | |
| 2-Methylphenol | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 40-110 | | | |
| Hexachloroethane | 1.03 | 0.25 | ug/L | 2.500 | | 41.2 | 30-95 | | | |
| N-Nitrosodi-n-propylamine | 1.09 | 0.25 | ug/L | 2.500 | | 43.6 | 35-130 | | | |
| 4-Methylphenol | 0.950 | 0.25 | ug/L | 2.500 | | 38.0 | 30-110 | | | |
| Nitrobenzene | 1.02 | 0.25 | ug/L | 2.500 | | 40.8 | 45-110 | | | |
| Isophorone | 1.43 | 0.25 | ug/L | 2.500 | | 57.2 | 50-110 | | | |
| 2-Nitrophenol | 1.82 | 0.25 | ug/L | 2.500 | | 72.8 | 40-115 | | | |
| 2,4-Dimethylphenol | 0.750 | 0.25 | ug/L | 2.500 | | 30.0 | 30-110 | | | |
| Benzoic acid | ND | 0.25 | ug/L | 2.500 | | | 75-125 | | | |
| Bis(2-chloroethoxy)methane | 1.68 | 0.25 | ug/L | 2.500 | | 67.2 | 45-105 | | | |
| 2,4-Dichlorophenol | 1.35 | 0.25 | ug/L | 2.500 | | 54.0 | 50-105 | | | |
| 1,2,4-Trichlorobenzene | 1.32 | 0.25 | ug/L | 2.500 | | 52.8 | 35-105 | | | |
| Naphthalene | 1.35 | 0.25 | ug/L | 2.500 | | 54.0 | 40-100 | | | |
| 4-Chloroaniline | 1.35 | 0.25 | ug/L | 2.500 | | 54.0 | 15-110 | | | |
| Hexachlorobutadiene | 1.58 | 0.25 | ug/L | 2.500 | | 63.2 | 25-105 | | | |
| 4-Chloro-3-methylphenol | 1.39 | 0.25 | ug/L | 2.500 | | 55.6 | 45-110 | | | |
| 2-Methylnaphthalene | 1.40 | 0.25 | ug/L | 2.500 | | 56.0 | 45-105 | | | |
| Hexachlorocyclopentadiene | 2.14 | 0.25 | ug/L | 2.500 | | 85.6 | 75-125 | | | |
| 2,4,6-Trichlorophenol | 2.82 | 0.25 | ug/L | 2.500 | | 113 | 50-115 | | | |
| 2,4,5-Trichlorophenol | 3.11 | 0.25 | ug/L | 2.500 | | 124 | 50-110 | | | |
| 2-Chloronaphthalene | 2.49 | 0.25 | ug/L | 2.500 | | 99.6 | 50-105 | | | |
| 2-Nitroaniline | 2.87 | 0.25 | ug/L | 2.500 | | 115 | 50-115 | | | |
| Acenaphthylene | 1.77 | 0.25 | ug/L | 2.500 | | 70.8 | 50-105 | | | |
| Dimethyl phthalate | 2.16 | 0.25 | ug/L | 2.500 | | 86.4 | 25-125 | | | |
| 2,6-Dinitrotoluene | 3.69 | 0.25 | ug/L | 2.500 | | 148 | 50-115 | | | |
| Acenaphthene | 2.38 | 0.25 | ug/L | 2.500 | | 95.2 | 45-110 | | | |
| 3-Nitroaniline | 3.00 | 0.25 | ug/L | 2.500 | | 120 | 20-125 | | | |
| 2,4-Dinitrophenol | 2.03 | 0.25 | ug/L | 2.500 | | 81.2 | 15-140 | | | |
| Dibenzofuran | 3.17 | 0.25 | ug/L | 2.500 | | 127 | 55-105 | | | |
| 2,4-Dinitrotoluene | 3.55 | 0.25 | ug/L | 2.500 | | 142 | 50-120 | | | |
| 4-Nitrophenol | 1.07 | 0.25 | ug/L | 2.500 | | 42.8 | 5-150 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS (B012029-BS1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| Fluorene | 3.12 | 0.25 | ug/L | 2.500 | | 125 | 50-110 | | | |
| 4-Chlorophenyl phenyl ether | 2.08 | 0.25 | ug/L | 2.500 | | 83.2 | 50-110 | | | |
| Diethyl phthalate | 3.86 | 0.25 | ug/L | 2.500 | | 154 | 40-120 | | | |
| 4-Nitroaniline | 2.56 | 0.25 | ug/L | 2.500 | | 102 | 35-120 | | | |
| 4,6-Dinitro-2-methylphenol | 1.87 | 0.25 | ug/L | 2.500 | | 74.8 | 40-130 | | | |
| N-Nitrosodiphenylamine | 1.78 | 0.25 | ug/L | 2.500 | | 71.2 | 50-110 | | | |
| 4-Bromophenyl phenyl ether | 2.43 | 0.25 | ug/L | 2.500 | | 97.2 | 50-115 | | | |
| Hexachlorobenzene | 1.45 | 0.25 | ug/L | 2.500 | | 58.0 | 50-110 | | | |
| Pentachlorophenol | 1.95 | 0.25 | ug/L | 2.500 | | 78.0 | 40-115 | | | |
| Phenanthrene | 1.62 | 0.25 | ug/L | 2.500 | | 64.8 | 50-115 | | | |
| Anthracene | 1.98 | 0.25 | ug/L | 2.500 | | 79.2 | 55-110 | | | |
| Di-n-butyl phthalate | 2.39 | 0.25 | ug/L | 2.500 | | 95.6 | 55-115 | | | B |
| Fluoranthene | 2.25 | 0.25 | ug/L | 2.500 | | 90.0 | 55-115 | | | |
| Benzidine | 0.0800 | 0.25 | ug/L | 2.500 | | 3.20 | 75-125 | | | J |
| Pyrene | 2.56 | 0.25 | ug/L | 2.500 | | 102 | 50-130 | | | |
| Butyl benzyl phthalate | 2.97 | 0.25 | ug/L | 2.500 | | 119 | 45-115 | | | |
| 3,3´-Dichlorobenzidine | 1.72 | 0.25 | ug/L | 2.500 | | 68.8 | 20-110 | | | |
| Benzo (a) anthracene | 2.76 | 0.25 | ug/L | 2.500 | | 110 | 55-110 | | | |
| Chrysene | 2.57 | 0.25 | ug/L | 2.500 | | 103 | 55-110 | | | |
| Bis(2-ethylhexyl)phthalate | 2.97 | 0.25 | ug/L | 2.500 | | 119 | 40-125 | | | B |
| Di-n-octyl phthalate | 1.97 | 0.25 | ug/L | 2.500 | | 78.8 | 35-135 | | | |
| Benzo (b) fluoranthene | 2.67 | 0.25 | ug/L | 2.500 | | 107 | 45-120 | | | |
| Benzo (k) fluoranthene | 2.81 | 0.25 | ug/L | 2.500 | | 112 | 45-125 | | | |
| Benzo (a) pyrene | 2.51 | 0.25 | ug/L | 2.500 | | 100 | 55-110 | | | |
| Indeno(1,2,3-cd)pyrene | 2.27 | 0.25 | ug/L | 2.500 | | 90.8 | 45-125 | | | |
| Dibenz (a,h) anthracene | 2.20 | 0.25 | ug/L | 2.500 | | 88.0 | 40-125 | | | |
| Benzo (g,h,i) perylene | 2.51 | 0.25 | ug/L | 2.500 | | 100 | 40-125 | | | |
| Pyridine | ND | 0.25 | ug/L | | | | 75-125 | | | |
| *Surrogate: 2-Fluorophenol* | *0.110* | | *ug/L* | *5.000* | | *2.20* | *20-110* | | | |
| *Surrogate: Phenol-d5* | *0.170* | | *ug/L* | *5.000* | | *3.40* | *20-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *1.08* | | *ug/L* | *2.500* | | *43.2* | *40-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.92* | | *ug/L* | *2.500* | | *76.8* | *50-110* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *3.34* | | *ug/L* | *5.000* | | *66.8* | *40-125* | | | |
| *Surrogate: Terphenyl-dl4* | *1.85* | | *ug/L* | *2.500* | | *74.0* | *50-135* | | | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B012029-BSD1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| N-Nitrosodimethylamine | ND | 0.25 | ug/L | 2.500 | | | 25-110 | | 20 | |
| Phenol | 0.210 | 0.25 | ug/L | 2.500 | | 8.40 | 5-150 | 71.0 | 20 | J |
| Aniline | 1.15 | 0.25 | ug/L | 2.500 | | 46.0 | 75-125 | 26.6 | 20 | |
| Bis(2-chloroethyl)ether | 1.15 | 0.25 | ug/L | 2.500 | | 46.0 | 35-110 | 26.6 | 20 | |
| 2-Chlorophenol | 0.980 | 0.25 | ug/L | 2.500 | | 39.2 | 35-105 | 30.6 | 20 | |
| 1,3-Dichlorobenzene | 1.17 | 0.25 | ug/L | 2.500 | | 46.8 | 30-100 | 15.7 | 20 | |
| 1,4-Dichlorobenzene | 1.17 | 0.25 | ug/L | 2.500 | | 46.8 | 30-100 | 14.7 | 20 | |
| 1,2-Dichlorobenzene | 1.13 | 0.25 | ug/L | 2.500 | | 45.2 | 35-100 | 16.3 | 20 | |
| Benzyl alcohol | 1.09 | 0.25 | ug/L | 2.500 | | 43.6 | 30-110 | 33.2 | 20 | |
| Bis(2-chloroisopropyl)ether | 1.47 | 0.25 | ug/L | 2.500 | | 58.8 | 25-130 | 13.8 | 20 | |
| 2-Methylphenol | 1.20 | 0.25 | ug/L | 2.500 | | 48.0 | 40-110 | 30.8 | 20 | |
| Hexachloroethane | 1.10 | 0.25 | ug/L | 2.500 | | 44.0 | 30-95 | 6.57 | 20 | |
| N-Nitrosodi-n-propylamine | 1.27 | 0.25 | ug/L | 2.500 | | 50.8 | 35-130 | 15.3 | 20 | |
| 4-Methylphenol | 1.24 | 0.25 | ug/L | 2.500 | | 49.6 | 30-110 | 26.5 | 20 | |
| Nitrobenzene | 1.27 | 0.25 | ug/L | 2.500 | | 50.8 | 45-110 | 21.8 | 20 | |
| Isophorone | 1.54 | 0.25 | ug/L | 2.500 | | 61.6 | 50-110 | 7.41 | 20 | |
| 2-Nitrophenol | 2.04 | 0.25 | ug/L | 2.500 | | 81.6 | 40-115 | 11.4 | 20 | |
| 2,4-Dimethylphenol | 1.00 | 0.25 | ug/L | 2.500 | | 40.0 | 30-110 | 28.6 | 20 | |
| Benzoic acid | ND | 0.25 | ug/L | 2.500 | | | 75-125 | | 20 | |
| Bis(2-chloroethoxy)methane | 1.84 | 0.25 | ug/L | 2.500 | | 73.6 | 45-105 | 9.09 | 20 | |
| 2,4-Dichlorophenol | 1.46 | 0.25 | ug/L | 2.500 | | 58.4 | 50-105 | 7.83 | 20 | |
| 1,2,4-Trichlorobenzene | 1.40 | 0.25 | ug/L | 2.500 | | 56.0 | 35-105 | 5.88 | 20 | |
| Naphthalene | 1.50 | 0.25 | ug/L | 2.500 | | 60.0 | 40-100 | 10.5 | 20 | |
| 4-Chloroaniline | 1.57 | 0.25 | ug/L | 2.500 | | 62.8 | 15-110 | 15.1 | 20 | |
| Hexachlorobutadiene | 1.62 | 0.25 | ug/L | 2.500 | | 64.8 | 25-105 | 2.50 | 20 | |
| 4-Chloro-3-methylphenol | 1.46 | 0.25 | ug/L | 2.500 | | 58.4 | 45-110 | 4.91 | 20 | |
| 2-Methylnaphthalene | 1.48 | 0.25 | ug/L | 2.500 | | 59.2 | 45-105 | 5.56 | 20 | |
| Hexachlorocyclopentadiene | 2.00 | 0.25 | ug/L | 2.500 | | 80.0 | 75-125 | 6.76 | 20 | |
| 2,4,6-Trichlorophenol | 2.67 | 0.25 | ug/L | 2.500 | | 107 | 50-115 | 5.46 | 20 | |
| 2,4,5-Trichlorophenol | 2.91 | 0.25 | ug/L | 2.500 | | 116 | 50-110 | 6.64 | 20 | |
| 2-Chloronaphthalene | 2.39 | 0.25 | ug/L | 2.500 | | 95.6 | 50-105 | 4.10 | 20 | |
| 2-Nitroaniline | 2.64 | 0.25 | ug/L | 2.500 | | 106 | 50-115 | 8.35 | 20 | |
| Acenaphthylene | 1.75 | 0.25 | ug/L | 2.500 | | 70.0 | 50-105 | 1.14 | 20 | |
| Dimethyl phthalate | 2.13 | 0.25 | ug/L | 2.500 | | 85.2 | 25-125 | 1.40 | 20 | |
| 2,6-Dinitrotoluene | 3.59 | 0.25 | ug/L | 2.500 | | 144 | 50-115 | 2.75 | 20 | |
| Acenaphthene | 2.32 | 0.25 | ug/L | 2.500 | | 92.8 | 45-110 | 2.55 | 20 | |
| 3-Nitroaniline | 2.92 | 0.25 | ug/L | 2.500 | | 117 | 20-125 | 2.70 | 20 | |
| 2,4-Dinitrophenol | 1.90 | 0.25 | ug/L | 2.500 | | 76.0 | 15-140 | 6.62 | 20 | |
| Dibenzofuran | 3.21 | 0.25 | ug/L | 2.500 | | 128 | 55-105 | 1.25 | 20 | |
| 2,4-Dinitrotoluene | 3.51 | 0.25 | ug/L | 2.500 | | 140 | 50-120 | 1.13 | 20 | |
| 4-Nitrophenol | 0.880 | 0.25 | ug/L | 2.500 | | 35.2 | 5-150 | 19.5 | 20 | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012029 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B012029-BSD1)** | | | | Prepared: 14-Dec-2010 Analyzed: 10-Jan-2011 | | | | | | |
| Fluorene | 3.07 | 0.25 | ug/L | 2.500 | | 123 | 50-110 | 1.62 | 20 | |
| 4-Chlorophenyl phenyl ether | 2.13 | 0.25 | ug/L | 2.500 | | 85.2 | 50-110 | 2.38 | 20 | |
| Diethyl phthalate | 3.81 | 0.25 | ug/L | 2.500 | | 152 | 40-120 | 1.30 | 20 | |
| 4-Nitroaniline | 2.44 | 0.25 | ug/L | 2.500 | | 97.6 | 35-120 | 4.80 | 20 | |
| 4,6-Dinitro-2-methylphenol | 1.79 | 0.25 | ug/L | 2.500 | | 71.6 | 40-130 | 4.37 | 20 | |
| N-Nitrosodiphenylamine | 1.86 | 0.25 | ug/L | 2.500 | | 74.4 | 50-110 | 4.40 | 20 | |
| 4-Bromophenyl phenyl ether | 2.36 | 0.25 | ug/L | 2.500 | | 94.4 | 50-115 | 2.92 | 20 | |
| Hexachlorobenzene | 1.53 | 0.25 | ug/L | 2.500 | | 61.2 | 50-110 | 5.37 | 20 | |
| Pentachlorophenol | 1.82 | 0.25 | ug/L | 2.500 | | 72.8 | 40-115 | 6.90 | 20 | |
| Phenanthrene | 1.67 | 0.25 | ug/L | 2.500 | | 66.8 | 50-115 | 3.04 | 20 | |
| Anthracene | 2.00 | 0.25 | ug/L | 2.500 | | 80.0 | 55-110 | 1.01 | 20 | |
| Di-n-butyl phthalate | 2.34 | 0.25 | ug/L | 2.500 | | 93.6 | 55-115 | 2.11 | 20 | B |
| Fluoranthene | 2.16 | 0.25 | ug/L | 2.500 | | 86.4 | 55-115 | 4.08 | 20 | |
| Benzidine | 0.110 | 0.25 | ug/L | 2.500 | | 4.40 | 75-125 | 31.6 | 20 | J |
| Pyrene | 2.88 | 0.25 | ug/L | 2.500 | | 115 | 50-130 | 11.8 | 20 | |
| Butyl benzyl phthalate | 3.03 | 0.25 | ug/L | 2.500 | | 121 | 45-115 | 2.00 | 20 | |
| 3,3´-Dichlorobenzidine | 2.12 | 0.25 | ug/L | 2.500 | | 84.8 | 20-110 | 20.8 | 20 | |
| Benzo (a) anthracene | 2.49 | 0.25 | ug/L | 2.500 | | 99.6 | 55-110 | 10.3 | 20 | |
| Chrysene | 2.83 | 0.25 | ug/L | 2.500 | | 113 | 55-110 | 9.63 | 20 | |
| Bis(2-ethylhexyl)phthalate | 2.90 | 0.25 | ug/L | 2.500 | | 116 | 40-125 | 2.39 | 20 | B |
| Di-n-octyl phthalate | 2.12 | 0.25 | ug/L | 2.500 | | 84.8 | 35-135 | 7.33 | 20 | |
| Benzo (b) fluoranthene | 2.73 | 0.25 | ug/L | 2.500 | | 109 | 45-120 | 2.22 | 20 | |
| Benzo (k) fluoranthene | 2.88 | 0.25 | ug/L | 2.500 | | 115 | 45-125 | 2.46 | 20 | |
| Benzo (a) pyrene | 2.45 | 0.25 | ug/L | 2.500 | | 98.0 | 55-110 | 2.42 | 20 | |
| Indeno(1,2,3-cd)pyrene | 2.34 | 0.25 | ug/L | 2.500 | | 93.6 | 45-125 | 3.04 | 20 | |
| Dibenz (a,h) anthracene | 2.37 | 0.25 | ug/L | 2.500 | | 94.8 | 40-125 | 7.44 | 20 | |
| Benzo (g,h,i) perylene | 2.52 | 0.25 | ug/L | 2.500 | | 101 | 40-125 | 0.398 | 20 | |
| Pyridine | ND | 0.25 | ug/L | | | | 75-125 | | 20 | |
| *Surrogate: 2-Fluorophenol* | *0.280* | | *ug/L* | *5.000* | | *5.60* | *20-110* | | | |
| *Surrogate: Phenol-d5* | *0.450* | | *ug/L* | *5.000* | | *9.00* | *20-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *1.18* | | *ug/L* | *2.500* | | *47.2* | *40-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.87* | | *ug/L* | *2.500* | | *74.8* | *50-110* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *3.57* | | *ug/L* | *5.000* | | *71.4* | *40-125* | | | |
| *Surrogate: Terphenyl-dl4* | *1.96* | | *ug/L* | *2.500* | | *78.4* | *50-135* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 28-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

26 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (filtered) | 0111204-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (filtered) | 0111204-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 Coarse/Sieved - Elutriate (filtered) | 0111204-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water (filtered) | 0111204-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.0714** | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Acenaphthene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.0179** | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.0179** | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.0179** | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.0179** | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.0179** | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.0893 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *51.0 %* | *45-105* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *54.0 %* | *30-125* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Acenaphthene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *47.5 %* | *45-105* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *44.0 %* | *30-125* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.0556** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.0185** | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.0926 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *60.0 %* | *45-105* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *48.5 %* | *30-125* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.0200** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Acenaphthene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Fluorene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Benzo (b) fluoranthene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Benzo (k) fluoranthene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Benzo (a) pyrene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| Benzo (g,h,i) perylene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 25-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *77.0 %* | *45-105* | | *13-Jan-2011* | *25-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *142 %* | *30-125* | | *13-Jan-2011* | *25-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **Blank (B011028-BLK1)** | | | | Prepared: 22-Nov-2010 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthylene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthene | ND | 0.0500 | ug/L | | | | | | | |
| Fluorene | ND | 0.0500 | ug/L | | | | | | | |
| Phenanthrene | ND | 0.0500 | ug/L | | | | | | | |
| Anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Chrysene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.0500 | ug/L | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.2* | | *ug/L* | *2.000* | | *58.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.4* | | *ug/L* | *2.000* | | *72.0* | *30-125* | | | |
| **LCS (B011028-BS1)** | | | | Prepared: 22-Nov-2010 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 0.90 | 0.0500 | ug/L | 2.000 | | 45.0 | 40-105 | | | |
| Acenaphthylene | 0.68 | 0.0500 | ug/L | 2.000 | | 34.0 | 45-105 | | | |
| Acenaphthene | 0.91 | 0.0500 | ug/L | 2.000 | | 45.5 | 45-110 | | | |
| Fluorene | 1.05 | 0.0500 | ug/L | 2.000 | | 52.5 | 50-110 | | | |
| Phenanthrene | 0.91 | 0.0500 | ug/L | 2.000 | | 45.5 | 50-110 | | | |
| Anthracene | 0.93 | 0.0500 | ug/L | 2.000 | | 46.5 | 55-105 | | | |
| Fluoranthene | 0.93 | 0.0500 | ug/L | 2.000 | | 46.5 | 55-115 | | | |
| Pyrene | 0.68 | 0.0500 | ug/L | 2.000 | | 34.0 | 45-125 | | | |
| Benzo (a) anthracene | 1.27 | 0.0500 | ug/L | 2.000 | | 63.5 | 50-110 | | | |
| Chrysene | 1.42 | 0.0500 | ug/L | 2.000 | | 71.0 | 55-110 | | | |
| Benzo (b) fluoranthene | 1.38 | 0.0500 | ug/L | 2.000 | | 69.0 | 45-115 | | | |
| Benzo (k) fluoranthene | 1.60 | 0.0500 | ug/L | 2.000 | | 80.0 | 45-125 | | | |
| Benzo (a) pyrene | 1.18 | 0.0500 | ug/L | 2.000 | | 59.0 | 50-110 | | | |
| Indeno (1,2,3-cd) pyrene | 1.10 | 0.0500 | ug/L | 2.000 | | 55.0 | 40-120 | | | |
| Dibenz (a,h) anthracene | 0.83 | 0.0500 | ug/L | 2.000 | | 41.5 | 40-125 | | | |
| Benzo (g,h,i) perylene | 1.11 | 0.0500 | ug/L | 2.000 | | 55.5 | 40-125 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.1* | | *ug/L* | *2.000* | | *53.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.0* | | *ug/L* | *2.000* | | *52.0* | *30-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B011028-BSD1)** | | | | Prepared: 22-Nov-2010 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 0.96 | 0.0500 | ug/L | 2.000 | | 48.0 | 40-105 | 6.45 | 30 | |
| Acenaphthylene | 0.82 | 0.0500 | ug/L | 2.000 | | 41.0 | 45-105 | 18.7 | 30 | |
| Acenaphthene | 1.07 | 0.0500 | ug/L | 2.000 | | 53.5 | 45-110 | 16.2 | 30 | |
| Fluorene | 1.32 | 0.0500 | ug/L | 2.000 | | 66.0 | 50-110 | 22.8 | 30 | |
| Phenanthrene | 1.11 | 0.0500 | ug/L | 2.000 | | 55.5 | 50-110 | 19.8 | 30 | |
| Anthracene | 1.01 | 0.0500 | ug/L | 2.000 | | 50.5 | 55-105 | 8.25 | 30 | |
| Fluoranthene | 1.75 | 0.0500 | ug/L | 2.000 | | 87.5 | 55-115 | 61.2 | 30 | |
| Pyrene | 1.57 | 0.0500 | ug/L | 2.000 | | 78.5 | 45-125 | 79.1 | 30 | |
| Benzo (a) anthracene | 1.44 | 0.0500 | ug/L | 2.000 | | 72.0 | 50-110 | 12.5 | 30 | |
| Chrysene | 1.59 | 0.0500 | ug/L | 2.000 | | 79.5 | 55-110 | 11.3 | 30 | |
| Benzo (b) fluoranthene | 1.54 | 0.0500 | ug/L | 2.000 | | 77.0 | 45-115 | 11.0 | 30 | |
| Benzo (k) fluoranthene | 1.92 | 0.0500 | ug/L | 2.000 | | 96.0 | 45-125 | 18.2 | 30 | |
| Benzo (a) pyrene | 1.35 | 0.0500 | ug/L | 2.000 | | 67.5 | 50-110 | 13.4 | 30 | |
| Indeno (1,2,3-cd) pyrene | 1.30 | 0.0500 | ug/L | 2.000 | | 65.0 | 40-120 | 16.7 | 30 | |
| Dibenz (a,h) anthracene | 0.99 | 0.0500 | ug/L | 2.000 | | 49.5 | 40-125 | 17.6 | 30 | |
| Benzo (g,h,i) perylene | 1.33 | 0.0500 | ug/L | 2.000 | | 66.5 | 40-125 | 18.0 | 30 | |
| *Surrogate: 2-Fluorobiphenyl* | *1.3* | | *ug/L* | *2.000* | | *63.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.2* | | *ug/L* | *2.000* | | *62.0* | *30-125* | | | |
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthylene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthene | ND | 0.0500 | ug/L | | | | | | | |
| Fluorene | ND | 0.0500 | ug/L | | | | | | | |
| Phenanthrene | ND | 0.0500 | ug/L | | | | | | | |
| Anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Chrysene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.0500 | ug/L | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.6* | | *ug/L* | *2.000* | | *81.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.6* | | *ug/L* | *2.000* | | *78.0* | *30-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **LCS (B101033-BS1)** | | | | Prepared: 13-Jan-2011 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 1.43 | 0.0500 | ug/L | 2.000 | | 71.5 | 40-105 | | | |
| Acenaphthylene | 1.55 | 0.0500 | ug/L | 2.000 | | 77.5 | 45-105 | | | |
| Acenaphthene | 1.47 | 0.0500 | ug/L | 2.000 | | 73.5 | 45-110 | | | |
| Fluorene | 1.27 | 0.0500 | ug/L | 2.000 | | 63.5 | 50-110 | | | |
| Phenanthrene | 1.36 | 0.0500 | ug/L | 2.000 | | 68.0 | 50-110 | | | |
| Anthracene | 1.50 | 0.0500 | ug/L | 2.000 | | 75.0 | 55-105 | | | |
| Fluoranthene | 1.55 | 0.0500 | ug/L | 2.000 | | 77.5 | 55-115 | | | |
| Pyrene | 2.59 | 0.0500 | ug/L | 2.000 | | 130 | 45-125 | | | |
| Benzo (a) anthracene | 1.98 | 0.0500 | ug/L | 2.000 | | 99.0 | 50-110 | | | |
| Chrysene | 1.75 | 0.0500 | ug/L | 2.000 | | 87.5 | 55-110 | | | |
| Benzo (b) fluoranthene | 2.03 | 0.0500 | ug/L | 2.000 | | 102 | 45-115 | | | |
| Benzo (k) fluoranthene | 1.94 | 0.0500 | ug/L | 2.000 | | 97.0 | 45-125 | | | |
| Benzo (a) pyrene | 1.87 | 0.0500 | ug/L | 2.000 | | 93.5 | 50-110 | | | |
| Indeno (1,2,3-cd) pyrene | 2.66 | 0.0500 | ug/L | 2.000 | | 133 | 40-120 | | | |
| Dibenz (a,h) anthracene | 0.90 | 0.0500 | ug/L | 2.000 | | 45.0 | 40-125 | | | |
| Benzo (g,h,i) perylene | 1.07 | 0.0500 | ug/L | 2.000 | | 53.5 | 40-125 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.7* | | *ug/L* | *2.000* | | *83.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *2.6* | | *ug/L* | *2.000* | | *130* | *30-125* | | | |
| **LCS Dup (B101033-BSD1)** | | | | Prepared: 13-Jan-2011 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 1.23 | 0.0500 | ug/L | 2.000 | | 61.5 | 40-105 | 15.0 | 30 | |
| Acenaphthylene | 1.36 | 0.0500 | ug/L | 2.000 | | 68.0 | 45-105 | 13.1 | 30 | |
| Acenaphthene | 1.32 | 0.0500 | ug/L | 2.000 | | 66.0 | 45-110 | 10.8 | 30 | |
| Fluorene | 1.14 | 0.0500 | ug/L | 2.000 | | 57.0 | 50-110 | 10.8 | 30 | |
| Phenanthrene | 1.27 | 0.0500 | ug/L | 2.000 | | 63.5 | 50-110 | 6.84 | 30 | |
| Anthracene | 1.40 | 0.0500 | ug/L | 2.000 | | 70.0 | 55-105 | 6.90 | 30 | |
| Fluoranthene | 1.59 | 0.0500 | ug/L | 2.000 | | 79.5 | 55-115 | 2.55 | 30 | |
| Pyrene | 2.65 | 0.0500 | ug/L | 2.000 | | 132 | 45-125 | 2.29 | 30 | |
| Benzo (a) anthracene | 2.06 | 0.0500 | ug/L | 2.000 | | 103 | 50-110 | 3.96 | 30 | |
| Chrysene | 1.84 | 0.0500 | ug/L | 2.000 | | 92.0 | 55-110 | 5.01 | 30 | |
| Benzo (b) fluoranthene | 2.23 | 0.0500 | ug/L | 2.000 | | 112 | 45-115 | 9.39 | 30 | |
| Benzo (k) fluoranthene | 1.98 | 0.0500 | ug/L | 2.000 | | 99.0 | 45-125 | 2.04 | 30 | |
| Benzo (a) pyrene | 1.91 | 0.0500 | ug/L | 2.000 | | 95.5 | 50-110 | 2.12 | 30 | |
| Indeno (1,2,3-cd) pyrene | 1.93 | 0.0500 | ug/L | 2.000 | | 96.5 | 40-120 | 31.8 | 30 | |
| Dibenz (a,h) anthracene | 1.02 | 0.0500 | ug/L | 2.000 | | 51.0 | 40-125 | 12.5 | 30 | |
| Benzo (g,h,i) perylene | 1.21 | 0.0500 | ug/L | 2.000 | | 60.5 | 40-125 | 12.3 | 30 | |
| *Surrogate: 2-Fluorobiphenyl* | *1.5* | | *ug/L* | *2.000* | | *73.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *2.9* | | *ug/L* | *2.000* | | *146* | *30-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

26 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (Unfiltered) | 0111203-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (Unfiltered) | 0111203-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 - Coarse/Sieved (Unfiltered) | 0111203-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water | 0111203-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.140** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Acenaphthylene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.0400** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluorene** | **0.0400** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.120** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Anthracene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.280** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.180** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.140** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.260** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **0.260** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **0.220** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **0.160** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **0.220** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **0.180** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *49.0 %* | *45-105* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *49.0 %* | *30-125* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Acenaphthylene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluorene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.120** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Anthracene** | **0.0400** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.380** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.180** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.160** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.280** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **0.360** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **0.200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **0.180** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **0.260** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **0.200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *45.0 %* | *45-105* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *48.0 %* | *30-125* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.0400** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluorene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.0600** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Anthracene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.160** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.100** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.0800** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.120** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **0.160** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **0.120** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **0.0800** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **0.140** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **0.0200** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **0.0800** | 0.100 | ug/L | 1 | 22-Nov-2010 | 24-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *31.0 %* | *45-105* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *37.0 %* | *30-125* | | *22-Nov-2010* | *24-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **0.0300** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| Acenaphthylene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Acenaphthene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Fluorene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Phenanthrene** | **0.0200** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| Anthracene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Fluoranthene** | **0.0300** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Pyrene** | **0.0200** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) anthracene** | **0.0200** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Chrysene** | **0.0200** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (a) pyrene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **0.0100** | 0.0500 | ug/L | 1 | 13-Jan-2011 | 24-Jan-2011 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *83.0 %* | *45-105* | | *13-Jan-2011* | *24-Jan-2011* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *88.5 %* | *30-125* | | *13-Jan-2011* | *24-Jan-2011* | *EPA 8270C* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **Blank (B011028-BLK1)** | | | | Prepared: 22-Nov-2010 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthylene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthene | ND | 0.0500 | ug/L | | | | | | | |
| Fluorene | ND | 0.0500 | ug/L | | | | | | | |
| Phenanthrene | ND | 0.0500 | ug/L | | | | | | | |
| Anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Chrysene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.0500 | ug/L | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.2* | | *ug/L* | *2.000* | | *58.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.4* | | *ug/L* | *2.000* | | *72.0* | *30-125* | | | |
| **LCS (B011028-BS1)** | | | | Prepared: 22-Nov-2010 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 0.90 | 0.0500 | ug/L | 2.000 | | 45.0 | 40-105 | | | |
| Acenaphthylene | 0.68 | 0.0500 | ug/L | 2.000 | | 34.0 | 45-105 | | | |
| Acenaphthene | 0.91 | 0.0500 | ug/L | 2.000 | | 45.5 | 45-110 | | | |
| Fluorene | 1.05 | 0.0500 | ug/L | 2.000 | | 52.5 | 50-110 | | | |
| Phenanthrene | 0.91 | 0.0500 | ug/L | 2.000 | | 45.5 | 50-110 | | | |
| Anthracene | 0.93 | 0.0500 | ug/L | 2.000 | | 46.5 | 55-105 | | | |
| Fluoranthene | 0.93 | 0.0500 | ug/L | 2.000 | | 46.5 | 55-115 | | | |
| Pyrene | 0.68 | 0.0500 | ug/L | 2.000 | | 34.0 | 45-125 | | | |
| Benzo (a) anthracene | 1.27 | 0.0500 | ug/L | 2.000 | | 63.5 | 50-110 | | | |
| Chrysene | 1.42 | 0.0500 | ug/L | 2.000 | | 71.0 | 55-110 | | | |
| Benzo (b) fluoranthene | 1.38 | 0.0500 | ug/L | 2.000 | | 69.0 | 45-115 | | | |
| Benzo (k) fluoranthene | 1.60 | 0.0500 | ug/L | 2.000 | | 80.0 | 45-125 | | | |
| Benzo (a) pyrene | 1.18 | 0.0500 | ug/L | 2.000 | | 59.0 | 50-110 | | | |
| Indeno (1,2,3-cd) pyrene | 1.10 | 0.0500 | ug/L | 2.000 | | 55.0 | 40-120 | | | |
| Dibenz (a,h) anthracene | 0.83 | 0.0500 | ug/L | 2.000 | | 41.5 | 40-125 | | | |
| Benzo (g,h,i) perylene | 1.11 | 0.0500 | ug/L | 2.000 | | 55.5 | 40-125 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.1* | | *ug/L* | *2.000* | | *53.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.0* | | *ug/L* | *2.000* | | *52.0* | *30-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B011028 - EPA 3535A** | | | | | | | | | | |
| **LCS Dup (B011028-BSD1)** | | | | Prepared: 22-Nov-2010 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 0.96 | 0.0500 | ug/L | 2.000 | | 48.0 | 40-105 | 6.45 | 30 | |
| Acenaphthylene | 0.82 | 0.0500 | ug/L | 2.000 | | 41.0 | 45-105 | 18.7 | 30 | |
| Acenaphthene | 1.07 | 0.0500 | ug/L | 2.000 | | 53.5 | 45-110 | 16.2 | 30 | |
| Fluorene | 1.32 | 0.0500 | ug/L | 2.000 | | 66.0 | 50-110 | 22.8 | 30 | |
| Phenanthrene | 1.11 | 0.0500 | ug/L | 2.000 | | 55.5 | 50-110 | 19.8 | 30 | |
| Anthracene | 1.01 | 0.0500 | ug/L | 2.000 | | 50.5 | 55-105 | 8.25 | 30 | |
| Fluoranthene | 1.75 | 0.0500 | ug/L | 2.000 | | 87.5 | 55-115 | 61.2 | 30 | |
| Pyrene | 1.57 | 0.0500 | ug/L | 2.000 | | 78.5 | 45-125 | 79.1 | 30 | |
| Benzo (a) anthracene | 1.44 | 0.0500 | ug/L | 2.000 | | 72.0 | 50-110 | 12.5 | 30 | |
| Chrysene | 1.59 | 0.0500 | ug/L | 2.000 | | 79.5 | 55-110 | 11.3 | 30 | |
| Benzo (b) fluoranthene | 1.54 | 0.0500 | ug/L | 2.000 | | 77.0 | 45-115 | 11.0 | 30 | |
| Benzo (k) fluoranthene | 1.92 | 0.0500 | ug/L | 2.000 | | 96.0 | 45-125 | 18.2 | 30 | |
| Benzo (a) pyrene | 1.35 | 0.0500 | ug/L | 2.000 | | 67.5 | 50-110 | 13.4 | 30 | |
| Indeno (1,2,3-cd) pyrene | 1.30 | 0.0500 | ug/L | 2.000 | | 65.0 | 40-120 | 16.7 | 30 | |
| Dibenz (a,h) anthracene | 0.99 | 0.0500 | ug/L | 2.000 | | 49.5 | 40-125 | 17.6 | 30 | |
| Benzo (g,h,i) perylene | 1.33 | 0.0500 | ug/L | 2.000 | | 66.5 | 40-125 | 18.0 | 30 | |
| *Surrogate: 2-Fluorobiphenyl* | *1.3* | | *ug/L* | *2.000* | | *63.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.2* | | *ug/L* | *2.000* | | *62.0* | *30-125* | | | |
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **Blank (B101033-BLK1)** | | | | Prepared: 13-Jan-2011 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthylene | ND | 0.0500 | ug/L | | | | | | | |
| Acenaphthene | ND | 0.0500 | ug/L | | | | | | | |
| Fluorene | ND | 0.0500 | ug/L | | | | | | | |
| Phenanthrene | ND | 0.0500 | ug/L | | | | | | | |
| Anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Chrysene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (b) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (k) fluoranthene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (a) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Indeno (1,2,3-cd) pyrene | ND | 0.0500 | ug/L | | | | | | | |
| Dibenz (a,h) anthracene | ND | 0.0500 | ug/L | | | | | | | |
| Benzo (g,h,i) perylene | ND | 0.0500 | ug/L | | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.6* | | *ug/L* | *2.000* | | *81.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *1.6* | | *ug/L* | *2.000* | | *78.0* | *30-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101033 - EPA 3535A** | | | | | | | | | | |
| **LCS (B101033-BS1)** | | | | Prepared: 13-Jan-2011 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 1.43 | 0.0500 | ug/L | 2.000 | | 71.5 | 40-105 | | | |
| Acenaphthylene | 1.55 | 0.0500 | ug/L | 2.000 | | 77.5 | 45-105 | | | |
| Acenaphthene | 1.47 | 0.0500 | ug/L | 2.000 | | 73.5 | 45-110 | | | |
| Fluorene | 1.27 | 0.0500 | ug/L | 2.000 | | 63.5 | 50-110 | | | |
| Phenanthrene | 1.36 | 0.0500 | ug/L | 2.000 | | 68.0 | 50-110 | | | |
| Anthracene | 1.50 | 0.0500 | ug/L | 2.000 | | 75.0 | 55-105 | | | |
| Fluoranthene | 1.55 | 0.0500 | ug/L | 2.000 | | 77.5 | 55-115 | | | |
| Pyrene | 2.59 | 0.0500 | ug/L | 2.000 | | 130 | 45-125 | | | |
| Benzo (a) anthracene | 1.98 | 0.0500 | ug/L | 2.000 | | 99.0 | 50-110 | | | |
| Chrysene | 1.75 | 0.0500 | ug/L | 2.000 | | 87.5 | 55-110 | | | |
| Benzo (b) fluoranthene | 2.03 | 0.0500 | ug/L | 2.000 | | 102 | 45-115 | | | |
| Benzo (k) fluoranthene | 1.94 | 0.0500 | ug/L | 2.000 | | 97.0 | 45-125 | | | |
| Benzo (a) pyrene | 1.87 | 0.0500 | ug/L | 2.000 | | 93.5 | 50-110 | | | |
| Indeno (1,2,3-cd) pyrene | 2.66 | 0.0500 | ug/L | 2.000 | | 133 | 40-120 | | | |
| Dibenz (a,h) anthracene | 0.90 | 0.0500 | ug/L | 2.000 | | 45.0 | 40-125 | | | |
| Benzo (g,h,i) perylene | 1.07 | 0.0500 | ug/L | 2.000 | | 53.5 | 40-125 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *1.7* | | *ug/L* | *2.000* | | *83.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *2.6* | | *ug/L* | *2.000* | | *130* | *30-125* | | | |
| **LCS Dup (B101033-BSD1)** | | | | Prepared: 13-Jan-2011 Analyzed: 24-Jan-2011 | | | | | | |
| Naphthalene | 1.23 | 0.0500 | ug/L | 2.000 | | 61.5 | 40-105 | 15.0 | 30 | |
| Acenaphthylene | 1.36 | 0.0500 | ug/L | 2.000 | | 68.0 | 45-105 | 13.1 | 30 | |
| Acenaphthene | 1.32 | 0.0500 | ug/L | 2.000 | | 66.0 | 45-110 | 10.8 | 30 | |
| Fluorene | 1.14 | 0.0500 | ug/L | 2.000 | | 57.0 | 50-110 | 10.8 | 30 | |
| Phenanthrene | 1.27 | 0.0500 | ug/L | 2.000 | | 63.5 | 50-110 | 6.84 | 30 | |
| Anthracene | 1.40 | 0.0500 | ug/L | 2.000 | | 70.0 | 55-105 | 6.90 | 30 | |
| Fluoranthene | 1.59 | 0.0500 | ug/L | 2.000 | | 79.5 | 55-115 | 2.55 | 30 | |
| Pyrene | 2.65 | 0.0500 | ug/L | 2.000 | | 132 | 45-125 | 2.29 | 30 | |
| Benzo (a) anthracene | 2.06 | 0.0500 | ug/L | 2.000 | | 103 | 50-110 | 3.96 | 30 | |
| Chrysene | 1.84 | 0.0500 | ug/L | 2.000 | | 92.0 | 55-110 | 5.01 | 30 | |
| Benzo (b) fluoranthene | 2.23 | 0.0500 | ug/L | 2.000 | | 112 | 45-115 | 9.39 | 30 | |
| Benzo (k) fluoranthene | 1.98 | 0.0500 | ug/L | 2.000 | | 99.0 | 45-125 | 2.04 | 30 | |
| Benzo (a) pyrene | 1.91 | 0.0500 | ug/L | 2.000 | | 95.5 | 50-110 | 2.12 | 30 | |
| Indeno (1,2,3-cd) pyrene | 1.93 | 0.0500 | ug/L | 2.000 | | 96.5 | 40-120 | 31.8 | 30 | |
| Dibenz (a,h) anthracene | 1.02 | 0.0500 | ug/L | 2.000 | | 51.0 | 40-125 | 12.5 | 30 | |
| Benzo (g,h,i) perylene | 1.21 | 0.0500 | ug/L | 2.000 | | 60.5 | 40-125 | 12.3 | 30 | |
| *Surrogate: 2-Fluorobiphenyl* | *1.5* | | *ug/L* | *2.000* | | *73.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *2.9* | | *ug/L* | *2.000* | | *146* | *30-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 26-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

Clarification of Qualifiers for Test America Report

The Cleveland Harbor project involved two sampling efforts and the creation of two sets of elutriates. The first sampling effort occurred during the week of November 8. The first set of elutriates were created during the week of November 15. Several analyses were completed on the first set of elutriates. The second sampling effort occurred on December 8, and the second set of elutriates were prepared on December 13. Material from the second set of elutriates were shipped to the contract lab, Test America, for analyses. These analyses include: Cyanide, TOC, Volatiles, and Ammonia. Since the second set of elutriates was a continuation of an existing project, the samples were not given a new work order or sample date. However, by not changing the sampling date on the submission form, Test America flagged the results as with a "H". A flag of "H" signifies that the samples were received outside of the EPA method standard hold times for extraction after sampling. We requested that Test America remove the flag and a change the sample date on March 17, 2011. We received the revised report on April 28, 2011, and only the dates for the filtered samples had been changed. Test America told us that the delay in sending the revised report was due to a database upgrade at one of their offices. Because the delay in getting the first revised report, we have opted to not ask for another revised report at this time. The unfiltered and filtered elutriate samples that were used for Cyanide, TOC, Volatiles, and Ammonia analyses came from the same set of elutriate samples with the creation date of December 13, 2010. The samples were submitted to the contract lab within the proper hold time for sampling to extraction.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 200-2986-1

SDG Number: 200-2986-1

Job Description: Vicksburg Quote

For:
White Water Associates
429 River Lane
PO BOX 27
Amasa, MI 49903

Attention: Dr. Bette J Premo

Approved for release.
Sara S Goff
Project Manager I
4/28/2011 2:57 PM

Sara S Goff
Project Manager I
sara.goff@testamericainc.com
04/28/2011
Revision: 1

# CASE NARRATIVE

## Client: White Water Associates

## Project: Vicksburg Quote

## Report Number: 200-2986-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This deliverable has been revised to provide for corrected collection times.

**RECEIPT**
The samples were received on 12/15/2010; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.3 and 4.7 C.

Method(s) 5030B, 8260B, 9012A, 9060, FIELD_FLTRD, FILTRATION, SM 4500 NH3 B, SM 4500 NH3 C, Subcontract: The following sample(s) was received outside of holding time: CLEVELAND SITE WATER(FILTERED), DMU 1- ELUTRIATE(UNFILTERED), DMU 1-COARSE/SIEVED(UNFILTERED), DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED), DMU 1-ELUTRIATE(FILTERED), DMU 2-ELUTRIATE(FILTERED), DMW 2-ELUTRIATE(UNFILTERED).

**VOLATILE ORGANIC COMPOUNDS - DISSOLVED(GC-MS)**
Samples DMU 1-ELUTRIATE(FILTERED), DMU 2-ELUTRIATE(FILTERED), DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) and CLEVELAND SITE WATER(FILTERED) were analyzed for Volatile Organic Compounds in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 12/20/2010.

No difficulties were encountered during the VOCs analyses.

All quality control parameters were within the acceptance limits.

**VOLATILE ORGANIC COMPOUNDS (GC-MS)**
Samples DMU 1- ELUTRIATE(UNFILTERED), DMW 2-ELUTRIATE(UNFILTERED), DMU 1-COARSE/SIEVED(UNFILTERED) and CLEVELAND SITE WATER(UNFILTERED) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 12/20/2010.

Several analytes were detected in method blank MB 200-11441/5 at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Refer to the QC report for details.

1,2-Dichlorobenzene-d4 and Toluene-d8 failed the surrogate recovery criteria high for DMU 1- ELUTRIATE(UNFILTERED), due to inssuficient sample volume reanalysis was not possible. Refer to the QC report for details.

No other difficulties were encountered during the volatiles analyses.

All other quality control parameters were within the acceptance limits.

**DISSOLVED CYANIDE**
Samples DMU 1-ELUTRIATE(FILTERED), DMU 2-ELUTRIATE(FILTERED), DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) and CLEVELAND SITE WATER(FILTERED) were analyzed for total cyanide in accordance with EPA SW-846 Method 9012A. The samples were prepared and analyzed on 12/21/2010.

No difficulties were encountered during the cyanide analyses.

All quality control parameters were within the acceptance limits.

**TOTAL CYANIDE**
Samples DMU 1- ELUTRIATE(UNFILTERED), DMW 2-ELUTRIATE(UNFILTERED), DMU 1-COARSE/SIEVED(UNFILTERED) and

CLEVELAND SITE WATER(UNFILTERED) were analyzed for total cyanide in accordance with EPA SW-846 Method 9012A. The samples were prepared and analyzed on 12/20/2010.

No difficulties were encountered during the cyanide analyses.

All quality control parameters were within the acceptance limits.

**TOTAL ORGANIC CARBON**

Samples DMU 1- ELUTRIATE(UNFILTERED), DMW 2-ELUTRIATE(UNFILTERED), DMU 1-COARSE/SIEVED(UNFILTERED) and CLEVELAND SITE WATER(UNFILTERED) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060. The samples were analyzed on 12/20/2010.

Samples DMU 1- ELUTRIATE(UNFILTERED)[2X] and DMW 2-ELUTRIATE(UNFILTERED)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the TOC analyses.

All quality control parameters were within the acceptance limits.

**TOTAL ORGANIC CARBON**

Samples DMU 1-ELUTRIATE(FILTERED), DMU 2-ELUTRIATE(FILTERED), DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) and CLEVELAND SITE WATER(FILTERED) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060. The samples were analyzed on 12/21/2010.

Dissolved Organic Carbon was detected in method blank PB 200-11392/1-A at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Refer to the QC report for details.

No other difficulties were encountered during the TOC analyses.

All other quality control parameters were within the acceptance limits.

**DISSOLVED AMMONIA**

Samples DMU 1-ELUTRIATE(FILTERED), DMU 2-ELUTRIATE(FILTERED), DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) and CLEVELAND SITE WATER(FILTERED) were analyzed for ammonia in accordance with SM18 4500 NH3 C. The samples were prepared and analyzed on 12/21/2010.

No difficulties were encountered during the ammonia analyses.

All quality control parameters were within the acceptance limits.

**AMMONIA**

Samples DMU 1- ELUTRIATE(UNFILTERED), DMW 2-ELUTRIATE(UNFILTERED), DMU 1-COARSE/SIEVED(UNFILTERED) and CLEVELAND SITE WATER(UNFILTERED) were analyzed for ammonia in accordance with SM4500NH3_C. The samples were prepared and analyzed on 12/21/2010.

Ammonia was detected in method blank MB 200-11477/2-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Ammonia was detected in method blank PB 200-11477/13-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Refer to the QC report for details.

Sample DMU 1-COARSE/SIEVED(UNFILTERED)[4X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the ammonia analyses.

All other quality control parameters were within the acceptance limits.

# EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

| Lab Sample ID / Analyte | Client Sample ID / Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|
| **200-2986-1** | **DMU 1- ELUTRIATE(UNFILTERED)** | | | | |
| Acetone | 79 | H | 5.0 | ug/L | 8260B |
| Methylene Chloride | 4.2 | H | 1.0 | ug/L | 8260B |
| 2-Butanone | 7.2 | H | 5.0 | ug/L | 8260B |
| Toluene | 0.78 | J H | 1.0 | ug/L | 8260B |
| Cyanide, Total | 5.1 | J H | 10.0 | ug/L | 9012A |
| Total Organic Carbon | 28.0 | H D | 2.0 | mg/L | 9060 |
| Ammonia | 0.095 | J H B | 0.10 | mg/L | SM 4500 NH3 C |
| **200-2986-2** | **DMW 2-ELUTRIATE(UNFILTERED)** | | | | |
| Acetone | 56 | H | 5.0 | ug/L | 8260B |
| Methylene Chloride | 6.3 | H | 1.0 | ug/L | 8260B |
| 2-Butanone | 9.7 | H | 5.0 | ug/L | 8260B |
| Toluene | 1.3 | H | 1.0 | ug/L | 8260B |
| Cyanide, Total | 4.6 | J H | 10.0 | ug/L | 9012A |
| Total Organic Carbon | 23.6 | H D | 2.0 | mg/L | 9060 |
| Ammonia | 0.079 | J H B | 0.10 | mg/L | SM 4500 NH3 C |
| **200-2986-3** | **DMU 1-COARSE/SIEVED(UNFILTERED)** | | | | |
| Acetone | 170 | H | 5.0 | ug/L | 8260B |
| Carbon disulfide | 0.16 | J H B | 1.0 | ug/L | 8260B |
| Methylene Chloride | 6.0 | H | 1.0 | ug/L | 8260B |
| 2-Butanone | 7.5 | H | 5.0 | ug/L | 8260B |
| Toluene | 0.69 | J H | 1.0 | ug/L | 8260B |
| Cyanide, Total | 3.0 | J H | 10.0 | ug/L | 9012A |
| Total Organic Carbon | 12.3 | H | 1.0 | mg/L | 9060 |
| Ammonia | 4.9 | H D B | 0.40 | mg/L | SM 4500 NH3 C |
| **200-2986-4** | **CLEVELAND SITE WATER(UNFILTERED)** | | | | |
| Acetone | 2.9 | J | 5.0 | ug/L | 8260B |
| Methylene Chloride | 0.64 | J | 1.0 | ug/L | 8260B |
| Cyclohexane | 0.33 | J | 1.0 | ug/L | 8260B |
| Total Organic Carbon | 2.5 | | 1.0 | mg/L | 9060 |
| Ammonia | 0.13 | B | 0.10 | mg/L | SM 4500 NH3 C |

# EXECUTIVE SUMMARY - Detections

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

| Lab Sample ID / Analyte | Client Sample ID | Result / Qualifier | | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **200-2986-5** | **DMU 1-ELUTRIATE(FILTERED)** | | | | | |
| ***Dissolved*** | | | | | | |
| Acetone | | 81 | | 5.0 | ug/L | 8260B |
| Methylene Chloride | | 60 | | 1.0 | ug/L | 8260B |
| 2-Butanone | | 5.7 | | 5.0 | ug/L | 8260B |
| Naphthalene | | 0.37 | J B | 1.0 | ug/L | 8260B |
| Cyanide, Total-Dissolved | | 7.0 | J | 10.0 | ug/L | 9012A |
| Dissolved Organic Carbon-Dissolved | | 14.5 | | 1.0 | mg/L | 9060 |
| Ammonia-Dissolved | | 8.4 | B D | 1.0 | mg/L | SM 4500 NH3 C |
| **200-2986-6** | **DMU 2-ELUTRIATE(FILTERED)** | | | | | |
| ***Dissolved*** | | | | | | |
| Acetone | | 54 | | 5.0 | ug/L | 8260B |
| Methylene Chloride | | 70 | | 1.0 | ug/L | 8260B |
| 2-Butanone | | 8.5 | | 5.0 | ug/L | 8260B |
| Naphthalene | | 0.20 | J B | 1.0 | ug/L | 8260B |
| Cyanide, Total-Dissolved | | 5.6 | J | 10.0 | ug/L | 9012A |
| Dissolved Organic Carbon-Dissolved | | 12.7 | | 1.0 | mg/L | 9060 |
| Ammonia-Dissolved | | 11.7 | B D | 1.0 | mg/L | SM 4500 NH3 C |
| **200-2986-7** | **DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED)** | | | | | |
| ***Dissolved*** | | | | | | |
| Acetone | | 160 | | 5.0 | ug/L | 8260B |
| Methylene Chloride | | 89 | | 1.0 | ug/L | 8260B |
| 2-Butanone | | 6.5 | | 5.0 | ug/L | 8260B |
| Naphthalene | | 0.50 | J B | 1.0 | ug/L | 8260B |
| Cyanide, Total-Dissolved | | 4.0 | J | 10.0 | ug/L | 9012A |
| Dissolved Organic Carbon-Dissolved | | 7.9 | | 1.0 | mg/L | 9060 |
| Ammonia-Dissolved | | 2.0 | B D | 0.10 | mg/L | SM 4500 NH3 C |
| **200-2986-8** | **CLEVELAND SITE WATER(FILTERED)** | | | | | |
| ***Dissolved*** | | | | | | |
| Acetone | | 6.4 | | 5.0 | ug/L | 8260B |
| Methylene Chloride | | 57 | | 1.0 | ug/L | 8260B |
| Dissolved Organic Carbon-Dissolved | | 4.1 | | 1.0 | mg/L | 9060 |
| Ammonia-Dissolved | | 0.21 | B | 0.20 | mg/L | SM 4500 NH3 C |

# METHOD SUMMARY

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL BUR | SW846 8260B | |
| Purge and Trap | TAL BUR | | SW846 5030B |
| Volatile Organic Compounds (GC/MS) | TAL BUR | SW846 8260B | |
| Purge and Trap | TAL BUR | | SW846 5030B |
| Sample Filtration, Field | | | FIELD_FLTRD |
| Cyanide, Total and/or Amenable | TAL BUR | SW846 9012A | |
| Cyanide, Total and/or Amenable, Distillation | TAL BUR | | SW846 9012A |
| Cyanide, Total and/or Amenable | TAL BUR | SW846 9012A | |
| Cyanide, Total and/or Amenable, Distillation | TAL BUR | | SW846 9012A |
| Sample Filtration | TAL BUR | | FILTRATION |
| Organic Carbon, Dissolved (DOC) | TAL BUR | SW846 9060 | |
| Sample Filtration | TAL BUR | | FILTRATION |
| Organic Carbon, Total (TOC) | TAL BUR | SW846 9060 | |
| Ammonia | TAL BUR | SM SM 4500 NH3 C | |
| Ammonia, Distillation | TAL BUR | | SM SM 4500 NH3 B |
| Ammonia | TAL BUR | SM SM 4500 NH3 C | |
| Ammonia, Distillation | TAL BUR | | SM SM 4500 NH3 B |
| Sample Filtration | TAL BUR | | FILTRATION |
| EPA 180.1 Turbidity | TAL KNX | EPA 180.1 | |

### Lab References:

TAL BUR = TestAmerica Burlington

TAL KNX = TestAmerica Knoxville

### Method References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

# METHOD / ANALYST SUMMARY

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Heald, John | JRH |
| SW846 9012A | Nelson, Andrea J | AJN |
| SW846 9060 | Nelson, Andrea J | AJN |
| SM SM 4500 NH3 C | Tam, Michelle N | MNT |

# SAMPLE SUMMARY

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 200-2986-1 | DMU 1-ELUTRIATE(UNFILTERED) | Water | 11/10/2010 0000 | 12/15/2010 1020 |
| 200-2986-2 | DMW 2-ELUTRIATE(UNFILTERED) | Water | 11/10/2010 0000 | 12/15/2010 1020 |
| 200-2986-3 | DMU 1-COARSE/SIEVED(UNFILTERED) | Water | 11/10/2010 0000 | 12/15/2010 1020 |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | Water | 12/07/2010 0000 | 12/15/2010 1020 |
| 200-2986-5 | DMU 1-ELUTRIATE(FILTERED) | Water | 12/13/2010 0000 | 12/15/2010 1020 |
| 200-2986-6 | DMU 2-ELUTRIATE(FILTERED) | Water | 12/13/2010 0000 | 12/15/2010 1020 |
| 200-2986-7 | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | Water | 12/13/2010 0000 | 12/15/2010 1020 |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | Water | 12/08/2010 0000 | 12/15/2010 1020 |

# SAMPLE RESULTS

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1- ELUTRIATE(UNFILTERED)**

Lab Sample ID: 200-2986-1
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv12.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1512 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1512 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U H | 0.38 | 1.0 |
| Chloromethane | 1.0 | U H | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U H | 0.34 | 1.0 |
| Bromomethane | 1.0 | U H | 0.29 | 1.0 |
| Chloroethane | 1.0 | U H | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U H | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U H | 0.23 | 1.0 |
| Freon TF | 1.0 | U H | 0.20 | 1.0 |
| Acetone | 79 | H | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U H | 0.18 | 1.0 |
| Carbon disulfide | 1.0 | U H | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U H | 0.39 | 1.0 |
| Methylene Chloride | 4.2 | H | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U H | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U H | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U H | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U H | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U H | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U H | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U H | 0.18 | 1.0 |
| 2-Butanone | 7.2 | H | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U H | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U H | 1.9 | 14 |
| Chloroform | 1.0 | U H | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U H | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U H | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U H | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U H | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U H | 11 | 50 |
| Benzene | 1.0 | U H | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U H | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U H | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U H | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U H | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U H | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U H | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U H | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U H | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U H | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U H | 0.74 | 5.0 |
| Toluene | 0.78 | J H | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U H | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U H | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U H | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U H | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U H | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1- ELUTRIATE(UNFILTERED)**

Lab Sample ID: 200-2986-1
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv12.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1512 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1512 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U H | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U H | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U H | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U H | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U H | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U H | 0.40 | 1.0 |
| o-Xylene | 1.0 | U H | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U H | 0.61 | 1.0 |
| Styrene | 1.0 | U H | 0.19 | 1.0 |
| Bromoform | 1.0 | U H | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U H | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U H | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U H | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U H | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U H | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U H | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U H | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U H | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U H | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U H | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U H | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U H | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U H | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U H | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U H | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U H | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U H | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U H | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U H | 0.21 | 1.0 |
| Naphthalene | 1.0 | U H | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U H | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 97 | | 80 - 115 |
| Toluene-d8 | 116 | X | 80 - 115 |
| Bromofluorobenzene | 113 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 116 | X | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMW 2-ELUTRIATE(UNFILTERED)**

Lab Sample ID: 200-2986-2
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv13.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1545 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1545 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U H | 0.38 | 1.0 |
| Chloromethane | 1.0 | U H | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U H | 0.34 | 1.0 |
| Bromomethane | 1.0 | U H | 0.29 | 1.0 |
| Chloroethane | 1.0 | U H | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U H | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U H | 0.23 | 1.0 |
| Freon TF | 1.0 | U H | 0.20 | 1.0 |
| Acetone | 56 | H | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U H | 0.18 | 1.0 |
| Carbon disulfide | 1.0 | U H | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U H | 0.39 | 1.0 |
| Methylene Chloride | 6.3 | H | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U H | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U H | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U H | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U H | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U H | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U H | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U H | 0.18 | 1.0 |
| 2-Butanone | 9.7 | H | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U H | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U H | 1.9 | 14 |
| Chloroform | 1.0 | U H | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U H | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U H | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U H | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U H | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U H | 11 | 50 |
| Benzene | 1.0 | U H | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U H | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U H | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U H | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U H | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U H | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U H | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U H | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U H | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U H | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U H | 0.74 | 5.0 |
| Toluene | 1.3 | H | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U H | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U H | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U H | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U H | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U H | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMW 2-ELUTRIATE(UNFILTERED)**

Lab Sample ID: 200-2986-2
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv13.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1545 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1545 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U H | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U H | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U H | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U H | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U H | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U H | 0.40 | 1.0 |
| o-Xylene | 1.0 | U H | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U H | 0.61 | 1.0 |
| Styrene | 1.0 | U H | 0.19 | 1.0 |
| Bromoform | 1.0 | U H | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U H | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U H | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U H | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U H | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U H | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U H | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U H | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U H | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U H | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U H | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U H | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U H | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U H | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U H | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U H | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U H | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U H | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U H | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U H | 0.21 | 1.0 |
| Naphthalene | 1.0 | U H | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U H | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | | 80 - 115 |
| Toluene-d8 | 105 | | 80 - 115 |
| Bromofluorobenzene | 103 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 106 | | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1-COARSE/SIEVED(UNFILTERED)**

Lab Sample ID: 200-2986-3
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv14.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1617 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1617 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U H | 0.38 | 1.0 |
| Chloromethane | 1.0 | U H | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U H | 0.34 | 1.0 |
| Bromomethane | 1.0 | U H | 0.29 | 1.0 |
| Chloroethane | 1.0 | U H | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U H | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U H | 0.23 | 1.0 |
| Freon TF | 1.0 | U H | 0.20 | 1.0 |
| Acetone | 170 | H | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U H | 0.18 | 1.0 |
| Carbon disulfide | 0.16 | J H B | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U H | 0.39 | 1.0 |
| Methylene Chloride | 6.0 | H | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U H | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U H | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U H | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U H | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U H | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U H | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U H | 0.18 | 1.0 |
| 2-Butanone | 7.5 | H | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U H | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U H | 1.9 | 14 |
| Chloroform | 1.0 | U H | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U H | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U H | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U H | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U H | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U H | 11 | 50 |
| Benzene | 1.0 | U H | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U H | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U H | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U H | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U H | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U H | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U H | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U H | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U H | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U H | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U H | 0.74 | 5.0 |
| Toluene | 0.69 | J H | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U H | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U H | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U H | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U H | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U H | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1-COARSE/SIEVED(UNFILTERED)**

Lab Sample ID: 200-2986-3
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv14.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1617 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1617 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U H | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U H | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U H | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U H | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U H | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U H | 0.40 | 1.0 |
| o-Xylene | 1.0 | U H | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U H | 0.61 | 1.0 |
| Styrene | 1.0 | U H | 0.19 | 1.0 |
| Bromoform | 1.0 | U H | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U H | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U H | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U H | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U H | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U H | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U H | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U H | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U H | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U H | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U H | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U H | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U H | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U H | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U H | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U H | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U H | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U H | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U H | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U H | 0.21 | 1.0 |
| Naphthalene | 1.0 | U H | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U H | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | | 80 - 115 |
| Toluene-d8 | 107 | | 80 - 115 |
| Bromofluorobenzene | 106 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 105 | | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **CLEVELAND SITE WATER(UNFILTERED)**

Lab Sample ID: 200-2986-4
Client Matrix: Water

Date Sampled: 12/07/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv15.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1649 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1649 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U | 0.38 | 1.0 |
| Chloromethane | 1.0 | U | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.34 | 1.0 |
| Bromomethane | 1.0 | U | 0.29 | 1.0 |
| Chloroethane | 1.0 | U | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.23 | 1.0 |
| Freon TF | 1.0 | U | 0.20 | 1.0 |
| Acetone | 2.9 | J | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U | 0.18 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U | 0.39 | 1.0 |
| Methylene Chloride | 0.64 | J | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.18 | 1.0 |
| 2-Butanone | 5.0 | U | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U | 1.9 | 14 |
| Chloroform | 1.0 | U | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U | 0.20 | 1.0 |
| Cyclohexane | 0.33 | J | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U | 11 | 50 |
| Benzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.74 | 5.0 |
| Toluene | 1.0 | U | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **CLEVELAND SITE WATER(UNFILTERED)**

Lab Sample ID: 200-2986-4
Client Matrix: Water

Date Sampled: 12/07/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv15.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1649 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1649 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U | 0.40 | 1.0 |
| o-Xylene | 1.0 | U | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U | 0.61 | 1.0 |
| Styrene | 1.0 | U | 0.19 | 1.0 |
| Bromoform | 1.0 | U | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U | 0.21 | 1.0 |
| Naphthalene | 1.0 | U | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | | 80 - 115 |
| Toluene-d8 | 104 | | 80 - 115 |
| Bromofluorobenzene | 102 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 105 | | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-5
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv16.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1721 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1721 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U | 0.38 | 1.0 |
| Chloromethane | 1.0 | U | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.34 | 1.0 |
| Bromomethane | 1.0 | U | 0.29 | 1.0 |
| Chloroethane | 1.0 | U | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.23 | 1.0 |
| Freon TF | 1.0 | U | 0.20 | 1.0 |
| Acetone | 81 | | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U | 0.18 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U | 0.39 | 1.0 |
| Methylene Chloride | 60 | | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.18 | 1.0 |
| 2-Butanone | 5.7 | | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U | 1.9 | 14 |
| Chloroform | 1.0 | U | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U | 11 | 50 |
| Benzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.74 | 5.0 |
| Toluene | 1.0 | U | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-5
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv16.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1721 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1721 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U | 0.40 | 1.0 |
| o-Xylene | 1.0 | U | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U | 0.61 | 1.0 |
| Styrene | 1.0 | U | 0.19 | 1.0 |
| Bromoform | 1.0 | U | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U | 0.21 | 1.0 |
| Naphthalene | 0.37 | J B | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | | 80 - 115 |
| Toluene-d8 | 108 | | 80 - 115 |
| Bromofluorobenzene | 104 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 108 | | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 2-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-6
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv17.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1753 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1753 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U | 0.38 | 1.0 |
| Chloromethane | 1.0 | U | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.34 | 1.0 |
| Bromomethane | 1.0 | U | 0.29 | 1.0 |
| Chloroethane | 1.0 | U | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.23 | 1.0 |
| Freon TF | 1.0 | U | 0.20 | 1.0 |
| Acetone | 54 | | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U | 0.18 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U | 0.39 | 1.0 |
| Methylene Chloride | 70 | | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.18 | 1.0 |
| 2-Butanone | 8.5 | | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U | 1.9 | 14 |
| Chloroform | 1.0 | U | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U | 11 | 50 |
| Benzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.74 | 5.0 |
| Toluene | 1.0 | U | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 2-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-6
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv17.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1753 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1753 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U | 0.40 | 1.0 |
| o-Xylene | 1.0 | U | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U | 0.61 | 1.0 |
| Styrene | 1.0 | U | 0.19 | 1.0 |
| Bromoform | 1.0 | U | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U | 0.21 | 1.0 |
| Naphthalene | 0.20 | J B | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | | 80 - 115 |
| Toluene-d8 | 108 | | 80 - 115 |
| Bromofluorobenzene | 104 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 109 | | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-7
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv18.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1825 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1825 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U | 0.38 | 1.0 |
| Chloromethane | 1.0 | U | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.34 | 1.0 |
| Bromomethane | 1.0 | U | 0.29 | 1.0 |
| Chloroethane | 1.0 | U | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.23 | 1.0 |
| Freon TF | 1.0 | U | 0.20 | 1.0 |
| Acetone | 160 | | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U | 0.18 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U | 0.39 | 1.0 |
| Methylene Chloride | 89 | | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.18 | 1.0 |
| 2-Butanone | 6.5 | | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U | 1.9 | 14 |
| Chloroform | 1.0 | U | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U | 11 | 50 |
| Benzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.74 | 5.0 |
| Toluene | 1.0 | U | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-7
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv18.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1825 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1825 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U | 0.40 | 1.0 |
| o-Xylene | 1.0 | U | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U | 0.61 | 1.0 |
| Styrene | 1.0 | U | 0.19 | 1.0 |
| Bromoform | 1.0 | U | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U | 0.21 | 1.0 |
| Naphthalene | 0.50 | J B | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | | 80 - 115 |
| Toluene-d8 | 103 | | 80 - 115 |
| Bromofluorobenzene | 101 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 105 | | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **CLEVELAND SITE WATER(FILTERED)**

Lab Sample ID: 200-2986-8
Client Matrix: Water

Date Sampled: 12/08/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv19.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1858 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1858 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U | 0.38 | 1.0 |
| Chloromethane | 1.0 | U | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.34 | 1.0 |
| Bromomethane | 1.0 | U | 0.29 | 1.0 |
| Chloroethane | 1.0 | U | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.23 | 1.0 |
| Freon TF | 1.0 | U | 0.20 | 1.0 |
| Acetone | 6.4 | | 1.7 | 5.0 |
| Methyl iodide | 1.0 | U | 0.18 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U | 0.39 | 1.0 |
| Methylene Chloride | 57 | | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.18 | 1.0 |
| 2-Butanone | 5.0 | U | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U | 1.9 | 14 |
| Chloroform | 1.0 | U | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U | 11 | 50 |
| Benzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.74 | 5.0 |
| Toluene | 1.0 | U | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U | 0.20 | 1.0 |
| 2-Hexanone | 5.0 | U | 0.82 | 5.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Client Sample ID:** **CLEVELAND SITE WATER(FILTERED)**

Lab Sample ID: 200-2986-8
Client Matrix: Water

Date Sampled: 12/08/2010 0000
Date Received: 12/15/2010 1020

**8260B Volatile Organic Compounds (GC/MS)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | lfmv19.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1858 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1858 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Dibromochloromethane | 1.0 | U | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U | 0.40 | 1.0 |
| o-Xylene | 1.0 | U | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U | 0.61 | 1.0 |
| Styrene | 1.0 | U | 0.19 | 1.0 |
| Bromoform | 1.0 | U | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U | 0.21 | 1.0 |
| Naphthalene | 1.0 | U | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 1.0 | U | 0.14 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | | 80 - 115 |
| Toluene-d8 | 105 | | 80 - 115 |
| Bromofluorobenzene | 104 | | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 108 | | 80 - 115 |

**General Chemistry**

**Client Sample ID:** **DMU 1- ELUTRIATE(UNFILTERED)**

Lab Sample ID: 200-2986-1
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 5.1 | J H | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Analysis Date: 12/20/2010 1815 | | | | | | |
| Prep Batch: 200-11398 | Prep Date: 12/20/2010 1540 | | | | | | |
| Ammonia | 0.095 | J H B | mg/L | 0.022 | 0.10 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 28.0 | H D | mg/L | 2.0 | 2.0 | 2.0 | 9060 |
| Run Type:DL Analysis Batch: 200-11415 | Analysis Date: 12/20/2010 2051 | | | | | | |

**General Chemistry**

**Client Sample ID:** **DMW 2-ELUTRIATE(UNFILTERED)**

Lab Sample ID: 200-2986-2
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 4.6 | J H | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Analysis Date: 12/20/2010 1816 | | | | | | |
| Prep Batch: 200-11398 | Prep Date: 12/20/2010 1540 | | | | | | |
| Ammonia | 0.079 | J H B | mg/L | 0.022 | 0.10 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 23.6 | H D | mg/L | 2.0 | 2.0 | 2.0 | 9060 |
| Run Type:DL Analysis Batch: 200-11415 | Analysis Date: 12/20/2010 2109 | | | | | | |

**General Chemistry**

**Client Sample ID:** **DMU 1-COARSE/SIEVED(UNFILTERED)**

Lab Sample ID: 200-2986-3
Client Matrix: Water

Date Sampled: 11/10/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 3.0 | J H | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Analysis Date: 12/20/2010 1817 | | | | | | |
| Prep Batch: 200-11398 | Prep Date: 12/20/2010 1540 | | | | | | |
| Ammonia | 4.9 | H D B | mg/L | 0.088 | 0.40 | 4.0 | SM 4500 NH3 |
| Run Type:DL Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 12.3 | H | mg/L | 1.0 | 1.0 | 1.0 | 9060 |
| Analysis Batch: 200-11400 | Analysis Date: 12/20/2010 1545 | | | | | | |

**General Chemistry**

**Client Sample ID:** **CLEVELAND SITE WATER(UNFILTERED)**

Lab Sample ID: 200-2986-4
Client Matrix: Water

Date Sampled: 12/07/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 10.0 | U | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11408 | Analysis Date: 12/20/2010 1818 | | | | | | |
| Prep Batch: 200-11398 | Prep Date: 12/20/2010 1540 | | | | | | |
| Ammonia | 0.13 | B | mg/L | 0.022 | 0.10 | 1.0 | SM 4500 NH3 |
| Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 2.5 | | mg/L | 1.0 | 1.0 | 1.0 | 9060 |
| Analysis Batch: 200-11400 | Analysis Date: 12/20/2010 1602 | | | | | | |

**General Chemistry**

**Client Sample ID:** **DMU 1-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-5
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total-Dissolved | 7.0 | J | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11446 | Analysis Date: 12/21/2010 1123 | | | | | | |
| Prep Batch: 200-11420 | Prep Date: 12/21/2010 0840 | | | | | | |
| Ammonia-Dissolved | 8.4 | B D | mg/L | 0.22 | 1.0 | 10 | SM 4500 NH3 |
| Run Type:DL Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 14.5 | | mg/L | 1.0 | 1.0 | 1.0 | 9060 |
| Analysis Batch: 200-11451 | Analysis Date: 12/21/2010 1202 | | | | | | |

**General Chemistry**

**Client Sample ID:** **DMU 2-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-6
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total-Dissolved | 5.6 | J | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11446 | Analysis Date: 12/21/2010 1124 | | | | | | |
| Prep Batch: 200-11420 | Prep Date: 12/21/2010 0840 | | | | | | |
| Ammonia-Dissolved | 11.7 | B D | mg/L | 0.22 | 1.0 | 10 | SM 4500 NH3 |
| Run Type:DL Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 12.7 | | mg/L | 1.0 | 1.0 | 1.0 | 9060 |
| Analysis Batch: 200-11451 | Analysis Date: 12/21/2010 1220 | | | | | | |

**General Chemistry**

**Client Sample ID:** **DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED)**

Lab Sample ID: 200-2986-7
Client Matrix: Water

Date Sampled: 12/13/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total-Dissolved | 4.0 | J | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11446 | Analysis Date: 12/21/2010 1125 | | | | | | |
| Prep Batch: 200-11420 | Prep Date: 12/21/2010 0840 | | | | | | |
| Ammonia-Dissolved | 2.0 | B D | mg/L | 0.022 | 0.10 | 1.0 | SM 4500 NH3 |
| Run Type:DL Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 7.9 | | mg/L | 1.0 | 1.0 | 1.0 | 9060 |
| Analysis Batch: 200-11451 | Analysis Date: 12/21/2010 1239 | | | | | | |

**General Chemistry**

**Client Sample ID:** **CLEVELAND SITE WATER(FILTERED)**

Lab Sample ID: 200-2986-8
Client Matrix: Water

Date Sampled: 12/08/2010 0000
Date Received: 12/15/2010 1020

| Analyte | Result | Qual | Units | MDL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Cyanide, Total-Dissolved | 10.0 | U | ug/L | 1.2 | 10.0 | 1.0 | 9012A |
| Analysis Batch: 200-11446 | Analysis Date: 12/21/2010 1126 | | | | | | |
| Prep Batch: 200-11420 | Prep Date: 12/21/2010 0840 | | | | | | |
| Ammonia-Dissolved | 0.21 | B | mg/L | 0.044 | 0.20 | 2.0 | SM 4500 NH3 |
| Analysis Batch: 200-11516 | Analysis Date: 12/21/2010 1820 | | | | | | |
| Prep Batch: 200-11477 | Prep Date: 12/21/2010 1330 | | | | | | |

| Analyte | Result | Qual | Units | RL | RL | Dil | Method |
|---|---|---|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 4.1 | | mg/L | 1.0 | 1.0 | 1.0 | 9060 |
| Analysis Batch: 200-11451 | Analysis Date: 12/21/2010 1258 | | | | | | |

# DATA REPORTING QUALIFIERS

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | B | Compound was found in the blank and sample. |
| | U | Indicates the analyte was analyzed for but not detected. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | H | Sample was prepped or analyzed beyond the specified holding time |
| | X | Surrogate is outside control limits |
| General Chemistry | | |
| | B | Compound was found in the blank and sample. |
| | U | Indicates the analyte was analyzed for but not detected. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | D | Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples. |
| | H | Sample was prepped or analyzed beyond the specified holding time |

# QUALITY CONTROL RESULTS

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:200-11441** | | | | | |
| LCS 200-11441/3 | Lab Control Sample | T | Water | 8260B | |
| MB 200-11441/5 | Method Blank | T | Water | 8260B | |
| 200-2986-1 | DMU 1- ELUTRIATE(UNFILTERED) | T | Water | 8260B | |
| 200-2986-2 | DMW 2-ELUTRIATE(UNFILTERED) | T | Water | 8260B | |
| 200-2986-3 | DMU 1-COARSE/SIEVED(UNFILTERED) | T | Water | 8260B | |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | T | Water | 8260B | |
| 200-2986-5 | DMU 1-ELUTRIATE(FILTERED) | D | Water | 8260B | |
| 200-2986-6 | DMU 2-ELUTRIATE(FILTERED) | D | Water | 8260B | |
| 200-2986-7 | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | D | Water | 8260B | |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | D | Water | 8260B | |

**Report Basis**
D = Dissolved
T = Total

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 200-11398** | | | | | |
| HLCS 200-11398/2-A | High Level Control Sample | T | Water | 9012A | |
| LCS 200-11398/5-A | Lab Control Sample | T | Water | 9012A | |
| LLCS 200-11398/1-A | Low Level Control Sample | T | Water | 9012A | |
| MB 200-11398/14-A | Method Blank | T | Water | 9012A | |
| 200-2986-1 | DMU 1- ELUTRIATE(UNFILTERED) | T | Water | 9012A | |
| 200-2986-2 | DMW 2-ELUTRIATE(UNFILTERED) | T | Water | 9012A | |
| 200-2986-3 | DMU 1-COARSE/SIEVED(UNFILTERED) | T | Water | 9012A | |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | T | Water | 9012A | |
| **Analysis Batch:200-11400** | | | | | |
| LCS 200-11400/1 | Lab Control Sample | T | Water | 9060 | |
| LCS 200-11400/7 | Lab Control Sample | T | Water | 9060 | |
| MB 200-11400/2 | Method Blank | T | Water | 9060 | |
| MB 200-11400/8 | Method Blank | T | Water | 9060 | |
| 200-2986-3 | DMU 1-COARSE/SIEVED(UNFILTERED) | T | Water | 9060 | |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | T | Water | 9060 | |
| **Analysis Batch:200-11408** | | | | | |
| HLCS 200-11398/2-A | High Level Control Sample | T | Water | 9012A | 200-11398 |
| LCS 200-11398/5-A | Lab Control Sample | T | Water | 9012A | 200-11398 |
| LLCS 200-11398/1-A | Low Level Control Sample | T | Water | 9012A | 200-11398 |
| MB 200-11398/14-A | Method Blank | T | Water | 9012A | 200-11398 |
| 200-2986-1 | DMU 1- ELUTRIATE(UNFILTERED) | T | Water | 9012A | 200-11398 |
| 200-2986-2 | DMW 2-ELUTRIATE(UNFILTERED) | T | Water | 9012A | 200-11398 |
| 200-2986-3 | DMU 1-COARSE/SIEVED(UNFILTERED) | T | Water | 9012A | 200-11398 |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | T | Water | 9012A | 200-11398 |
| **Analysis Batch:200-11415** | | | | | |
| LCS 200-11415/1 | Lab Control Sample | T | Water | 9060 | |
| LCS 200-11415/5 | Lab Control Sample | T | Water | 9060 | |
| MB 200-11415/2 | Method Blank | T | Water | 9060 | |
| MB 200-11415/6 | Method Blank | T | Water | 9060 | |
| 200-2986-1DL | DMU 1- ELUTRIATE(UNFILTERED) | T | Water | 9060 | |
| 200-2986-2DL | DMW 2-ELUTRIATE(UNFILTERED) | T | Water | 9060 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 200-11420** | | | | | |
| HLCS 200-11420/2-A | High Level Control Sample | T | Water | 9012A | |
| LCS 200-11420/4-A | Lab Control Sample | T | Water | 9012A | |
| LLCS 200-11420/1-A | Low Level Control Sample | T | Water | 9012A | |
| MB 200-11420/3-A | Method Blank | T | Water | 9012A | |
| PB 200-11386/1-B | Preparation / Extraction Blank | D | Water | 9012A | |
| 200-2986-5 | DMU 1-ELUTRIATE(FILTERED) | D | Water | 9012A | |
| 200-2986-6 | DMU 2-ELUTRIATE(FILTERED) | D | Water | 9012A | |
| 200-2986-7 | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | D | Water | 9012A | |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | D | Water | 9012A | |
| **Analysis Batch:200-11446** | | | | | |
| HLCS 200-11420/2-A | High Level Control Sample | T | Water | 9012A | 200-11420 |
| LCS 200-11420/4-A | Lab Control Sample | T | Water | 9012A | 200-11420 |
| LLCS 200-11420/1-A | Low Level Control Sample | T | Water | 9012A | 200-11420 |
| MB 200-11420/3-A | Method Blank | T | Water | 9012A | 200-11420 |
| PB 200-11386/1-B | Preparation / Extraction Blank | D | Water | 9012A | 200-11420 |
| 200-2986-5 | DMU 1-ELUTRIATE(FILTERED) | D | Water | 9012A | 200-11420 |
| 200-2986-6 | DMU 2-ELUTRIATE(FILTERED) | D | Water | 9012A | 200-11420 |
| 200-2986-7 | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | D | Water | 9012A | 200-11420 |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | D | Water | 9012A | 200-11420 |
| **Analysis Batch:200-11451** | | | | | |
| LCS 200-11451/1 | Lab Control Sample | D | Water | 9060 | |
| LCS 200-11451/8 | Lab Control Sample | D | Water | 9060 | |
| MB 200-11451/2 | Method Blank | D | Water | 9060 | |
| MB 200-11451/9 | Method Blank | D | Water | 9060 | |
| PB 200-11392/1-A | Preparation / Extraction Blank | D | Water | 9060 | |
| 200-2986-5 | DMU 1-ELUTRIATE(FILTERED) | D | Water | 9060 | |
| 200-2986-6 | DMU 2-ELUTRIATE(FILTERED) | D | Water | 9060 | |
| 200-2986-7 | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | D | Water | 9060 | |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | D | Water | 9060 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 200-11477** | | | | | |
| LCS 200-11477/3-A | Lab Control Sample | T | Water | SM 4500 NH3 B | |
| MB 200-11477/2-A | Method Blank | T | Water | SM 4500 NH3 B | |
| PB 200-11477/13-A | Preparation / Extraction Blank | T | Water | SM 4500 NH3 B | |
| 200-2986-1 | DMU 1- ELUTRIATE(UNFILTERED) | T | Water | SM 4500 NH3 B | |
| 200-2986-2 | DMW 2-ELUTRIATE(UNFILTERED) | T | Water | SM 4500 NH3 B | |
| 200-2986-3DL | DMU 1-COARSE/SIEVED(UNFILTERED) | T | Water | SM 4500 NH3 B | |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | T | Water | SM 4500 NH3 B | |
| 200-2986-5DL | DMU 1-ELUTRIATE(FILTERED) | D | Water | SM 4500 NH3 B | |
| 200-2986-6DL | DMU 2-ELUTRIATE(FILTERED) | D | Water | SM 4500 NH3 B | |
| 200-2986-7DL | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | D | Water | SM 4500 NH3 B | |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | D | Water | SM 4500 NH3 B | |
| **Analysis Batch:200-11516** | | | | | |
| LCS 200-11477/3-A | Lab Control Sample | T | Water | SM 4500 NH3 C | 200-11477 |
| MB 200-11477/2-A | Method Blank | T | Water | SM 4500 NH3 C | 200-11477 |
| PB 200-11477/13-A | Preparation / Extraction Blank | T | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-1 | DMU 1- ELUTRIATE(UNFILTERED) | T | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-2 | DMW 2-ELUTRIATE(UNFILTERED) | T | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-3DL | DMU 1-COARSE/SIEVED(UNFILTERED) | T | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | T | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-5DL | DMU 1-ELUTRIATE(FILTERED) | D | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-6DL | DMU 2-ELUTRIATE(FILTERED) | D | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-7DL | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | D | Water | SM 4500 NH3 C | 200-11477 |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | D | Water | SM 4500 NH3 C | 200-11477 |

**Report Basis**
D = Dissolved
T = Total

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCA %Rec | TOL %Rec | BFB %Rec | DCZ %Rec |
|---|---|---|---|---|---|
| 200-2986-1 | DMU 1-ELUTRIATE(UNFILTERED) | 97 | 116X | 113 | 116X |
| 200-2986-2 | DMW 2-ELUTRIATE(UNFILTERED) | 89 | 105 | 103 | 106 |
| 200-2986-3 | DMU 1-COARSE/SIEVED(UNFILTERED) | 90 | 107 | 106 | 105 |
| 200-2986-4 | CLEVELAND SITE WATER(UNFILTERED) | 89 | 104 | 102 | 105 |
| MB 200-11441/5 | | 87 | 107 | 102 | 105 |
| LCS 200-11441/3 | | 85 | 108 | 101 | 105 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 | 80-115 |
| TOL = Toluene-d8 | 80-115 |
| BFB = Bromofluorobenzene | 85-120 |
| DCZ = 1,2-Dichlorobenzene-d4 | 80-115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Water Dissolved**

| Lab Sample ID | Client Sample ID | DCA %Rec | TOL %Rec | BFB %Rec | DCZ %Rec |
|---|---|---|---|---|---|
| 200-2986-5 | DMU 1-ELUTRIATE(FILTERED) | 91 | 108 | 104 | 108 |
| 200-2986-6 | DMU 2-ELUTRIATE(FILTERED) | 91 | 108 | 104 | 109 |
| 200-2986-7 | DMU 1-COARSE/SIEVED-ELUTRIATE(FILTERED) | 89 | 103 | 101 | 105 |
| 200-2986-8 | CLEVELAND SITE WATER(FILTERED) | 91 | 105 | 104 | 108 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 | 80-115 |
| TOL = Toluene-d8 | 80-115 |
| BFB = Bromofluorobenzene | 85-120 |
| DCZ = 1,2-Dichlorobenzene-d4 | 80-115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11441**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11441/5 | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | lfmv05.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1109 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1109 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Dichlorodifluoromethane | 1.0 | U | 0.38 | 1.0 |
| Chloromethane | 1.0 | U | 0.28 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.34 | 1.0 |
| Bromomethane | 1.0 | U | 0.29 | 1.0 |
| Chloroethane | 1.0 | U | 0.39 | 1.0 |
| Trichlorofluoromethane | 1.0 | U | 0.36 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.23 | 1.0 |
| Freon TF | 1.0 | U | 0.20 | 1.0 |
| Acetone | 5.0 | U | 1.7 | 5.0 |
| Methyl iodide | 0.244 | J | 0.18 | 1.0 |
| Carbon disulfide | 0.152 | J | 0.13 | 1.0 |
| Methyl acetate | 1.0 | U | 0.39 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.25 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.14 | 1.0 |
| 1,2-Dichloroethene, Total | 1.0 | U | 0.31 | 1.0 |
| Methyl t-butyl ether | 1.0 | U | 0.21 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Vinyl acetate | 1.0 | U | 0.26 | 1.0 |
| 2,2-Dichloropropane | 1.0 | U | 0.23 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.18 | 1.0 |
| 2-Butanone | 5.0 | U | 1.0 | 5.0 |
| Bromochloromethane | 1.0 | U | 0.37 | 1.0 |
| Tetrahydrofuran | 14 | U | 1.9 | 14 |
| Chloroform | 1.0 | U | 0.20 | 1.0 |
| 1,1,1-Trichloroethane | 1.0 | U | 0.20 | 1.0 |
| Cyclohexane | 1.0 | U | 0.18 | 1.0 |
| 1,1-Dichloropropene | 1.0 | U | 0.16 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.20 | 1.0 |
| Isobutyl alcohol | 50 | U | 11 | 50 |
| Benzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.18 | 1.0 |
| Trichloroethene | 1.0 | U | 0.17 | 1.0 |
| Methylcyclohexane | 1.0 | U | 0.16 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.21 | 1.0 |
| Dibromomethane | 1.0 | U | 0.21 | 1.0 |
| 1,4-Dioxane | 50 | U | 9.5 | 50 |
| Bromodichloromethane | 1.0 | U | 0.20 | 1.0 |
| 2-Chloroethyl vinyl ether | 1.0 | U | 0.14 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.18 | 1.0 |
| 4-Methyl-2-pentanone | 5.0 | U | 0.74 | 5.0 |
| Toluene | 1.0 | U | 0.19 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.22 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.34 | 1.0 |
| 1,3-Dichloropropane | 1.0 | U | 0.20 | 1.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11441**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11441/5 | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | lfmv05.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1109 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1109 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 2-Hexanone | 5.0 | U | 0.82 | 5.0 |
| Dibromochloromethane | 1.0 | U | 0.27 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.21 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.18 | 1.0 |
| 1,1,1,2-Tetrachloroethane | 1.0 | U | 0.23 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.18 | 1.0 |
| m&p-Xylene | 1.0 | U | 0.40 | 1.0 |
| o-Xylene | 1.0 | U | 0.20 | 1.0 |
| Xylenes, Total | 1.0 | U | 0.61 | 1.0 |
| Styrene | 1.0 | U | 0.19 | 1.0 |
| Bromoform | 1.0 | U | 0.17 | 1.0 |
| Isopropylbenzene | 1.0 | U | 0.22 | 1.0 |
| Bromobenzene | 1.0 | U | 0.20 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.22 | 1.0 |
| 1,2,3-Trichloropropane | 1.0 | U | 0.24 | 1.0 |
| n-Propylbenzene | 1.0 | U | 0.22 | 1.0 |
| 2-Chlorotoluene | 1.0 | U | 0.23 | 1.0 |
| 4-Chlorotoluene | 1.0 | U | 0.25 | 1.0 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 0.22 | 1.0 |
| tert-Butylbenzene | 1.0 | U | 0.23 | 1.0 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 0.21 | 1.0 |
| sec-Butylbenzene | 1.0 | U | 0.22 | 1.0 |
| 1,3-Dichlorobenzene | 1.0 | U | 0.19 | 1.0 |
| 4-Isopropyltoluene | 1.0 | U | 0.19 | 1.0 |
| 1,4-Dichlorobenzene | 1.0 | U | 0.17 | 1.0 |
| 1,2-Dichlorobenzene | 1.0 | U | 0.23 | 1.0 |
| n-Butylbenzene | 1.0 | U | 0.19 | 1.0 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 0.33 | 1.0 |
| 1,2,4-Trichlorobenzene | 0.151 | J | 0.15 | 1.0 |
| Hexachlorobutadiene | 1.0 | U | 0.21 | 1.0 |
| Naphthalene | 0.243 | J | 0.15 | 1.0 |
| 1,2,3-Trichlorobenzene | 0.168 | J | 0.14 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | 80 - 115 |
| Toluene-d8 | 107 | 80 - 115 |
| Bromofluorobenzene | 102 | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 105 | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Lab Control Sample - Batch: 200-11441**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11441/3 | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | lfmv03.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1005 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1005 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Dichlorodifluoromethane | 25.0 | 19.3 | 77 | 35 - 190 | |
| Chloromethane | 25.0 | 23.5 | 94 | 65 - 145 | |
| Vinyl chloride | 25.0 | 25.0 | 100 | 85 - 120 | |
| Bromomethane | 25.0 | 22.1 | 88 | 55 - 150 | |
| Chloroethane | 25.0 | 23.8 | 95 | 80 - 125 | |
| Trichlorofluoromethane | 25.0 | 20.9 | 83 | 70 - 130 | |
| 1,1-Dichloroethene | 25.0 | 24.1 | 96 | 85 - 120 | |
| Freon TF | 25.0 | 25.3 | 101 | 85 - 120 | |
| Acetone | 125 | 108 | 86 | 55 - 135 | |
| Methyl iodide | 25.0 | 22.6 | 90 | 65 - 150 | |
| Carbon disulfide | 25.0 | 26.2 | 105 | 85 - 120 | |
| Methyl acetate | 25.0 | 28.2 | 113 | 60 - 140 | |
| Methylene Chloride | 25.0 | 28.3 | 113 | 85 - 120 | |
| trans-1,2-Dichloroethene | 25.0 | 25.3 | 101 | 85 - 120 | |
| Methyl t-butyl ether | 25.0 | 24.6 | 98 | 85 - 120 | |
| 1,1-Dichloroethane | 25.0 | 24.5 | 98 | 85 - 120 | |
| Vinyl acetate | 25.0 | 23.0 | 92 | 60 - 160 | |
| 2,2-Dichloropropane | 25.0 | 23.0 | 92 | 80 - 120 | |
| cis-1,2-Dichloroethene | 25.0 | 24.6 | 98 | 85 - 120 | |
| 2-Butanone | 125 | 122 | 98 | 75 - 130 | |
| Bromochloromethane | 25.0 | 24.8 | 99 | 85 - 120 | |
| Tetrahydrofuran | 350 | 360 | 103 | 80 - 125 | |
| Chloroform | 25.0 | 23.2 | 93 | 85 - 120 | |
| 1,1,1-Trichloroethane | 25.0 | 22.4 | 90 | 85 - 120 | |
| Cyclohexane | 25.0 | 25.2 | 101 | 60 - 140 | |
| 1,1-Dichloropropene | 25.0 | 24.7 | 99 | 80 - 120 | |
| Carbon tetrachloride | 25.0 | 22.0 | 88 | 80 - 120 | |
| Isobutyl alcohol | 1250 | 1300 | 104 | 55 - 145 | |
| Benzene | 25.0 | 26.4 | 106 | 85 - 120 | |
| 1,2-Dichloroethane | 25.0 | 21.6 | 86 | 80 - 115 | |
| Trichloroethene | 25.0 | 25.1 | 100 | 85 - 120 | |
| Methylcyclohexane | 25.0 | 26.1 | 104 | 60 - 140 | |
| 1,2-Dichloropropane | 25.0 | 25.9 | 103 | 85 - 120 | |
| Dibromomethane | 25.0 | 24.4 | 98 | 85 - 120 | |
| 1,4-Dioxane | 1250 | 1330 | 106 | 50 - 145 | |
| Bromodichloromethane | 25.0 | 23.6 | 94 | 85 - 120 | |
| 2-Chloroethyl vinyl ether | 25.0 | 23.6 | 94 | 85 - 120 | |
| cis-1,3-Dichloropropene | 25.0 | 24.9 | 100 | 85 - 120 | |
| 4-Methyl-2-pentanone | 125 | 129 | 103 | 80 - 120 | |
| Toluene | 25.0 | 27.0 | 108 | 85 - 120 | |
| trans-1,3-Dichloropropene | 25.0 | 24.1 | 96 | 85 - 120 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Lab Control Sample - Batch: 200-11441**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11441/3 | Analysis Batch: | 200-11441 | Instrument ID: | L.i |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | lfmv03.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 12/20/2010 1005 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 12/20/2010 1005 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | 25.0 | 27.3 | 109 | 85 - 120 | |
| Tetrachloroethene | 25.0 | 26.2 | 105 | 85 - 120 | |
| 1,3-Dichloropropane | 25.0 | 26.1 | 104 | 80 - 120 | |
| 2-Hexanone | 125 | 138 | 111 | 70 - 140 | |
| Dibromochloromethane | 25.0 | 25.5 | 102 | 85 - 120 | |
| 1,2-Dibromoethane | 25.0 | 25.8 | 103 | 85 - 120 | |
| Chlorobenzene | 25.0 | 26.5 | 106 | 85 - 120 | |
| 1,1,1,2-Tetrachloroethane | 25.0 | 25.3 | 101 | 85 - 120 | |
| Ethylbenzene | 25.0 | 26.3 | 105 | 85 - 120 | |
| m&p-Xylene | 50.0 | 53.9 | 108 | 85 - 120 | |
| o-Xylene | 25.0 | 27.0 | 108 | 85 - 120 | |
| Styrene | 25.0 | 26.1 | 104 | 85 - 120 | |
| Bromoform | 25.0 | 24.6 | 98 | 85 - 120 | |
| Isopropylbenzene | 25.0 | 26.2 | 105 | 55 - 120 | |
| Bromobenzene | 25.0 | 25.5 | 102 | 85 - 120 | |
| 1,1,2,2-Tetrachloroethane | 25.0 | 27.9 | 112 | 85 - 120 | |
| 1,2,3-Trichloropropane | 25.0 | 22.4 | 90 | 80 - 115 | |
| n-Propylbenzene | 25.0 | 26.4 | 106 | 85 - 120 | |
| 2-Chlorotoluene | 25.0 | 26.2 | 105 | 85 - 120 | |
| 4-Chlorotoluene | 25.0 | 27.0 | 108 | 85 - 120 | |
| 1,3,5-Trimethylbenzene | 25.0 | 25.8 | 103 | 85 - 120 | |
| tert-Butylbenzene | 25.0 | 26.0 | 104 | 85 - 120 | |
| 1,2,4-Trimethylbenzene | 25.0 | 26.3 | 105 | 85 - 120 | |
| sec-Butylbenzene | 25.0 | 27.0 | 108 | 85 - 120 | |
| 1,3-Dichlorobenzene | 25.0 | 26.5 | 106 | 85 - 120 | |
| 4-Isopropyltoluene | 25.0 | 25.6 | 102 | 85 - 120 | |
| 1,4-Dichlorobenzene | 25.0 | 26.6 | 106 | 85 - 120 | |
| 1,2-Dichlorobenzene | 25.0 | 26.7 | 107 | 85 - 120 | |
| n-Butylbenzene | 25.0 | 27.3 | 109 | 85 - 120 | |
| 1,2-Dibromo-3-Chloropropane | 25.0 | 23.7 | 95 | 85 - 120 | |
| 1,2,4-Trichlorobenzene | 25.0 | 26.0 | 104 | 85 - 120 | |
| Hexachlorobutadiene | 25.0 | 26.0 | 104 | 80 - 125 | |
| Naphthalene | 25.0 | 29.4 | 117 | 85 - 125 | |
| 1,2,3-Trichlorobenzene | 25.0 | 26.2 | 105 | 85 - 120 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 | 85 | 80 - 115 |
| Toluene-d8 | 108 | 80 - 115 |
| Bromofluorobenzene | 101 | 85 - 120 |
| 1,2-Dichlorobenzene-d4 | 105 | 80 - 115 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11398/14-A | Analysis Batch: | 200-11408 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11398 | Lab File ID: | OM_12-20-10_05-44-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/20/2010 1812 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/20/2010 1540 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Cyanide, Total | 10.0 | U | 1.2 | 10.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Low Level Control Sample - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LLCS 200-11398/1-A | Analysis Batch: | 200-11408 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11398 | Lab File ID: | OM_12-20-10_05-44-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/20/2010 1755 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/20/2010 1540 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 50.0 | 49.22 | 98 | 90 - 110 | |

**High Level Control Sample - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | HLCS 200-11398/2-A | Analysis Batch: | 200-11408 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11398 | Lab File ID: | OM_12-20-10_05-44-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/20/2010 1756 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/20/2010 1540 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 200 | 198.6 | 99 | 90 - 110 | |

**Lab Control Sample - Batch: 200-11398**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11398/5-A | Analysis Batch: | 200-11408 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11398 | Lab File ID: | OM_12-20-10_05-44-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/20/2010 1814 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/20/2010 1540 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total | 120 | 125.2 | 104 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11420**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11420/3-A | Analysis Batch: | 200-11446 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11420 | Lab File ID: | OM_12-21-10_11-05-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/21/2010 1120 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 0840 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Cyanide, Total-Dissolved | 10.0 | U | 1.2 | 10.0 |

**Preparation / Extraction Blank - Batch: 200-11420**

**Method: 9012A**
**Preparation: 9012A**
**Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | PB 200-11386/1-B | Analysis Batch: | 200-11446 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11420 | Lab File ID: | OM_12-21-10_11-05-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/21/2010 1127 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 0840 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Cyanide, Total-Dissolved | 10.0 | U | 1.2 | 10.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Low Level Control Sample - Batch: 200-11420**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LLCS 200-11420/1-A | Analysis Batch: | 200-11446 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11420 | Lab File ID: | OM_12-21-10_11-05-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/21/2010 1116 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 0840 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total-Dissolved | 50.0 | 48.57 | 97 | 90 - 110 | |

**High Level Control Sample - Batch: 200-11420**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | HLCS 200-11420/2-A | Analysis Batch: | 200-11446 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11420 | Lab File ID: | OM_12-21-10_11-05-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/21/2010 1117 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 0840 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total-Dissolved | 200 | 201.5 | 101 | 90 - 110 | |

**Lab Control Sample - Batch: 200-11420**

**Method: 9012A**
**Preparation: 9012A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11420/4-A | Analysis Batch: | 200-11446 | Instrument ID: | WCLachat |
| Client Matrix: | Water | Prep Batch: | 200-11420 | Lab File ID: | OM_12-21-10_11-05-3 |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/21/2010 1121 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 0840 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cyanide, Total-Dissolved | 120 | 124.8 | 104 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11400**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11400/2 | Analysis Batch: | 200-11400 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 1448 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Total Organic Carbon | 1.0 | U | 1.0 | 1.0 |

**Method Blank - Batch: 200-11400**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11400/8 | Analysis Batch: | 200-11400 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 1633 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Total Organic Carbon | 1.0 | U | 1.0 | 1.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Lab Control Sample - Batch: 200-11400**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11400/1 | Analysis Batch: | 200-11400 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 1435 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon | 10.0 | 9.25 | 92 | 85 - 115 | |

**Lab Control Sample - Batch: 200-11400**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11400/7 | Analysis Batch: | 200-11400 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 1619 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon | 10.0 | 9.32 | 93 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11415**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11415/2 | Analysis Batch: | 200-11415 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010B.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 2032 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Total Organic Carbon | 1.0 | U | 1.0 | 1.0 |

**Method Blank - Batch: 200-11415**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11415/6 | Analysis Batch: | 200-11415 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010B.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 2141 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Total Organic Carbon | 1.0 | U | 1.0 | 1.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Lab Control Sample - Batch: 200-11415**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11415/1 | Analysis Batch: | 200-11415 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010B.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 2016 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon | 10.0 | 10.10 | 101 | 85 - 115 | |

**Lab Control Sample - Batch: 200-11415**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11415/5 | Analysis Batch: | 200-11415 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122010B.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/20/2010 2126 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Total Organic Carbon | 10.0 | 9.96 | 100 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11451**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11451/2 | Analysis Batch: | 200-11451 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122110A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/21/2010 1125 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 1.0 | U | 1.0 | 1.0 |

**Preparation / Extraction Blank - Batch: 200-11451**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | PB 200-11392/1-A | Analysis Batch: | 200-11451 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122110A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/21/2010 1142 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 1.95 | | 1.0 | 1.0 |

**Method Blank - Batch: 200-11451**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11451/9 | Analysis Batch: | 200-11451 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122110A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/21/2010 1332 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 1.0 | U | 1.0 | 1.0 |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Lab Control Sample - Batch: 200-11451**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11451/1 | Analysis Batch: | 200-11451 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122110A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/21/2010 1109 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 10.0 | 11.49 | 115 | 85 - 115 | |

**Lab Control Sample - Batch: 200-11451**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11451/8 | Analysis Batch: | 200-11451 | Instrument ID: | WCCH4 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 122110A.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 6 mL |
| Analysis Date: | 12/21/2010 1316 | Units: | mg/L | Final Weight/Volume: | 6 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Dissolved Organic Carbon-Dissolved | 10.0 | 9.92 | 99 | 85 - 115 | |

Client: White Water Associates

Job Number: 200-2986-1
Sdg Number: 200-2986-1

**Method Blank - Batch: 200-11477**

**Method: SM 4500 NH3 C**
**Preparation: SM 4500 NH3 B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 200-11477/2-A | Analysis Batch: | 200-11516 | Instrument ID: | WCS2 |
| Client Matrix: | Water | Prep Batch: | 200-11477 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/21/2010 1820 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 1330 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Ammonia | 0.0487 | J | 0.022 | 0.10 |

**Preparation / Extraction Blank - Batch: 200-11477**

**Method: SM 4500 NH3 C**
**Preparation: SM 4500 NH3 B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | PB 200-11477/13-A | Analysis Batch: | 200-11516 | Instrument ID: | WCS2 |
| Client Matrix: | Water | Prep Batch: | 200-11477 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 12/21/2010 1820 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 1330 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Ammonia-Dissolved | 0.0795 | J | 0.022 | 0.10 |

**Lab Control Sample - Batch: 200-11477**

**Method: SM 4500 NH3 C**
**Preparation: SM 4500 NH3 B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 200-11477/3-A | Analysis Batch: | 200-11516 | Instrument ID: | WCS2 |
| Client Matrix: | Water | Prep Batch: | 200-11477 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 12/21/2010 1820 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 12/21/2010 1330 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Ammonia-Dissolved | 2.00 | 1.85 | 93 | 85 - 115 | |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

# ANALYTICAL REPORT

REVISED

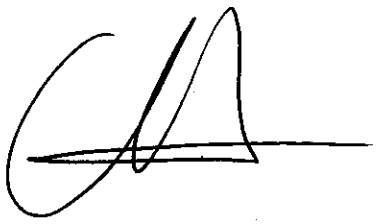
**White Water Assoicates**

**Lot #: C0L160453**

**Sara Goff**

**TestAmerica Burlington**
**30 Community Drive, Suite #11**
**South Burlington, VT 05403**

**TESTAMERICA LABORATORIES, INC.**



**Christina M. Kovitch**
Project Manager

**April 28, 2011**


## NELAC REPORTING:

At the time of analysis the laboratory was in compliance with the current NELAC standards and held accreditation for all analyses performed unless noted by a qualifier. The labs accreditation numbers are listed below. The format and contents of the report meets all applicable NELAC standards except as noted in the narrative and shall not be reproduced except in full, without the written approval of the laboratory. The table below presents a summary of the certifications held by TestAmerica Pittsburgh. Our primary accreditation authority for the Non-potable water and Solid & Hazardous waste programs is Pennsylvania DEP. A more detailed parameter list is available upon request. Please ask your project manager for this information when required.

| Certifying State/Program | Certificate # | Program Types | TestAmerica |
|---|---|---|---|
| DoD ELAP | ADE-1442 | WW<br>HW | X |
| US Dept of Agriculture | (#P330-10-00139) | Foreign Soil Import Permit | X |
| Arkansas | (#88-0690) | WW<br>HW | X<br>X |
| California – NELAC | 04224CA | WW<br>HW | X<br>X |
| Connecticut | (#PH-0688) | WW<br>HW | X<br>X |
| Florida – NELAC | (#E871008) | WW<br>HW | X<br>X |
| Illinois – NELAC | (#002602) | WW<br>HW | X<br>X |
| Kansas – NELAC | (#E-10350) | WW<br>HW | X<br>X |
| Louisiana – NELAC | (#04041) | WW<br>HW | X<br>X |
| New Hampshire – NELAC | (#203011) | WW<br>-- | X<br>-- |
| New Jersey – NELAC | (PA-005) | WW<br>HW | X<br>X |
| New York – NELAC | (#11182) | WW<br>HW | X<br>X |
| North Carolina | (#434) | WW<br>HW | X<br>X |
| Pennsylvania - NELAC | (#02-00416) | WW<br>HW | X<br>X |
| South Carolina | (#89014002) | WW<br>HW | X<br>X |
| Utah – NELAC | (STLP) | WW<br>HW | X<br>X |
| West Virginia | (#142) | WW<br>HW | X<br>X |
| Wisconsin | 998027800 | WW<br>HW | X<br>X |

The codes utilized for program types are described below:

HW Hazardous Waste certification
WW Non-potable Water and/or Wastewater certification
X Laboratory has some form of certification under the specific program. Many states certify laboratories for specific parameters or tests within a category. The information in the table indicates the lab is certified in a general category of testing. Please contact the laboratory if parameter specific certification information is required.

Updated: 05/19/10 N:\Reporting\NELAC NARRATIVE Pttsburgh_Updated 051910.doc

**CASE NARRATIVE**
**TestAmerica Burlington**

**LOT # C0L160453-RE**

**Sample Receiving:**
TestAmerica's Pittsburgh laboratory received samples on December 15, 2010. The cooler was received within the proper temperature range.

Report reissued per client request due to sample dates were incorrect on Chain of Custody and needed corrected and reissued.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

**General Chemistry:**
Several samples were diluted for turbidity.

The samples were received with the holding time expired.

[redacted]

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111204** TA Job No: 200-2986-1

**SENDING LABORATORY:**

ERDC- EL-EP-C (Environmental Chemistry Branch)
3909 Halls Ferry Road , Building 3299
Vicksburg, MS 39180
Phone: 601-634-4826
Fax: 601-634-2742
Project Manager: Patty Tuminello

**RECEIVING LABORATORY:**

White Water Associates
429 River Lane
Amasa, MI 49903
Phone :(906) 822-7889
Fax: -

TestAmerica
Burlington Lab
30 Community Drive
Suite 11
South Burlington, VT 05403
802-660-1990

**BPA Call No:** 19 (Millington) **BPA Call Date:** 12/7/10

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| Correction: 13Dec2010 | | | | |
| **ID: DMU 1 - Elutriate (filtered)** | **Water** | **Sampled:~~10-Nov-2010 00:00~~** | [redacted] | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | For the Cyanide, TOC, and Ammonia samples, these will need to be filtered 1st using 0.7 filter. Material in these samples have not been preserved. Please filter & then preserve. The Volatiles have been filtered and HCl was added. |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| Correction: 13Dec2010 | | | | |
| **ID: DMU 2 - Elutriate (filtered)** | **Water** | **Sampled:~~10-Nov-2010~~ 00:00** | [redacted] | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [redacted] | 12/13/10 | [redacted] | 12/13/10 1020 |
| Released By | Date | Received By | Date |

[redacted]

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111204**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| Correction! 13 Dec 2010 [redacted] | | | | |
| ID: DMU 1 Coarse/Sieved - Elutriate (fi Water Sampled: ~~10-Nov-2010~~ 00:00 | | | | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| Correction! 8 Dec 2010 [redacted] | | | | |
| ID: Cleveland Site Water (filtered) Water Sampled: ~~07-Nov-2010~~ 00:00 | | | | |
| Volatiles | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 05-Dec-2010 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 14-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 07-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 05-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 21-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |

Filter Cyanide, TOC, Ammonia

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 12/13/10 | [signature] | 12/15/10 1020 |
| Released By | Date | Received By | Date |

Thanks – Sara

**Sara Goff**
Project Manager
802.923.1027

---

**From:** Goff, Sara
**Sent:** Friday, April 15, 2011 2:45 PM
**To:** Kovitch, Chris
**Subject:** RE: c0l160453

Hi Chris,

I know you are extremely busy but I just wanted to check in find out when you thought this revision would be ready.

Thanks - Sara

**Sara Goff**
Project Manager
802.923.1027

---

**From:** Goff, Sara
**Sent:** Thursday, April 14, 2011 8:37 AM
**To:** Kovitch, Chris; Ruyechan, Roseann
**Subject:** RE: c0l160453

Hi Chris,
Can you please revise your section of this deliverable with new sample collection dates?

Thanks – Sara

**Sara Goff**
Project Manager
802.923.1027

---

**From:** Goff, Sara
**Sent:** Friday, January 07, 2011 10:00 AM
**To:** Ruyechan, Roseann
**Cc:** Kovitch, Chris
**Subject:** RE: c0l160453

Can you please forward a QDS "STLstandard" EDD for this work.

Thank you!

**Sara Goff**
Project Manager
802.923.1027

---

**From:** Ruyechan, Roseann
**Sent:** Wednesday, December 22, 2010 2:43 PM
**To:** Goff, Sara

# METHODS SUMMARY

**C0L160453**

| PARAMETER | ANALYTICAL METHOD | PREPARATION METHOD |
|---|---|---|
| Turbidity (Nephelometric) | MCAWW 180.1 | MCAWW 180.1 |

**References:**


MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

# SAMPLE SUMMARY

**C0L160453**

| WO # | SAMPLE# | CLIENT SAMPLE ID | SAMPLED DATE | SAMP TIME |
|---|---|---|---|---|
| MCFDX | 001 | DMU 1-ELUTRIATE(UNFILTERED) | 11/10/10 | |
| MCFD3 | 002 | DMU 2-ELUTRIATE(UNFILTERED) | 11/10/10 | |
| MCFD4 | 003 | DMU 1-COARSE/SIEVED(UNFILTERED)WATER | 11/10/10 | |
| MCFD5 | 004 | CLEVELAND SITE WATER(UNFILTERED)WATER | 11/10/10 | |
| MCFD6 | 005 | DMU 1-ELUTRIATE(FILTERED) | 12/13/10 | |
| MCFEF | 006 | DMU 2-ELUTRIATE(FILTERED) | 12/13/10 | |
| MCFEH | 007 | DMU 1 COARSE/SIEVED-ELUTRIATE(FILTERED)WATER | 12/13/10 | |
| MCFET | 008 | CLEVELAND SITE WATER(FILTERED) | 12/08/10 | |

**NOTE(S):**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

# GENERAL CHEMISTRY SUMMARY

**TestAmerica Burlington**

**Client Sample ID: DMU 1-ELUTRIATE(UNFILTERED)**

**General Chemistry**

**Lot-Sample #...:** C0L160453-001 **Work Order #...:** MCFDX **Matrix.....:** WATER
**Date Sampled...:** 11/10/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| **Turbidity** | **305** | **10.0** | **NTU** | **MCAWW 180.1** | **12/16/10** | **0350320** |

Dilution Factor: 10 Analysis Time..: 15:04 MS Run #.....: 0350207

**TestAmerica Burlington**

**Client Sample ID: DMU 2-ELUTRIATE(UNFILTERED)**

**General Chemistry**

**Lot-Sample #...:** C0L160453-002 **Work Order #...:** MCFD3 **Matrix.....:** WATER
**Date Sampled...:** 11/10/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| **Turbidity** | **532** | **25.0** | **NTU** | **MCAWW 180.1** | **12/16/10** | **0350320** |

Dilution Factor: 25 Analysis Time..: 15:06 MS Run #.....: 0350207

**TestAmerica Burlington**

**Client Sample ID: DMU 1-COARSE/SIEVED(UNFILTERED)WATER**

**General Chemistry**

**Lot-Sample #...:** C0L160453-003 **Work Order #...:** MCFD4 **Matrix.....:** WATER
**Date Sampled...:** 11/10/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| **Turbidity** | **261** | **10.0** | **NTU** | **MCAWW 180.1** | **12/16/10** | **0350320** |

Dilution Factor: 10 Analysis Time..: 15:07 MS Run #.....: 0350207

**TestAmerica Burlington**

**Client Sample ID: CLEVELAND SITE WATER(UNFILTERED)WATER**

**General Chemistry**

**Lot-Sample #...:** C0L160453-004 **Work Order #...:** MCFD5 **Matrix.....:** WATER
**Date Sampled...:** 11/10/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| **Turbidity** | **201** | **10.0** | **NTU** | **MCAWW 180.1** | **12/16/10** | **0350320** |
| | Dilution Factor: 10 | | | Analysis Time..: 15:08 | MS Run #.....: 0350207 | |

**TestAmerica Burlington**

**Client Sample ID: DMU 1-ELUTRIATE(FILTERED)**

**General Chemistry**

**Lot-Sample #...:** C0L160453-005 **Work Order #...:** MCFD6 **Matrix.....:** WATER
**Date Sampled...:** 12/13/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| Turbidity | ND | 1.0 | NTU | MCAWW 180.1 | 12/17/10 | 0351202 |
| | Dilution Factor: 1 | | | Analysis Time..: 12:24 | MS Run #.....: 0351121 | |

**TestAmerica Burlington**

**Client Sample ID: DMU 2-ELUTRIATE(FILTERED)**

**General Chemistry**

**Lot-Sample #...:** C0L160453-006 **Work Order #...:** MCFEF **Matrix.....:** WATER
**Date Sampled...:** 12/13/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| Turbidity | ND | 1.0 | NTU | MCAWW 180.1 | 12/17/10 | 0351202 |

Dilution Factor: 1 Analysis Time..: 12:26 MS Run #.....: 0351121

**TestAmerica Burlington**

**Client Sample ID: DMU 1 COARSE/SIEVED-ELUTRIATE(FILTERED)WATER**

**General Chemistry**

**Lot-Sample #...:** C0L160453-007 **Work Order #...:** MCFEH **Matrix.....:** WATER
**Date Sampled...:** 12/13/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| Turbidity | ND | 1.0 | NTU | MCAWW 180.1 | 12/17/10 | 0351202 |

Dilution Factor: 1 Analysis Time..: 12:27 MS Run #.....: 0351121

**TestAmerica Burlington**

**Client Sample ID: CLEVELAND SITE WATER(FILTERED)**

**General Chemistry**

**Lot-Sample #...:** C0L160453-008 **Work Order #...:** MCFET **Matrix.....:** WATER
**Date Sampled...:** 12/08/10 **Date Received..:** 12/16/10

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| Turbidity | ND | 1.0 | NTU | MCAWW 180.1 | 12/17/10 | 0351202 |

Dilution Factor: 1 Analysis Time..: 12:28 MS Run #.....: 0351121

## METHOD BLANK REPORT

### General Chemistry

**Client Lot #...:** C0L160453 **Matrix.....:** WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|
| Turbidity | | Work Order #: MCFQR1AA | | MB Lot-Sample #: | C0L160000-320 | |
| | ND | 1.0 | NTU | MCAWW 180.1 | 12/16/10 | 0350320 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 15:03 | | | | |
| Turbidity | | Work Order #: MCG1D1AA | | MB Lot-Sample #: | C0L170000-202 | |
| | ND | 1.0 | NTU | MCAWW 180.1 | 12/17/10 | 0351202 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 12:23 | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** C0L160453 **Matrix.....:** WATER

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|
| Turbidity | | Work Order #: MCFQR1AC | LCS Lot-Sample#: C0L160000-320 | | |
| | 99 | (85 - 115) | MCAWW 180.1 | 12/16/10 | 0350320 |
| | | Dilution Factor: 1 | Analysis Time..: 15:02 | | |
| Turbidity | | Work Order #: MCG1D1AC | LCS Lot-Sample#: C0L170000-202 | | |
| | 102 | (85 - 115) | MCAWW 180.1 | 12/17/10 | 0351202 |
| | | Dilution Factor: 1 | Analysis Time..: 12:22 | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** C0L160453 **Work Order #...:** MCFDX-SMP MCFDX-DUP **Matrix.....:** WATER

**Date Sampled...:** 11/10/10 **Date Received..:** 12/16/10

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Turbidity | | | | | | SD Lot-Sample #: | C0L160453-001 | |
| | 305 | 302 | NTU | 0.99 | (0-20) | MCAWW 180.1 | 12/16/10 | 0350320 |

Dilution Factor: 10 Analysis Time..: 15:04 MS Run Number..: 0350207

## SAMPLE DUPLICATE EVALUATION REPORT

### General Chemistry

**Client Lot #...:** C0L160453 **Work Order #...:** MCFD6-SMP MCFD6-DUP **Matrix.....:** WATER

**Date Sampled...:** 11/10/10 **Date Received..:** 12/16/10

| PARAM | RESULT | DUPLICATE RESULT | UNITS | RPD | RPD LIMIT | METHOD | PREPARATION-ANALYSIS DATE | PREP BATCH # |
|---|---|---|---|---|---|---|---|---|
| Turbidity | | | | | | SD Lot-Sample #: C0L160453-005 | | |
| | ND | 0.25 B | NTU | 3.9 | (0-20) | MCAWW 180.1 | 12/17/10 | 0351202 |

Dilution Factor: 1 Analysis Time..: 12:24 MS Run Number..: 0351121

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

FROM: U.S. ARMY ERDC CE-WES-LM-MS (601) 634-4826
U.S. ARMY ERDC CE-WES-LM-MS
3909 Halls Ferry Road
PATTY TUMINELLO
Vicksburg, MS 39180

FedEx Revenue Barcode

FedEx Express

TO: **TEST AMERICA (802) 660-1990**

**BURLINGTON LAB**
**30 COMMUNITY DRIVE SUITE 11**
**SOUTH BURLINGTON, VT 05403**

CAD: 2207818
SHIP DATE: 14DEC10
WEIGHT: 50.0 LB

DIMMED: 24 X 14 X 15 IN

Ref: 00820280W81EWFJS

RELEASE#

DELIVERY ADDRESS (FedEx-EDR)

**PRIORITY OVERNIGHT**

**WED**
AA
Deliver by:
**15DEC10**

TRK # 7942 1736 8752

FORM
0201

**BTV**

**05403** -VT-US

**XH BTVA**

J-1030101004

COPY - ORIGINAL ON FILE
SDG # ——— ETR # 2000-2983

FROM: U.S. ARMY ERDC CE-WES-LM-MS (601) 634-4826
U.S. ARMY ERDC CE-WES-LM-MS
3909 Halls Ferry Road
PATTY TUMINELLO
Vicksburg, MS 39180

FedEx Revenue Barcode

FedEx Express

TO: **TEST AMERICA (802) 660-1990**

**BURLINGTON LAB**
**30 COMMUNITY DRIVE SUITE 11**
**SOUTH BURLINGTON, VT 05403**

CAD: 2207818
SHIP DATE: 14DEC10
WEIGHT: 50.0 LB

DIMMED: 24 X 14 X 15 IN

Ref: 00820280W81EWFKQ

RELEASE#

DELIVERY ADDRESS (FedEx-EDR)

**PRIORITY OVERNIGHT**

**WED**
AA
Deliver by:
**15DEC10**

TRK # **7965 5206 6857**

FORM
0201

**BTV**

**05403** -VT-US

**XH BTVA**

J-1030101004

ORIGINAL ON FILE
SAC # 2 ETR # 2006-2983
WM 12/16/16

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111203**

**SENDING LABORATORY:**

ERDC- EL-EP-C (Environmental Chemistry Branch)
3909 Halls Ferry Road , Building 3299
Vicksburg, MS 39180
Phone: 601-634-4826
Fax: 601-634-2742
Project Manager: Patty Tuminello

**RECEIVING LABORATORY:**

White Water Associates
429 River Lane
Amasa, MI 49903
Phone :(906) 822-7889
Fax: -

TestAmerica
Burlington Lab
30 Community Drive
Suite 11
South Burlington, VT 05403
802-660-1990

**BPA Call No:** 19 (Millington) **BPA Call Date:** 12/7/10

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: DMU 1 - Elutriate (Unfiltered)** **Water** **Sampled:10-Nov-2010 00:00** | | | [redacted] | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | * Do not Filter these Samples |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| **ID: DMU 2 - Elutriate (Unfiltered)** **Water** **Sampled:10-Nov-2010 00:00** | | | [redacted] | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | * Material has been preserved |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111203**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: DMU 1 - Coarse/Sieved (Unfiltered)Water** | **Sampled:10-Nov-2010 00:00** | | | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| **ID: Cleveland Site Water (Unfiltered)Water** | **Sampled:07-Dec-2010 00:00** | | | |
| Volatiles | 30-Nov-2010 00:00 | 06-Jan-2011 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 04-Jan-2011 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 14-Dec-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 06-Jan-2011 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 04-Jan-2011 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 21-Dec-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 06-Jan-2011 00:00 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/15/10 1020 |
| Released By | Date | Received By | Date |
| | | | |

[redacted]

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111204**

**SENDING LABORATORY:**

ERDC- EL-EP-C (Environmental Chemistry Branch)
3909 Halls Ferry Road , Building 3299
Vicksburg, MS 39180
Phone: 601-634-4826
Fax: 601-634-2742
Project Manager: Patty Tuminello

**RECEIVING LABORATORY:**

White Water Associates
429 River Lane
Amasa, MI 49903
Phone :(906) 822-7889
Fax: -

TestAmerica
Burlington Lab
30 Community Drive
Suite 11
South Burlington, VT 05403
802-660-1990

**BPA Call No:** 19 (Millington) **BPA Call Date:** 12/7/10

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: DMU 1 - Elutriate (filtered)** | **Water** | **Sampled:10-Nov-2010 00:00** | [redacted] | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | For the Cyanide, TOC, and Ammonia samples, these will need to be filtered 1st using 0.7 filter. The material in these samples have not been preserved. Please filter & then preserve. The Volatiles have been filtered and HCl was added. |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| **ID: DMU 2 - Elutriate (filtered)** | **Water** | **Sampled:10-Nov-2010 00:00** | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| | 12/13/10 | | 12/13/10 1020 |
| Released By | Date | Received By | Date |
| | | | |

[redacted]

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111204**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: DMU 1 Coarse/Sieved - Elutriate (fiWater** | **Sampled:10-Nov-2010 00:00** | | [redacted] | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| **ID: Cleveland Site Water (filtered)** | **Water** | **Sampled:07-Nov-2010 00:00** | [redacted] | |
| Volatiles | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 05-Dec-2010 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 14-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 07-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 05-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 21-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |

Filter
Cyanide, TOC, Ammonia

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 12/13/10 | [signature] | 12/15/10 1020 |
| | | | |
| Released By | Date | Received By | Date |

[redacted]

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111204** TA Job No: 200-2986-1

**SENDING LABORATORY:**

ERDC- EL-EP-C (Environmental Chemistry Branch)
3909 Halls Ferry Road , Building 3299
Vicksburg, MS 39180
Phone: 601-634-4826
Fax: 601-634-2742
Project Manager: Patty Tuminello

**RECEIVING LABORATORY:**

White Water Associates
429 River Lane
Amasa, MI 49903
Phone :(906) 822-7889
Fax: -

TestAmerica
Burlington Lab
30 Community Drive
Suite 11
South Burlington, VT 05403
802-660-1990

**BPA Call No:** 19 (Millington) **BPA Call Date:** 12/7/10

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **ID: DMU 1 - Elutriate (filtered)** | Correction: 13Dec2010 Water | Sampled: ~~10-Nov-2010 00:00~~ | [redacted] | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | For the Cyanide, TOC, and Ammonia samples, these will need to be filtered 1st using 0.7 filter. The material in these samples have not been preserved. Please filter & then preserve. The Volatiles have been filtered and HCl was added. |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| **ID: DMU 2 - Elutriate (filtered)** | Correction: 13Dec2010 Water | Sampled: ~~10-Nov-2010~~ 00:00 | [redacted] | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 12/13/10 | [signature] | 12/13/10 1020 |
| Released By | Date | Received By | Date |

[redacted]

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**0111204**

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| | Correction! 13 Dec 2010 | | | |
| **ID: DMU 1 Coarse/Sieved - Elutriate (fi Water** | **Sampled: ~~10-Nov-2010~~ 00:00** | | [redacted] | |
| [redacted] | 06-Jan-2011 00:00 | 17-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 10-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 24-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Volatiles | 30-Nov-2010 00:00 | 10-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 08-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |
| | Correction! 8 Dec 2010 | | | |
| **ID: Cleveland Site Water (filtered)** | **Water Sampled: ~~07-Nov-2010~~ 00:00** | | [redacted] | |
| Volatiles | 30-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| Ammonia | 30-Nov-2010 00:00 | 05-Dec-2010 00:00 | | |
| [redacted] | 06-Jan-2011 00:00 | 14-Nov-2010 00:00 | | |
| Cyanide | 06-Jan-2011 00:00 | 07-Dec-2010 00:00 | | |
| [redacted] | 30-Nov-2010 00:00 | 05-Dec-2010 00:00 | | |
| TOC | 06-Jan-2011 00:00 | 21-Nov-2010 00:00 | | |
| [redacted] | 15-Nov-2010 00:00 | 07-Dec-2010 00:00 | | |
| *Containers Supplied:* | | | | |

Filter
Cyanide, TOC, Ammonia

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 12/13/10 | [signature] | 12/15/10 1020 |
| Released By | Date | Received By | Date |

# Login Sample Receipt Checklist

Client: White Water Associates

Job Number: 200-2986-1
SDG Number: 200-2986-1

**Login Number: 2986**
**List Number: 1**
**Creator: Keeton, Jamie**

**List Source: TestAmerica Burlington**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 2.3, 4.7ºC IR gun ID 96, CF= -1 |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | N/A | |
| There are no discrepancies between the sample IDs on the containers and the COC. | False | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | N/A | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

25 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (filtered) | 0111204-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (filtered) | 0111204-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 Coarse/Sieved - Elutriate (filtered) | 0111204-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water (filtered) | 0111204-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 1 - Elutriate (filtered)

**0111204-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **373** | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **422** | 4.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |
| Total Suspended Solids | ND | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 2 - Elutriate (filtered)

**0111204-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **440** | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **474** | 4.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |
| Total Suspended Solids | ND | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## DMU 1 Coarse/Sieved - Elutriate (filtered)

**0111204-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **191** | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **212** | 4.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |
| Total Suspended Solids | ND | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Cleveland Site Water (filtered)

**0111204-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **172** | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **184** | 4.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |
| Total Suspended Solids | ND | 5.00 | mg/L | 1 | 24-Jan-2011 | 24-Jan-2011 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Miscellaneous Physical/Conventional Chemistry Parameters - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101044 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B101044-BLK1)** | | | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Solids | ND | 4.00 | mg/L | | | | | | | |
| **Duplicate (B101044-DUP1)** | | **Source: 0111204-03** | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Solids | 216 | 4.00 | mg/L | | 212 | | | 1.87 | 30 | |
| **Batch B101045 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B101045-BLK1)** | | | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | | | | | | |
| **Blank (B101045-BLK2)** | | | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | | | | | | |
| **Blank (B101045-BLK3)** | | | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | | | | | | |
| **Duplicate (B101045-DUP1)** | | **Source: 1011802-01** | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Suspended Solids | 47.0 | 5.00 | mg/L | | 49.0 | | | 4.17 | 20 | |
| **Duplicate (B101045-DUP2)** | | **Source: 1011802-09** | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Suspended Solids | 89.6 | 6.49 | mg/L | | 84.4 | | | 5.98 | 20 | |
| **Duplicate (B101045-DUP3)** | | **Source: 0111204-03** | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | ND | | | | 20 | |
| **Batch B101046 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B101046-BLK1)** | | | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Dissolved Solids | ND | 5.00 | mg/L | | | | | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Miscellaneous Physical/Conventional Chemistry Parameters - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101046 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B101046-BLK2)** | | | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Dissolved Solids | ND | 5.00 | mg/L | | | | | | | |
| **Blank (B101046-BLK3)** | | | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Dissolved Solids | ND | 5.00 | mg/L | | | | | | | |
| **Duplicate (B101046-DUP1)** | | **Source: 1011802-01** | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Dissolved Solids | 222 | 5.00 | mg/L | | 221 | | | 0.451 | 20 | |
| **Duplicate (B101046-DUP2)** | | **Source: 1011802-09** | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Dissolved Solids | 219 | 6.49 | mg/L | | 212 | | | 3.25 | 20 | |
| **Duplicate (B101046-DUP3)** | | **Source: 0111204-03** | | Prepared & Analyzed: 24-Jan-2011 | | | | | | |
| Total Dissolved Solids | 196 | 5.00 | mg/L | | 191 | | | 2.58 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 25-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

12 January 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 12-Nov-2010. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMU 1 - Elutriate (Unfiltered) | 0111203-01 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 2 - Elutriate (Unfiltered) | 0111203-02 | Water | 10-Nov-2010 | 12-Nov-2010 |
| DMU 1 - Coarse/Sieved (Unfiltered) | 0111203-03 | Water | 10-Nov-2010 | 12-Nov-2010 |
| Cleveland Site Water | 0111203-04 | Water | 07-Dec-2010 | 12-Nov-2010 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 - Elutriate (Unfiltered)

**0111203-01 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **229** | 5.00 | mg/L | 1 | 04-Jan-2011 | 04-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **424** | 4.00 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |
| **Total Suspended Solids** | **195** | 12.5 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 2 - Elutriate (Unfiltered)

**0111203-02 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **527** | 5.00 | mg/L | 1 | 04-Jan-2011 | 04-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **698** | 4.00 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |
| **Total Suspended Solids** | **171** | 12.2 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## DMU 1 - Coarse/Sieved (Unfiltered)

**0111203-03 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **396** | 5.00 | mg/L | 1 | 04-Jan-2011 | 04-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **540** | 4.00 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |
| **Total Suspended Solids** | **144** | 9.09 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Cleveland Site Water

**0111203-04 (Water)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Miscellaneous Physical/Conventional Chemistry Parameters** | | | | | | | | |
| **Total Dissolved Solids** | **80.0** | 5.00 | mg/L | 1 | 04-Jan-2011 | 04-Jan-2011 | EPA 160.1 | |
| **Total Solids** | **258** | 4.00 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |
| **Total Suspended Solids** | **178** | 10.0 | mg/L | 1 | 29-Dec-2010 | 29-Dec-2010 | EPA 160.2 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Miscellaneous Physical/Conventional Chemistry Parameters - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012039 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B012039-BLK1)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | ND | 4.00 | mg/L | | | | | | | |
| **Blank (B012039-BLK2)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | ND | 4.00 | mg/L | | | | | | | |
| **Blank (B012039-BLK3)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | ND | 4.00 | mg/L | | | | | | | |
| **Blank (B012039-BLK4)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | ND | 4.00 | mg/L | | | | | | | |
| **Duplicate (B012039-DUP1)** | | **Source: 0102201-03** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | 230 | 4.00 | mg/L | | 232 | | | 0.866 | 30 | |
| **Duplicate (B012039-DUP2)** | | **Source: 0102201-11** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | 236 | 4.00 | mg/L | | 230 | | | 2.58 | 30 | |
| **Duplicate (B012039-DUP3)** | | **Source: 0102201-23** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | 248 | 4.00 | mg/L | | 252 | | | 1.60 | 30 | |
| **Duplicate (B012039-DUP4)** | | **Source: 0111203-02** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Solids | 824 | 6.90 | mg/L | | 698 | | | 16.6 | 30 | |
| **Batch B012044 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B012044-BLK1)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | | | | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Miscellaneous Physical/Conventional Chemistry Parameters - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B012044 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B012044-BLK2)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | | | | | | |
| **Blank (B012044-BLK3)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | | | | | | |
| **Blank (B012044-BLK4)** | | | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | ND | 5.00 | mg/L | | | | | | | |
| **Duplicate (B012044-DUP1)** | | **Source: 0102201-03** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | 13.0 | 5.00 | mg/L | | 14.0 | | | 7.41 | 20 | |
| **Duplicate (B012044-DUP2)** | | **Source: 0102201-11** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | 16.0 | 5.00 | mg/L | | 15.0 | | | 6.45 | 20 | |
| **Duplicate (B012044-DUP3)** | | **Source: 0102201-23** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | 6.00 | 5.00 | mg/L | | 9.00 | | | 40.0 | 20 | |
| **Duplicate (B012044-DUP4)** | | **Source: 0111203-02** | | Prepared & Analyzed: 29-Dec-2010 | | | | | | |
| Total Suspended Solids | 198 | 11.9 | mg/L | | 171 | | | 14.6 | 20 | |
| **Batch B101003 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B101003-BLK1)** | | | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | ND | 5.00 | mg/L | | | | | | | |
| **Blank (B101003-BLK2)** | | | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | ND | 5.00 | mg/L | | | | | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Miscellaneous Physical/Conventional Chemistry Parameters - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101003 - TS/TSS/TDS Prep** | | | | | | | | | | |
| **Blank (B101003-BLK3)** | | | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | ND | 5.00 | mg/L | | | | | | | |
| **Blank (B101003-BLK4)** | | | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | ND | 5.00 | mg/L | | | | | | | |
| **Duplicate (B101003-DUP1)** | | **Source: 0102201-03** | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | 217 | 5.00 | mg/L | | 218 | | | 0.460 | 20 | |
| **Duplicate (B101003-DUP2)** | | **Source: 0102201-11** | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | 220 | 5.00 | mg/L | | 215 | | | 2.30 | 20 | |
| **Duplicate (B101003-DUP3)** | | **Source: 0102201-23** | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | 242 | 5.00 | mg/L | | 243 | | | 0.412 | 20 | |
| **Duplicate (B101003-DUP4)** | | **Source: 0111203-02** | | Prepared & Analyzed: 04-Jan-2011 | | | | | | |
| Total Dissolved Solids | 626 | 5.00 | mg/L | | 527 | | | 17.2 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 12-Jan-2011 |

## Notes and Definitions

| | |
|---|---|
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

# Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|
| | | | Default Report (not modified) |
| | | | VERSION 5.85:2898 |
| | Total Solids | (Water) | Result calculations based on MDL |
| | Total Suspended Solids | (Water) | Result calculations based on MDL |
| 0111203-01 | Total Dissolved Solids | | Sampled->Analyzed > 14.00 days |
| 0111203-01 | Total Solids | | Sampled->Analyzed > 7.00 days |
| 0111203-01 | Total Suspended Solids | | Sampled->Analyzed > 7.00 days |
| 0111203-02 | Total Dissolved Solids | | Sampled->Analyzed > 14.00 days |
| 0111203-02 | Total Solids | | Sampled->Analyzed > 7.00 days |
| 0111203-02 | Total Suspended Solids | | Sampled->Analyzed > 7.00 days |
| 0111203-03 | Total Dissolved Solids | | Sampled->Analyzed > 14.00 days |
| 0111203-03 | Total Solids | | Sampled->Analyzed > 7.00 days |
| 0111203-03 | Total Suspended Solids | | Sampled->Analyzed > 7.00 days |
| 0111203-04 | Total Dissolved Solids | | Sampled->Analyzed > 14.00 days |
| 0111203-04 | Total Solids | | Sampled->Analyzed > 7.00 days |
| 0111203-04 | Total Suspended Solids | | Sampled->Analyzed > 7.00 days |
| B012044-DUP3 | Total Suspended Solids | Total Suspended Solids | Exceeds RPD control limit |

U.S. ARMY CORPS OF ENGINEERS

## CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | NO. OF CONTAINERS | ELUTRIATE WATER | REMARKS |
|---|---|---|---|---|
| | CLEVELAND BU | | | |

SAMPLERS: *(Signature)*

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | ELUTRIATE WATER | REMARKS |
|---|---|---|---|---|---|---|---|---|
| PB | 11/9/10 | 0940 | | X | | 2 | X | |

| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
|---|---|---|---|---|---|
| | 11/10/10 1600 | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* | Relinquished by: *(Signature)* | Date / Time | Received by: *(Signature)* |
| | | | | | |
| Relinquished by: *(Signature)* | Date / Time | Received for Laboratory by: *(Signature)* | Date / Time | Remarks | |
| | | | 11/12/10 | | |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

13273

# Chain of Custody Record

US Army Corps of Engineers
Buffalo District

Page 1 of 1

COC No.:

Date: 12/7/10

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-
Project Manager: CLEVELAND BU
Project Name:
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)

| Field Sample # | Container Type | # Jars | Date | Time | Matrix |
|---|---|---|---|---|---|
| DB | 10L CUBE | 2 | 12/7/10 | 1270 | WATER |

Requested Parameters

| Metals | PAHs | Pesticides/PCBs | TOC | Dioxin/Furan | Mirex | Elutriate | Elutraite Water | Particle Size | *Hyalella azteca* | *Chironomus tentans* | *Lumbriculus variegatus* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | X | | | | | | | |

Laboratory Name:
Address: ERDC
Phone:
Contact:

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS

Relinquished by: [signature] — Date: 12/7/10 — Time: 1500
Printed Name: JAY MILLER
Company: USACE

Received by — Date — Time
Signature
Printed Name
Company

Relinquished by — Date — Time
Signature
Printed Name
Company

Received by: [signature]
Printed Name: Patricia Tumeo
Company: ERDC
Date: ~~12/12/2010~~ 12/8/10
Time

Subtotal Number of Containers:

**Preservatives for above requested parameters:**
A. ICE
B.
C.
D.

**Methods for above requested parameters:**

Shipment Method:
Airbill No.:

**USACE Location**

US Army Corps of Engineers
Buffalo District

# Chain of Custody Record

COC No.:

Page 1 of 1 Date: 12/7/10

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-
Project Manager: CLEVELAND BU
Project Name:
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)

Laboratory Name:
Address: ERDC
Phone:
Contact:

| Field Sample # | Container Type | # Jars | Date | Time | Matrix | Metals | PAHs | Pesticides/PCBs | TOC | Dioxin/Furan | Mirex | Elutriate | Elutraite Water | Particle Size | *Hyalella azteca* | *Chironomus tentans* | *Lumbriculus variegatus* | | | | OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PB | 10L CUBE | 2 | 12/7/10 | 1230 | WATER | | | | | | | | X | | | | | | | | |
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Requested Parameters

Relinquished by: JAY MILLOR
Signature
Printed Name: USACE
Company
Date: 12/7/10
Time: 1500

Received by
Signature
Printed Name
Company
Date
Time

Subtotal Number of Containers:

**Preservatives for above requested parameters:**
A. ICE C.
B. D.

**Methods for above requested parameters:**

Shipment Method:
Airbill No.:

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by: Patricia Thiel
Signature
Printed Name: ERDC
Company
Date: 12/8/10
Time

**USACE Location**

US Army Corps of Engineers
Buffalo District

# Chain of Custody Record

Page 1 of 1

COC No.:

Date: 12/7/10

Name: USACE - Buffalo District
Address: 1776 Niagara Street
Phone Number: (716) 879-
Project Manager: CLEVELAND BU
Project Name:
Job/Contract/P.O. #:
Sampler (Signature) (Printed Name)

Laboratory Name:
Address: ERDC
Phone:
Contact:

| Field Sample # | Container Type | # Jars | Date | Time | Matrix | Metals | PAHs | Pesticides/PCBs | TOC | Dioxin/Furan | Mirex | Elutriate | Elutraite Water | Particle Size | *Hyalella azteca* | *Chironomus tentans* | *Lumbriculus variegatus* | | | | OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PB | 10L CUBE | 2 | 12/7/10 | 1230 | WATER | | | | | | | | X | | | | | | | | |
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Requested Parameters

Subtotal Number of Containers:

**Preservatives for above requested parameters:**
A. C.
B. D.

**Methods for above requested parameters:**

| Relinquished by | Date | Received by | Date | Time |
|---|---|---|---|---|
| Signature: [signature] | 12/7/10 | Signature | | |
| Printed Name: SAM MILLON | Time: 1500 | Printed Name | | |
| Company: USACE | | Company | | |
| Relinquished by | Date | Received by | Date | Time |
| Signature | | Signature: [signature] | 12/8/10 | |
| Printed Name | Time | Printed Name: Patricia Tumbleson | | |
| Company | | Company: ERDC | | |

Shipment Method:
Airbill No.:

**USACE Location**

# Appendix D3: Aquatic Toxicity and Bioaccumulation Test Data

**Prepared for:**

**U.S. Army Corps of Engineers, Buffalo District**
Atn: O'Connor, Frank A
CELRB-TD-HD
US Army Corps of Engineers
1776 Niagara Street
Buffalo, NY, 14207-3199

**Prepared by:**

**Department of the Army**
**US Army Engineer Research and Development Center**
**Environmental Laboratory**
3909 Halls Ferry Rd, EP-R
Vicksburg, MS 39180

**Technical bioassay points of contact:**

**Alan J. Kennedy**

**J. Daniel Farrar**

**Guilherme Lotufo**

**6 April 2011**

## Contents

## DRAFT EXECTUTIVE SUMMARY

This report summarizes the Tier III biological testing of sediment collected from Cleveland Harbor Federal Navigation Channel (Cuyahoga River) conducted in basic accordance with the Inland Testing and Great Lakes Regional Manuals (USEPA / USACE 1998a, 1998b). Bioassays were performed to simulate the potential for biological effects of dredged material released into in the water column (elutriate toxicity tests) and once in-place at the beneficial use site (sediment toxicity and bioaccumulation tests).

- Sediment elutriate bioassay results:
  - No acute toxicity predicted for the cladoceran *Ceriodaphnia dubia* for any of the Dredged Material Management Units (DMMU).
  - No acute toxicity predicted for the fish larva *Pimephales promelas* for DMMU-1 or DMMU-1S.
  - Acute toxicity was observed for *P. promelas* exposed to DMMU-2. However, mortality was not great (<50%) enough to calculate a lethal median concentration (LC50).

- Sediment toxicity bioassay results:
  - Toxicity was observed for the DMMU-2 sediment in the *Hyalella azteca* test. No acute or sublethal toxicity was observed for *Chironomus dilutus* for any DMMU evaluated.
  - Sediment from DMMU-1 and DMMU-1S met the guidelines for open water dredge material disposal.
  - DMMU-2 sediment failed to meet the guidelines for open water dredge material disposal.

- Sediment bioaccumulation bioassay results:
  - Mean *Lumbriculus variegatus* tissue concentrations of chlorinated pesticides and polychlorinated biphenyls (PCB)s were less than U.S. Food and Drug Administration (USFDA) action levels. Body residues of contaminants of concern (COC) in organisms exposed to dredged material and to reference material were below the laboratory detection limit. Therefore, DMMUs evaluated for bioaccumulation potential are not predicted to be toxic to benthic organisms and are not likely to have an unacceptable adverse effect on survival, growth, or reproduction of aquatic organisms due to bioaccumulation.

## INTRODUCTION

The Buffalo District of the US Army Corps of Engineers (USACE) requested assistance from the US Army Engineer Research and Development Center (ERDC, Vicksburg, MS) to perform an evaluation of material collected from the Cuyahoga River Federal Navigation Channel. The evaluation consisted of analytical chemistry on the solid phase sediment materials, analytical chemistry on the sediment elutriate waters in addition to Tier III biological testing. All analyses were conducted in accordance with the Inland Testing Manual (USEPA / USACE, 1998a) and Great Lakes Dredged Material Testing and Evaluation Manual (USEPA / USACE 1998b).

This report presents the results of the biological testing. Bioassays were performed to simulate the potential for biological effects of dredged material released into the water column (elutriate toxicity tests) and once in-place at the final placement site (sediment toxicity and bioaccumulation tests). The elutriate toxicity tests used the larval fathead minnow *Pimephales promelas* and the cladoceran *Ceriodaphnia dubia*. The sediment toxicity tests employed the amphipod *Hyalella azteca* and the midge *Chironomus dilutus*. The bioaccumulation tests used the oligochaete *Lumbriculus variegatus*.

Three (3) composite Dredged Material Management Units (DMMUs) were prepared at the U.S. Army Engineer Research and Development Center (ERDC) using distinct, field-collected sediments. Analytical chemistry and toxicity data were generated during the months of November and December 2010 and January 2011.

**Table 1.** Summary of the test materials.

| Sample Name | Customer ID |
|---|---|
| **DMMU-1** | DMU 1 |
| **DMMU-1S** | DMU 1S |
| **DMMU-2** | DMU 2 |
| **Reference** | Reference |

## METHODS

### Elutriate Bioassays

Sediment elutriate bioassays were conducted to simulate exposure to water column organisms during the open water placement of dredged material. The standard elutriate was prepared following guidance (USEPA / USACE 1998a,b). All sediment samples were mixed with site water at a ratio of 1:4, agitated thirty minutes, and allowed to settle for one hour prior to supernatant collection. Following the settling period, the supernatant was siphoned and used for testing. This elutriate water was defined as the 100% elutriate.

Elutriate bioassays were conducted for 48 or 96-hours (depending on the test organism) using the 100% elutriate. As directed by the Great Lakes Regional Implementation Manual (RIM) (USEPA / USACE 1998b), the 100% elutriate concentration was initially tested, and if test organism mortality was 50% or less, the elutriate bioassay was considered completed. However, if the 100% elutriate induced greater than 50% mortality, the exposure was repeated to include the 100% elutriate in addition to a 50%, 25%, 12.5% and 6.25% dilutions of the 100% elutriate water. A laboratory water was used as the diluent and for laboratory performance controls. All concentrations, including the control, were replicated five times. The standard test organisms that were selected to assess the potential toxicity of the elutriate water were the fathead minnow *Pimephales promelas* and the cladoceran *Ceriodaphnia dubia*. Bioassays were conducted in basic accordance with dredged material evaluation guidance (US EPA / US ACE 1998a,b). Tests were conducted at 25 ± 1 °C and survival was the test endpoint.

### *Pimephales promelas* elutriate bioassay

The fathead minnow *Pimephales promelas* was exposed to the sediment elutriate water at an age of 3 days old to facilitate organism shipping requirements and conduct of the 96-hour bioassays during the work week so that tests could be continuously monitored by laboratory staff. Larval fish were shipped overnight from Aquatic Biosystems (Fort Collins, CO, USA), immediately observed for potential shipment impacts and fed brine shrimp (*Artemia*) . The control and dilution water was dechlorinated tap water (Vicksburg, MS, Municipal source). Tests were conducted in 250 mL beakers containing 200 mL test media. Ten (10) *P. promelas* were added per replicate and were fed *Artemia* daily during the test exposure. At 48-hours, the elutriate waters were renewed.

### *Ceriodaphnia dubia* elutriate bioassay

The cladoceran *Ceriodaphnia dubia* was exposed to the sediment elutriate water at <24-h days old. Organisms were shipped overnight from Aquatic Biosystems (Fort Collins, CO, USA) immediately observed for potential shipment impacts and provided food (1:1 *Selenastrum capricornutum* and yeast-cereal leaves-trout chow mix (YCT)) at least two hours prior to testing. The *C. dubia* were tested the day of receipt in order to utilize < 24-hour old organisms. The control and dilution water was moderately hard reconstituted water (MHRW, formulated according to US EPA 2002). Tests were conducted in glass 50 mL beakers containing 30 mL test media. Five (5) *C. dubia* were added per replicate and no feeding ration was provided during the 48-h exposure as specified by national (US EPA 2002) and regional test guidance (USEPA /USACE 1998b).

## Whole Sediment Toxicity Bioassays

Whole sediment toxicity tests were conducted to simulate exposure of benthic or epibenthic organisms to the in-place dredged material at the disposal site. Test sediments were stored at 4 °C until needed for use in the bioassays. Prior to testing, sediments were thoroughly homogenized using an impeller mixer. The standard test organisms *Hyalella azteca* and

*Chironomus dilutus* were used in testing in basic accordance with national and regional dredged material evaluation guidance (US EPA / USACE 1998a,b).

### *Hyalella azteca* whole sediment toxicity bioassay

*Hyalella azteca* 10-day sediment exposures were conducted as described in national and regional testing guidance (USEPA/USACE 1998a,b). Organisms were obtained from ERDC in-house cultures. The day prior to test initiation approximately 75 mL of each test sediment was added to five replicate 300 mL beakers. Sediment from the University of Mississippi field station (Oxford, MS), was included as a laboratory performance control. Beakers were placed in a temperature controlled chamber at 23°C and allowed to equilibrate overnight. Pore water ammonia measurements were taken on chemistry blanks following sediment addition to beakers. Prior to the addition of organisms, water exchanges were conducted to reduce pore water concentrations to values below 20 mg/L in accordance with guidance provided in the Inland Testing Manual (USEPA /USACE 1998a). Overlying water quality (temperature, pH, dissolved oxygen, hardness, alkalinity, conductivity and ammonia) was recorded for each replicate beaker at test initiation. Ten amphipods (approximately 7-8 days old) were added to each replicate. Organisms were fed 1 mL of a YCT food mixture. Temperature and dissolved oxygen were measured daily throughout the exposure period. Conductivity was measured weekly. Animals were fed YCT food mixture and two full water renewals were conducted daily. On day 10, overlying water quality was measured and each replicate beaker was terminated by passing the sediment through a 425 µm screen. Surviving amphipods were recovered and enumerated.

### *Chironomus dilutus* whole sediment toxicity bioassay

*Chironomus dilutus* 10-day sediment exposures were conducted as described in national and regional testing guidance (USEPA/USACE 1998a,b). Egg masses were obtained from Environmental Consulting and Testing (Superior, WI) and maintained in culture until the correct age (~ 10 days old) organism was obtained. On the day prior to test initiation, approximately 75 mL of each sediment was added to five replicate 300 mL beakers. Sediment from the University of Mississippi field station (Oxford, MS), was included as a laboratory performance control. Beakers were placed in a temperature controlled chamber at 23°C and allowed to equilibrate over night. Pore water ammonia measurements were taken on chemistry blanks following sediment addition to beakers. Prior to addition of organisms, water exchanges were conducted to reduce pore water concentrations to values below 20 mg/L in accordance with guidance provided in the Inland Testing Manual (USEPA /USACE 1998a). Overlying water quality (temperature, pH, dissolved oxygen, hardness, alkalinity, conductivity and ammonia) was recorded for each replicate beaker at test initiation. Ten organisms (~10 day old) were added to each replicate and 1 mL of a Tetrafin® food mixture was provided. Temperature and dissolved oxygen were measured daily throughout the exposure period. Conductivity was measured weekly. Animals were fed 1 mL of a Tetrafin® food mixture and two full water renewals were conducted daily. On day 10, overlying water quality was measured and each replicate beaker was terminated by passing the sediment through a 425 µm screen. Surviving organisms were recovered and enumerated. Following enumeration organisms from each replicate were placed on pre-weighed

pans and placed in a drying oven for 24 hours at 60 °C. Following the drying period, pans were removed from the oven and dry weight for each replicate was recorded.

## Whole Sediment Bioaccumulation Bioassay

### *Lumbriculus variegatus* whole sediment bioaccumulation bioassay

A *Lumbriculus variegatus* 28-d bioaccumulation study was conducted as described in national and regional testing guidance (USEPA/USACE 1998a,b). Due to logistics involved in test termination, the test was setup over two days. The first three replicates of a sediment treatment were setup the first day followed by the final two replicates of each treatment on the second day. One or two days prior to addition of organism approximately 2 liters of each sediment was added to five replicate 1 gallon aquaria. Aquaria were placed in a temperature controlled chamber (23 °C) with aeration and allowed to equilibrate overnight. Porewater ammonia measurements were taken on a composite sediment sample from each sediment treatment. Prior to the addition of organisms, water exchanges were conducted to reduce pore water concentrations to values below 20 mg/L in accordance with guidance provided in the inland testing manual (USEPA /USACE 1998a). Overlying water quality (temperature, pH, dissolved oxygen, hardness, alkalinity, conductivity and ammonia) was recorded for each replicate aquarium at test initiation. In order to meet the 5 gram tissue requirement for chemsitry analysis, approximately 10 grams of *Lumbriculus variegatus* was added to each aquarium. Temperature and dissolved oxygen were measured daily throughout the exposure period. Animals were not fed during the exposure, as directed by test guidance. On day 28, overlying water quality was measured and each replicate aquarium was terminated by passing the sediment through a 425 µm screen. Surviving organisms in each replicate were recovered and placed in clean water and allowed to purge their gut contents for 24 hours. Following purging, organisms from each replicate were placed in a pre-tared vial and total tissue mass was determined. Tissue samples were frozen and submitted for chemistry analysis.

## Reference toxicity tests

Reference toxicant tests were conducted on each batch of test organisms to assess test organism sensitivity relative to historic information recorded in laboratory control charts. Where required, a sufficient number of reference toxicity tests were conducted such that internal control charts ($n \geq 5$) have been developed for all test organisms.

The selected reference toxicant for *Pimephales promelas* and *Cerodaphnia dubia* was potassium chloride (KCl). Reagent grade KCl was weighed and completely dissolved into the appropriate water. Five triplicated concentrations were prepared (100, 50, 25, 12.5, 6.25%) with the previously described number of organisms in each replicate. The 100% concentration used was 2.7 g/L for *Pimephales promelas* and 1.0 g/L for *Cerodaphnia dubia*. The endpoint measured was survival after a 48-hour (*C. dubia*) or 96-hour (*P. promelas*) exposure.

The selected reference toxicant for *Hyalella azteca* and *Chironomus dilutus* was cadmium chloride ($CdCl_2$) and NaCl, respectivley. Reagent grade $CdCl_2$ and NaCl were weighed and

completely dissolved into the dechlorinated tap water for each test species. Five NaCl (1.25, 2.5, 5, 10 and 20 g NaCl/L) concentrations of two replicates each were prepared and placed in 250 mL beakers. Ten *Chironomus dilutus* (10-day old) were placed in each replicate. Four $CdCl_2$ (0.01, 0.025, 0.055, 0.01 mg $CdCl_2$/L) concentrations of three replicates each were prepared and placed in 250 mL beakers. Five *Hyalella azteca* (7-8 day old) were placed in each replicate. The endpoint measured was survival after a 96-hour exposure.

### Water quality parameters

The water quality during bioassay testing was measured using an Thermo Scientific Orion 4Star meter (Thermo Scientific**,** Beverly, MA) for electrical conductivity, a model 315i meter (WTW; Weilheim, Germany) for pH, and a model Oxi 330 meter (WTW; Weilheim, Germany) for dissolved oxygen (D.O.). Total ammonia, hardness and alkalinity were measured using LeMotte titration kits (Chestertown, MD, USA). In addition, total ammonia was measured using a 720A ion-selective electrode (ISE) meter (Thermo Orion Electron Corp., Beverly, MA) equipped with a 95-12 ammonia-sensitive electrode (Thermo Orion Electron Corp., Beverly, MA) for confirmation of concentrations exceeding 8 mg/L.

### Statistical analysis

Data normality (Kolmogorov–Smirnov test), homogeneity (Levene's Test), and treatment differences compared to the reference (one way ANOVA and Dunn's or Dunnett's Methods) and statistical significance was determined at $\alpha = 0.05$ using SigmaStat software (SPSS, Chicago, IL). Survival data were arcsine-square-root transformed. When normality was not achieved, the Kruskal–Wallis one-way ANOVA on ranks was applied. For whole sediment toxicity tests, two criteria were required to designate a sediment as potentially toxic based on survival: 1) a statistically significant reduction in survival compared to survival in the reference sediment and 2) mortality that was more than 10% greater (*Hyalella azteca*) or 20% greater (*Chironomus dilutus*) than mortality in the reference (USACE, 1998b). For the sublethal growth endpoint for *Chironomus dilutus*, individual dry mass for a given sediment must be below 0.6 mg, be greater than 10% less than the reference and be statistically significant to be designated as potentially toxic. The lethal median concentration producing 50% mortality (LC50) in elutriate or reference toxicity test dilutions was determined by the Spearman–Karber method using Toxstat software (Gulley 1996, University of Wyoming).

## RESULTS

### Elutriate Bioassays

The testing was conducted in two batches, based on the sample availability. DMMU-1, DMMU-1S, DMMU-2 and a laboratory control were tested during the week of 15 November 2010. Site water and an additional control were tested during the week of 13 December 2010.

#### *Pimephales promelas* elutriate bioassays

Water quality parameters (Appendix E, Table E1) were within the acceptability ranges specified by testing guidance (US EPA / US ACE 1991, 1998). Survival in the laboratory performance controls exceeded the 90% requirement (Table 2). The LC50 values from the KCl reference toxicity tests conducted on 15 November and 13 December 2010 were 0.78 (0.70 – 0.88) and 0.87 (0.80 – 0.95) g KCl/L, respectively. These values were compared to two standard deviations around the mean LC50 values from ERDC control charts (0.55 – 0.96 g KCl/L). This result suggests test organisms were within the historic tolerance range to the reference toxicant.

Survival in the two laboratory controls (Table 2) was not statistically distinguishable ($p = 0.69$). Survival was relatively high in the site water. Survival in the 100% (undiluted) elutriate waters ranged from 66 to 98%. Statistically significant reductions in survival relative to both the laboratory control ($p < 0.01$) and the site water ($p = 0.02$) were determined for only DMMU-2 (66 ± 5%). Mortality did not exceeded 50% in any of the elutriate waters. Therefore, according to USEPA / USACE (1998b) guidance, an additional bioassay assessing the potential toxicity of a dilution of the elutriate waters was not required.

The results of the *Pimephales promelas* elutriate bioassays did not indicate acute toxicity for DMMU-1 or DMMU-1S. Significantly reduced mortality was determined for the DMMU-2 elutriate; however, mortality was not high enough to calculate a LC50 value.

Ammonia, when present, is an important toxicant to consider in bioassays employing fish species (US EPA 2009). The unionized fraction of ammonia is typically considered to be responsible for causing toxicity. The fraction of total ammonia that is unionized ammonia is dependent on water temperature, pH and to a lesser extent salinity. The measured total ammonia value in DMMU-2 was 10 mg/L. At the mean pH and temperature recorded in the bioassay (Appendix E, Table 2), the unionized ammonia concentration was calculated to be approximately 0.5 mg/L. Several studies (Nimmo et al., 1989; Diamond et al., 1993; Buhl 2002) in the available literature provide toxicity reference values for larval *P. promelas* exposed to ammonia for 96-hours. Among these studies, Diamond et al. (1993) reported the lowest LC50 value of 0.25 (0.21 – 0.30) mg/L as unionized ammonia. Nimmo et al. (1989) reported LC50 values ranging from 0.56 (0.52 – 0.61) to 0.94 (0.87 - 1.02) mg/L, as unionized ammonia, in two different field waters. Additionally, Buhl et al (2002) reported a 96-h LC50 of 1.01 (0.83 – 1.18) mg/L as unionized ammonia or 14.4 (10.4 – 18.5) mg/L as total ammonia at pH 8 and a temperature of 25 °C. While it cannot be stated that ammonia was the only driver of toxicity in DMMU-2, the measured ammonia levels in the elutriate water (Appendix E, Table E1) approached literature reported LC50 values for *P. promelas,* providing evidence that ammonia could be a contributor to the observed mortality.

### *Ceriodaphnia dubia* elutriate bioassays

Water quality parameters (Appendix E, Table E2) were within the acceptability ranges specified by testing guidance (US EPA / US ACE 1991, 1998). Survival in the laboratory performance controls exceeded the 90% requirement (Table 2). The LC50 values from the KCl reference toxicity tests conducted on 16 November and 14 December 2010 were 0.68 (0.62 – 0.74) and 0.45 (0.38 – 0.53) g KCl/L, respectively. These values were compared to two standard deviations around the mean LC50 values from ERDC control charts (0.14 – 0.77g KCl/L). This result suggests test organisms were within the historic tolerance range to the reference toxicant.

Survival was high in the site water (Table 2) and not statistically distinguishable from survival in either laboratory control (p = 1.00). Survival in the 100% (undiluted) elutriate waters ranged from 84 to 96%. No statistically significant reductions in survival relative to the laboratory control (p = 0.20) or the site water (p = 0.20) were determined for any of the elutriate waters tested. Mortality did not exceeded 50% in any of the elutriate waters and according to USEPA / USACE (1998b) guidance, an additional bioassay assessing the potential toxicity of a dilution of the elutriate waters was not required.

The results of the *Ceriodaphnia dubia* elutriate bioassays do not indicate acute toxicity for DMMU-1, DMMU-1S or DMMU-2. Mortality was insufficient to calculate LC50 values.

**Table 2.** Survival of *Pimephales promelas* after 96-hours and survival of *Ceriodaphnia dubia* after 48-hours exposure to the undiluted (100%) elutriate waters. Asterisks denote a statistically significant reduction in survival.

| Sample Name | Concentration | 48-h *Ceriodaphnia dubia* survival (%) | 96-h *Pimephales promelas* survival (%) |
|---|---|---|---|
| **Control1** | NA | 100 ± 0 | 100 ± 0 |
| **DMMU-1** | 100% | 96 ± 9 | 86 ± 9 |
| **DMMU-1S** | 100% | 88 ± 18 | 98 ± 4 |
| **DMMU-2** | 100% | 84 ± 17 | 66 ± 5* |
| **Control2** | NA | 100 ± 0 | 94 ± 13 |
| **Site water** | 0% | 100 ± 0 | 85 ± 11 |

## Whole Sediment Toxicity and Bioaccumulation Bioassays

The 10-day sediment toxicity bioassays employing *Hyalella azteca* and *Chironomus dilutus* were initiated on 17 December 2010. The *Lumbriculus variagatus* bioaccumulation test was initiated over two days with replicates A-C initiated on 16-December 2010 and replicated D and E initiated on 17 December 2010. Bulk sediment ammonia pore water concentrations, measured prior to the addition of organisms, were high. Pore water ammonia concentrations were 91, 80, and 91 mg/L for DMMU-1, DMMU-1S and DMMU-2, respectively. Prior to test initiation, four water exchanges were conducted on beakers and aquaria from each bioassay to decrease the pore water concentrations below 20 mg/L, as recommended in the Inland Testing Manual (USEPA /USACE 1998). Pore water ammonia concentrations at test initiation were 15, 8 and 11 mg/L for DMMU-1, DMMU-1S and DMMU-2 sediments, respectively in the *Hyalella azteca* and *Chironomus dilutus* bioassays. Total pore water ammonia concentrations at test initiation were 15.2, 9.4 and 12.1 mg/L for DMMU-1, DMMU-1S and DMMU-2, respectively in the *Lumbriculus variegatus* bioaccumulation study. Due to sediment volume limitations chemistry blanks were not available for pore water ammonia measurements at test termination.

### *Hyalella azteca* whole sediment toxicity bioassay

Water quality parameters (Appendix F, Table F1) were within the acceptability ranges specified by testing guidance (US EPA / USACE 1998a,b). Survival in the laboratory performance control (94%) exceeded the 80% requirement (Table 3). The LC50 value from the $CdCl_2$ reference toxicity test conducted on 17 December 2010 was 0.025 (0.019 – 0.034) mg $CdCl_2$/L. This value was compared to two standard deviations around the mean LC50 value from an established laboratory control chart (0.023 – 0.058 mg $CdCl_2$/L). This result suggests test organisms were within the historic tolerance range to the reference toxicant.

Survival was high in the DMMU-1 and DMMU-1S sediments (88%) with no statistical difference detected relative to reference sediment survival (84%) (Table 3). Survival was lower in the DMMU-2 sediment (58%) and was statistically different from the reference (p=0.01). In addition mortality was more than 10% greater than reference mortality. The result of the *Hyalella azteca* sediment bioassay showed no acute toxicity for DMMU-1 and DMMU-1S indicating these sediments met the guidelines for open water disposal. Sediment from DMMU-2 was predicted to be acutely toxic to benthic invertebrates and did not meet the guidelines for open water dredge material disposal.

### *Chironomus dilutus* whole sediment toxicity bioassay

All water quality parameters (Appendix G, Table G1) were within the acceptability ranges specified by testing guidance (US EPA / US ACE 1991, 1998). Survival in the laboratory performance control (86%) exceeded the 70% requirement (Table 3). The LC50 value from the NaCl reference toxicity test conducted on 17 December 2010 was 6.83 (5.91 – 7.89) g NaCl/L. This value was compared to two standard deviations around the mean LC50 value from an established laboratory control chart (5.72 - 8.62 g NaCl/L). This result suggests test organisms were within the historic tolerance range to the reference toxicant.

Survival was generally high in all site sediments (86 – 96%) and similar to the reference sediment survival of 94% (Table 3). No statistically significant reduction in survival was detected (p=0.35). In addition, mortality in all site sediments was within 20% of the mortality value for the reference. Individual dry weights ranged from 2.03 to 3.24 g and were generally lower compared to the reference (3.46 g) (Table 3). The lowest mass observed was 2.03 g for DMMU-2. Organism dry weights exceeded the 0.6 mg criteria for all sediments. DMMU-1 and DMMU-2 were more than 10% less than the reference but no statistical difference was detected for the growth endpoint for any of the sediments evaluated (p=0.06). The result of the *Chironomus dilutus* sediment bioassay predicts no acute or sublethal toxicity.

**Table 3.** Percent survival and mass (and one standard deviation from the mean) in 10-day whole sediment toxicity tests. Asterisks denote a statistically significant reduction in survival or mass relative to the reference sediment.

| Sample Name | *Hyalella azteca* (% Survival) | *Chironomus dilutus* (% Survival) | *Chironomus dilutus* (individual dry weight, g) |
|---|---|---|---|
| **Control** | 94 ± 8.9 | 86 ± 5.5 | 2.44 ± 0.38 |
| **Reference** | 84 ± 11.4 | 94 ± 8.9 | 3.46 ± 1.54 |
| **DMMU-1** | 88 ± 8.4 | 92 ± 11.0 | 2.99 ± 0.89 |
| **DMMU-1S** | 88 ± 11.0 | 86 ± 8.9 | 3.24 ± 0.39 |
| **DMMU-2** | 58 ± 8.4* | 96 ± 5.5 | 2.03 ± 0.10 |

## Whole Sediment Bioaccumulation Bioassay

### *Lumbriculus variegatus* whole sediment bioaccumulation bioassay

All water quality parameters (Appendix H, Table H1) were within the acceptability ranges specified by testing guidance (US EPA / USACE 1998a,b). All organisms burrowed into test materials and remained burrowed during the exposure. Replicate tissue mass recovered for analytical chemistry ranged from 1.8 to 8.0 g (Table 4). Mean percent lipids ranged from 1.5 to 1.7% with no statistical difference observed between DMMUs and the reference (P = 0.509). A list of chemicals analyzed in tissues is provided in Table 5.

According to the ITM, data from bioaccumulation tests are evaluated at two levels. First, the amount of bioaccumulation of a specific contaminant in tissues exposed to dredged material is compared to applicable USFDA Action or Tolerance Levels for Poisonous or Deleterious Substances in Fish and Shellfish for Human Food, when such levels have been set for the contaminants measured in tissues of bioaccumulation test organisms. The USFDA levels (http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/Seafood/FederalStatePrograms/NationalShellfishSanitationProgram/UCM053987) are based on human-health as well as economic considerations, but do not indicate the potential for environmental impact on the contaminated organisms or the potential for biomagnification. Because contamination of food in excess of USFDA levels is considered a threat to human health, concentrations in excess of such levels in any test species are considered to be predictive of benthic bioaccumulation of contaminants (USEPA and USACE 1998). This guidance applies even though the test species may not be a typical human food.

PCB tissue residues in *L. variegatus* tissues were non-detectable in DMMU and lake reference area exposures. Given the laboratory reporting limit of 4.9 – 10.5 µg/kg, bioaccumulation of PCBs from the DMMU sediments was at least two orders of magnitude lower than the 2 mg/kg USFDA action limit for the edible portion of fish. The detection limits for the bioaccumulation of DDTs ranged from 0.059 to 0.177 µg/kg; aldrin ranged from 0.05 to 0.107 µg/kg; chlordane ranged from 0.078 to 0.178 µg/kg; dieldrin ranged from 0.061 – 0.131 µg/kg; heptachlor ranged

from 0.086 to 0.200 µg/kg. Therefore, the USFDA action limit for the edible portion of fish were also over two orders of magnitude higher than analytical detection limits for those organohalogen pesticides.

Body residues of COC in organisms exposed to dredged material and to reference material were below the laboratory detection limits. Therefore, a statistically significant increase in body residue in *Lumbriculus variegatus* exposed to the site materials relative to *Lumbriculus variegatus* exposed to the reference sediment was not observed.

Mean tissue concentrations of all contaminants for benthic invertebrates exposed to channel DMMUs were less than USFDA action levels. Body residues of COC in organisms exposed to dredged material and to reference material were below the laboratory reporting limit. Therefore, DMMUs evaluated for bioaccumulation potential are not predicted to be toxic to benthic organisms and are not likely to have an unacceptable adverse effect on survival, growth, or reproduction of aquatic organisms due to bioaccumulation.

**Table 4.** Mean Initial and recovered mass (± one standard deviation from the mean) at the end of the 28-day bioaccumulation tests. The minimum and maximum range of the data is provided in parentheses

| Sample Name | Initial Mass (g) | Recovered Mass (g) | % Lipid |
|---|---|---|---|
| **Reference** | 10.35 ± 0.12<br>(10.23-10.50) | 3.65 ± 2.10<br>(1.78-6.85) | 1.46 ± 0.32<br>(1.0-1.9) |
| **DMMU-1** | 10.18 ± 0.12<br>(10.06-10.34) | 5.71 ± 0.34<br>(5.24-6.16) | 1.32 ± 0.34<br>(0.9-1.8) |
| **DMMU-1S** | 10.29 ± 0.27<br>(10.06-10.73) | 6.30 ± 1.14<br>(5.12-7.96) | 1.66 ± 0.31<br>(1.2-2.0) |
| **DMMU-2** | 10.17 ± 0.11<br>(10.06-10.34) | 5.87 ± 0.54<br>(5.08-6.56) | 1.66 ± 0.48<br>(0.9-2.2) |

**Table 5.** Concentration (µg/kg wet wt.) of organohalogen pesticides and PCBs (as Aroclors) in *Lumbriculus variegatus* from DMMU and lake reference area bioaccumulation exposures. All body residues were below the laboratory reporting limit, for which the highest replicate value is reported.

| Analyte | Reference | DMMU-1 | DMMU-1S | DMMU-2 |
|---|---|---|---|---|
| **4,4-DDD** | <0.126 | <0.060 | <0.060 | <0.059 |
| **4,4-DDE** | <0.177 | <0.084 | <0.084 | <0.083 |
| **4,4-DDT** | <0.160 | <0.076 | <0.076 | <0.075 |
| **Aldrin** | <0.107 | <0.051 | <0.051 | <0.050 |
| **Alpha-BHC** | <0.159 | <0.075 | <0.075 | <0.074 |
| **Alpha-Chlordane** | <0.166 | <0.079 | <0.078 | <0.078 |
| **Beta-BHC** | <0.177 | <0.084 | <0.084 | <0.083 |
| **Delta-BHC** | <0.152 | <0.072 | <0.072 | <0.071 |
| **Dieldrin** | <0.131 | <0.062 | <0.062 | <0.061 |
| **Endosulfan I** | <0.360 | <0.171 | <0.170 | <0.169 |
| **Endosulfan II** | <0.416 | <0.197 | <0.197 | <0.195 |
| **Endosulfan sulfate** | <0.164 | <0.078 | <0.078 | <0.077 |
| **Endrin** | <0.148 | <0.070 | <0.070 | <0.069 |
| **Endrin aldehyde** | <0.288 | <0.137 | <0.136 | <0.135 |
| **Endrin ketone** | <0.067 | <0.032 | <0.032 | <0.032 |
| **Gamma-BHC (Lindane)** | <0.181 | <0.086 | <0.086 | <0.085 |
| **Gamma-chlordane** | <0.178 | <0.085 | <0.084 | <0.084 |
| **Heptachlor** | <0.184 | <0.087 | <0.087 | <0.086 |
| **Heptachlor epoxide** | <0.200 | <0.095 | <0.094 | <0.093 |
| **Methoxychlor** | <0.280 | <0.133 | <0.132 | <0.131 |
| **PCB-1016** | ≤10.5 | ≤5.00 | ≤4.99 | ≤4.94 |
| **PCB-1221** | ≤10.5 | ≤5.00 | ≤4.99 | ≤4.94 |
| **PCB-1232** | ≤10.5 | ≤5.00 | ≤4.99 | ≤4.94 |

| Analyte | Reference | DMMU-1 | DMMU-1S | DMMU-2 |
|---|---|---|---|---|
| PCB-1242 | ≤10.5 | ≤5.00 | ≤4.99 | ≤4.94 |
| PCB-1248 | ≤10.5 | ≤5.00 | ≤4.99 | ≤4.94 |
| PCB-1254 | ≤10.5 | ≤5.00 | ≤4.99 | ≤4.94 |
| PCB-1260 | ≤10.5 | ≤5.00 | ≤4.99 | ≤4.94 |

## REFERENCES

Buhl KJ. 2002. The relative toxicity of waterborne inorganic contaminants to the Rio Grand Silvery minnow (*Hybognathus amrus*) and fathead minnow (*Pimephales promelas*) in a water quality simulating that in the Rio Grande, New Mexico. Final report to the U.S. Fish and Wildlife Service. U.S. Geological Survey, Columbia Environmental Research Center, Yankton Field Research Station, Yankton, SD, USA.

Diamond JM, Mackler DG, Rasnake WJ, Gruber D. 1993. Derivation of site-specific ammonia criteria for an effluent-dominated headwater stream. *Environmental Toxicology and Chemistry* 12: 649 – 658.

Nimmo DWR, Link D, Parrish LP. 1989. Comparison of on-site and laboratory toxicity tests: derivation of site specific criteria for unionized ammonia in a Colorado transitional stream. *Environmental Toxicology and Chemistry* 8: 1177-1189.

US Environmental Protection Agency / US Army Corps of Engineers (US EPA / USACE). 1998a. Evaluation of Material Proposed for Discharge to Waters of the U.S. - Testing Manual (Inland Testing Manual). EPA-823-B-98-004, Office of Water, Washington DC.

US Environmental Protection Agency / US Army Corps of Engineers (US EPA / USACE). 1998b. Great Lakes Dredged Material Testing and Evaluation Manual. Prepared by US EPA Regions 2, 3 and 5, Great Lakes National Program Office and US Army Corps of Engineers Great Lakes and Ohio River Division. Office of Water, Washington DC.

US Environmental Protection Agency. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th edition. EPA-821-R-02-012, Office of Water, Washington, D.C.

US Environmental Protection Agency. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater. EPA-822-D-09-001, Office of Water, Washington, D.C.

## Appendix A. Reference toxicity test statistics for *Pimephales promelas*.

```
DATE:   11/15/10          TEST NUMBER: n/a          DURATION:   96 h
TOXICANT :  KCl
SPECIES:  Pimephales promelas

RAW DATA:  Concentration       Number      Mortalities
--- ----   (g/L)               Exposed
              .00                 30           1
              .17                 30           0
              .34                 30           0
              .68                 30           9
             1.35                 30          30
             2.70                 30          30

 SPEARMAN-KARBER TRIM:                .00%

 SPEARMAN-KARBER ESTIMATES:     LC50:            .78
               95% LOWER CONFIDENCE:            .70
               95% UPPER CONFIDENCE:            .88

NOTE:  MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING.
       ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.
-------------------------------------------------------------------------------
```

```
DATE:   12/13/10          TEST NUMBER: n/a          DURATION:   96 h
TOXICANT :  KCl
SPECIES:  Pimephales promelas

RAW DATA:  Concentration       Number      Mortalities
--- ----   (g/L)               Exposed
              .00                 30           3
              .17                 30           4
              .34                 30           0
              .68                 30           6
             1.35                 30          30
             2.70                 30          30

 SPEARMAN-KARBER TRIM:                .00%

 SPEARMAN-KARBER ESTIMATES:     LC50:            .87
               95% LOWER CONFIDENCE:            .80
               95% UPPER CONFIDENCE:            .95

NOTE:  MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING.
       ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.
-------------------------------------------------------------------------------
```

## Appendix B. Reference toxicity test statistics for *Ceriodaphnia dubia*.

```
DATE:   11/16/10          TEST NUMBER: n/a          DURATION:   48 h
TOXICANT :  KCl
SPECIES:  Ceriodaphnia dubia

RAW DATA:  Concentration       Number      Mortalities
--- ----   (g/L)               Exposed
             .00                 15           0
             .06                 15           0
             .13                 15           0
             .25                 15           0
             .50                 15           1
            1.00                 15          15

 SPEARMAN-KARBER TRIM:               .00%

 SPEARMAN-KARBER ESTIMATES:     LC50:            .68
               95% LOWER CONFIDENCE:            .62
               95% UPPER CONFIDENCE:            .74
```

```
DATE:   12/14/10          TEST NUMBER: n/a          DURATION:   48 h
TOXICANT :  KCl
SPECIES:  Ceriodaphnia dubia

RAW DATA:  Concentration       Number      Mortalities
--- ----   (g/L)               Exposed
             .00                 15           0
             .06                 15           0
             .13                 15           0
             .25                 15           0
             .50                 15          10
            1.00                 15          15

 SPEARMAN-KARBER TRIM:               .00%

 SPEARMAN-KARBER ESTIMATES:     LC50:            .45
               95% LOWER CONFIDENCE:            .38
               95% UPPER CONFIDENCE:            .53
```

## Appendix C. Reference toxicity test statistics for *Hyalella azteca*.

```
DATE:   12/17/20          TEST NUMBER: 2           DURATION:   96 h
TOXICANT :  Cadmium Chloride
SPECIES:  H. azteca

RAW DATA:  Concentration       Number      Mortalities
--- ----   (ug/L)              Exposed
              .00                 15           0
              .10                 15           1
              .25                 15           8
              .50                 15          12
             1.00                 15          15

 SPEARMAN-KARBER TRIM:             6.67%

 SPEARMAN-KARBER ESTIMATES:     LC50:            .25
                95% LOWER CONFIDENCE:            .19
                95% UPPER CONFIDENCE:            .34
```

## Appendix D. Reference toxicity test statistics for *Chironomus dilutus*.

```
DATE:   12/17/20          TEST NUMBER: 1           DURATION:   96 H
TOXICANT :  NaCl
SPECIES:  C. dilutus

RAW DATA:  Concentration       Number      Mortalities
--- ----   (g/L)               Exposed
              .00                 20            0
             1.25                 20            0
             2.50                 20            0
             5.00                 20            3
            10.00                 20           18
            20.00                 20           20

 SPEARMAN-KARBER TRIM:                .00%

 SPEARMAN-KARBER ESTIMATES:     LC50:          6.83
                95% LOWER CONFIDENCE:          5.91
                95% UPPER CONFIDENCE:          7.89
--------------------------------------------------------------------------------
```

## Appendix E. Water quality parameters for *elutriate* bioassays

**Table E1.** Water quality parameters for 96-hour *Pimephales promelas* bioassay. Means and one standard deviation from the mean are indicated, with the minimum and maximum range of the data provided in parentheses.

| Treatment | Concentration | Temperature (° C) | pH (SU) | Dissolved oxygen (mg/L) | Conductivity (µS/cm) | Maximum Ammonia (mg/L) | Alkalinity (mg/L) | Hardness (mg/L) |
|---|---|---|---|---|---|---|---|---|
| **Control** | NA | 24.2 ± 0.3 (24.0 – 24.9) | 7.98 ± 0.25 (7.50 – 8.18) | 7.5 ± 0.7 (6.4 – 8.2) | 262 ± 53 (236 – 708) | <1 | 115 | 90 |
| **DMMU-1** | 100% | 24.1 ± 0.6 (23.2 – 25.1) | 7.89 ± 0.49 (7.50 – 8.18) | 6.4 ± 0.3 (6.0 – 6.8) | 666 ± 18 (631 – 1659) | 8 | 140 | NA |
| **DMMU-1S** | 100% | 24.5 ± 1.2 (23.0 – 25.9) | 7.74 ± 0.29 (7.42 – 8.05) | 7.2 ± 0.9 (6.0 – 8.2) | 331 ± 4 (326 – 837) | 4 | 190 | NA |
| **DMMU-2** | 100% | 24.4 ± 0.9 (23.3 – 25.4) | 7.94 ± 0.45 (7.50 – 8.46) | 6.7 ± 0.5 (6.1 – 7.3) | 749 ± 22 (707 – 1709) | 10 | 115 | 80 |
| **Control 2** | NA | 24.0 ± 0.5 (23.3 – 25.1) | 7.88 ± 0.25 (7.46 – 8.18) | 7.3 ± 0.8 (5.7 – 8.2) | 215 ± 7 (207 – 229) | <1 | 58 | 64 |
| **Site water** | NA | 24.1 ± 0.6 (23.4 – 25.1) | 7.95 ± 0.29 (7.62 – 8.31) | 7.2 ± 1.0 (5.5 – 8.3) | 299 ± 7 (291 – 311) | < 1 (0.4) | 76 | 114 |

**Table E2.** Water quality parameters for 48-hour *Ceriodaphnia* bioassay. Means and one standard deviation from the mean are indicated, with the minimum and maximum range of the data provided in parentheses.

| Treatment | Concentration | Temperature (° C) | pH (SU) | Dissolved oxygen (mg/L) | Conductivity (µS/cm) | Maximum Ammonia (mg/L) | Alkalinity (mg/L) | Hardness (mg/L) |
|---|---|---|---|---|---|---|---|---|
| **Control** | NA | 25.0 ± 0.4 (24.6 – 25.5) | 8.17 ± 0.12 (8.01 – 8.28) | 7.6 ± 0.2 (7.4 – 7.9) | 318 ± 23 (297 – 356) | <1 | 115 | 90 |
| **DMMU-1** | 100% | 25.1 ± 0.7 (24.3 – 25.8) | 7.69 ± 0.28 (7.35 – 8.01) | 6.6 ± 0.4 (6.1 – 7.4) | 636 ± 48 (587 – 681) | 8 | 140 | NA |
| **DMMU-1S** | 100% | 25.3 ± 0.4 (24.9 – 25.9) | 7.69 ± 0.24 (7.42 – 8.00) | 7.4 ± 0.7 (6.3 – 8.2) | 325 ± 6 (317 – 331) | 4 | 190 | NA |
| **DMMU-2** | 100% | 25.0 ± 0.4 (24.4 – 25.4) | 7.79 ± 0.29 (7.50 – 8.16) | 6.8 ± 0.5 (5.9 – 7.3) | 702 ± 65 (632 – 769) | 10 | 115 | 80 |
| **Control 2** | NA | 24.9 ± 0.4 (24.6 – 25.1) | 7.71 ± 0.01 (7.70 – 7.71) | 5.9 ± 0.1 (5.9 – 6.0) | NA | <1 | 58 | 64 |
| **Site water** | NA | 24.8 ± 0.1 (24.7 – 24.8) | 7.91 ± 0.16 (7.80 – 8.02) | 6.5 ± 0.1 (6.4 – 6.5) | 305 ± 5 (301 – 308) | <1 | 76 | 114 |

## Appendix F. Water quality parameters for *Hyalella azteca* bioassays

**Table F1.** Overlying water quality parameters for 10-day *Hyalella azteca* bioassay. Means and one standard deviation from the mean are indicated, with the minimum and maximum range of the data provided in parentheses.

| Treatment | Temperature (° C) | pH (SU) | Dissolved oxygen (mg/L) | Conductivity (µS/cm) | Maximum Ammonia (mg/L) | Alkalinity (mg/L) | Hardness (mg/L) |
|---|---|---|---|---|---|---|---|
| **Control** | 22.6 ± 0.7 (21.9 – 23.6) | 7.4 ± 0.2 (7.2 – 7.8) | 7.5 ± 0.6 (6.8 – 8.6) | 204 ± 11 (194 – 228) | <1 | 62 ± 3 (60-64) | 69 ± 7 (64-74) |
| **Reference** | 22.6 ± 0.7 (21.7 – 23.3) | 8.0 ± 0.1 (7.8 – 8.2) | 7.6 ± 0.3 (7.1 – 7.9) | 214 ± 3 (211 – 218) | <1 | 68 ± 0 (68-68) | 70 ± 3 (68-72) |
| **DMMU-1** | 22.5 ± 0.9 (21.5 – 23.6) | 7.5 ± 0.1 (7.4 – 7.8) | 6.2 ± 0.3 (5.8 – 6.9) | 239 ± 11 (241 – 253) | <1 | 70 ± 11 (62-78) | 66 ± 1 (65-67) |
| **DMMU-1S** | 22.1 ± 1.2 (20.6 – 23.4) | 7.6 ± 0.2 (7.3 – 7.8) | 6.3 ± 0.4 (5.5 – 6.7) | 224 ± 3 (220 – 229) | <1 | 67 ± 18 (54-80) | 71 ± 4 (68-73) |
| **DMMU-2** | 22.3 ± 0.6 (21.4 – 22.9) | 7.7 ± 0.2 (7.4 – 8.1) | 6.3 ± 0.2 (5.9 – 6.7) | 246 ± 28 (237 – 309) | <1 | 72 ± 17 (60-84) | 73 ± 5 (69-76) |

## Appendix G. Water quality parameters for *Chironomus dilutus* bioassays

**Table F1.** Overlying water quality parameters for 10-day *Chironomus dilutus* bioassay. Means and one standard deviation from the mean are indicated, with the minimum and maximum range of the data provided in parentheses.

| Treatment | Temperature (° C) | pH (SU) | Dissolved oxygen (mg/L) | Conductivity (µS/cm) | Maximum Ammonia (mg/L) | Alkalinity (mg/L) | Hardness (mg/L) |
|---|---|---|---|---|---|---|---|
| **Control** | 23.1 ± 0.6 (22.1 – 23.8) | 7.6 ± 0.1 (7.4 – 7.8) | 7.0 ± 0.5 (6.2 – 7.6) | 200 ± 8 (192 – 213) | <1 | 70 ± 14 (60-80) | 71 ± 4 (68-74) |
| **Reference** | 22.4 ± 0.8 (21.3 – 23.5) | 8.0 ± 0.1 (7.8 – 8.0) | 7.4 ± 0.5 (6.5 – 8.0) | 219 ± 6 (211 – 228) | <1 | 64 ± 6 (60-68) | 67 ± 1 (66-67) |
| **DMMU-1** | 22.1 ± 0.7 (21.1 – 23.0) | 7.5 ± 0.1 (7.4 – 7.7) | 4.9 ± 1.9 (2.7 – 6.9) | 248 ± 14 (242 – 287) | 1 | 79 ± 1 (78-80) | 71 ± 4 (68-73) |
| **DMMU-1S** | 22.1 ± 0.8 (21.1 – 23.2) | 7.4 ± 0.2 (7.2 – 7.6) | 6.3 ± 0.4 (5.6 – 6.7) | 240 ± 26 (217 – 287) | 1 | 67 ± 7 (62-72) | 74 ± 3 (72-76) |
| **DMMU-2** | 22.3 ± 0.7 (21.5 – 23.0) | 7.5 ± 0.1 (7.4 – 7.6) | 6.9 ± 0.3 (6.6 – 7.4) | 241 ± 7 (242 – 247) | <1 | 70 ± 1 (69-70) | 68 ± 1 (67-69) |

## Appendix H. Water quality parameters for *Lumbriculus variegatus* bioassays

**Table H1.** Overlying water quality parameters for 28-day *Lumbriculus variegatus* bioassay. Means and one standard deviation from the mean are indicated, with the minimum and maximum range of the data provided in parentheses.

| Treatment | Temperature (° C) | pH (SU) | Dissolved oxygen (mg/L) | Conductivity (µS/cm) | Maximum Ammonia (mg/L) | Alkalinity (mg/L) | Hardness (mg/L) |
|---|---|---|---|---|---|---|---|
| **Control** | 23.4 ± 0.3 (23.0 – 23.9) | 7.5 ± 0.6 (6.6 – 8.2) | 8.4 ± 0.3 (7.8 – 8.7) | 164 ± 9 (157 – 170) | 1 | 78 ± 4 (75 – 80) | 81 ± 0.7 (80 – 81) |
| **Reference** | 23.5 ± 0.4 (23.0 – 24.0) | 7.8 ± 0.6 (6.5 – 8.1) | 8.5 ± 0.2 (8.0 – 8.7) | 230 ± 14 (220 – 240) | <1 | 72 ± 11 (64 – 80) | 81 ± 6 (76 – 85) |
| **DMMU-1** | 23.6 ± 0.3 (23.0 – 24.0) | 8.0 ± 0.3 (7.4 – 8.4) | 7.7 ± 1.3 (4.7 – 8.6) | 272 ± 28 (252 – 291) | 4 | 78 ± 11 (70 – 85) | 82 ± 2 (80 – 83) |
| **DMMU-1S** | 23.4 ± 0.3 (23.0 – 23.8) | 7.8 ± 0.3 (7.2 – 8.2) | 7.9 ± 0.8 (6.3 – 8.6) | 250 ± 14 (240 – 260) | <1 | 84 ± 1 (83 – 85) | 90 ± 3 (88 – 92) |
| **DMMU-2** | 22.2 ± 0.5 (22.5 – 23.9) | 7.7 ± 0.4 (7.1 – 8.2) | 6.9 ± 2 (3.6 – 8.6) | 255 ± 12 (246 – 263) | 4 | 77 ± 1 (76 – 78) | 75 ± 7 (70 – 80) |

## Appendix I. Statistical analyses for *Pimephales promelas* elutriate toxicity tests

**t-test** Friday, January 14, 2011, 3:48:12 PM

**Data source:** Copy of Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(5))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, Rank Sum Test begun

**Mann-Whitney Rank Sum Test** Friday, January 14, 2011, 3:48:12 PM

**Data source:** Copy of Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Control | 5 | 0 | 1.571 | 1.571 | 1.571 |
| Control 2 | 5 | 0 | 1.571 | 1.426 | 1.571 |

Mann-Whitney U Statistic= 10.000

T = 30.000 n(small)= 5 n(big)= 5 P(est.)= 0.424 P(exact)= 0.690

The difference in the median values between the two groups is not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.690)

**One Way Analysis of Variance** Friday, January 14, 2011, 3:52:58 PM

**Data source:** Copy of Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(17))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

**Kruskal-Wallis One Way Analysis of Variance on Ranks** Friday, January 14, 2011, 3:52:58 PM

**Data source:** Copy of Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Control | 5 | 0 | 1.571 | 1.571 | 1.571 |
| DMMU 1 | 5 | 0 | 1.107 | 1.107 | 1.329 |
| DMMU 1S | 5 | 0 | 1.571 | 1.490 | 1.571 |
| DMMU 2 | 5 | 0 | 0.991 | 0.886 | 0.991 |

H = 16.019 with 3 degrees of freedom. (P = 0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = 0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

Multiple Comparisons versus Control Group (Dunn's Method) :

| Comparison | Diff of Ranks | Q | P<0.05 |
|---|---|---|---|
| DMMU 2 vs Control | 12.500 | 3.341 | Yes |
| DMMU 1 vs Control | 6.300 | 1.684 | No |
| DMMU 1S vs Control | 1.200 | 0.321 | Do Not Test |

Note: The multiple comparisons on ranks do not include an adjustment for ties.

**t-test** Friday, January 14, 2011, 3:57:09 PM

**Data source:** Copy of Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(25))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, Rank Sum Test begun

**Mann-Whitney Rank Sum Test** Friday, January 14, 2011, 3:57:09 PM

**Data source:** Copy of Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Site water | 5 | 0 | 1.183 | 1.078 | 1.329 |
| DMMU 2 | 5 | 0 | 0.991 | 0.886 | 0.991 |

Mann-Whitney U Statistic= 1.500

T = 38.500 n(small)= 5 n(big)= 5 P(est.)= 0.023 P(exact)= 0.016

The difference in the median values between the two groups is greater than would be expected by chance; there is a statistically significant difference (P = 0.016)

## Appendix J. Statistical analyses for *Ceriodaphnia dubia* elutriate toxicity tests

**One Way Analysis of Variance** Friday, January 14, 2011, 3:37:15 PM

**Data source:** Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(2))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

**Kruskal-Wallis One Way Analysis of Variance on Ranks** Friday, January 14, 2011, 3:37:15 PM

**Data source:** Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Control | 5 | 0 | 1.571 | 1.571 | 1.571 |
| 1 | 5 | 0 | 1.571 | 1.455 | 1.571 |
| 1S | 5 | 0 | 1.571 | 1.052 | 1.571 |
| DMMU 2 | 5 | 0 | 1.107 | 1.052 | 1.571 |
| Control 2 | 5 | 0 | 1.571 | 1.571 | 1.571 |
| Site water | 5 | 0 | 1.571 | 1.571 | 1.571 |

H = 9.730 with 5 degrees of freedom. (P = 0.083)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.083)

**t-test** Friday, January 14, 2011, 3:38:34 PM

**Data source:** Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(6))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, Rank Sum Test begun

**Mann-Whitney Rank Sum Test** Friday, January 14, 2011, 3:38:34 PM

**Data source:** Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Control | 5 | 0 | 1.571 | 1.571 | 1.571 |
| Control 2 | 5 | 0 | 1.571 | 1.571 | 1.571 |

Mann-Whitney U Statistic= 12.500

T = 27.500 n(small)= 5 n(big)= 5 P(est.)= <0.001 P(exact)= 1.000

The difference in the median values between the two groups is not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 1.000)

**One Way Analysis of Variance** Friday, January 14, 2011, 3:39:27 PM

**Data source:** Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(6))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

**Kruskal-Wallis One Way Analysis of Variance on Ranks** Friday, January 14, 2011, 3:39:27 PM

**Data source:** Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Control | 5 | 0 | 1.571 | 1.571 | 1.571 |
| Control 2 | 5 | 0 | 1.571 | 1.571 | 1.571 |
| Site water | 5 | 0 | 1.571 | 1.571 | 1.571 |

H = 0.000 with 2 degrees of freedom. (P = 1.000)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 1.000)

**One Way Analysis of Variance** Friday, January 14, 2011, 3:44:29 PM

**Data source:** Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(10))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

**Kruskal-Wallis One Way Analysis of Variance on Ranks** Friday, January 14, 2011, 3:44:29 PM

**Data source:** Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Control | 5 | 0 | 1.571 | 1.571 | 1.571 |
| DMMU 1 | 5 | 0 | 1.571 | 1.455 | 1.571 |
| DMMU 1S | 5 | 0 | 1.571 | 1.052 | 1.571 |
| DMMU 2 | 5 | 0 | 1.107 | 1.052 | 1.571 |

H = 4.592 with 3 degrees of freedom. (P = 0.204)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.204)

**One Way Analysis of Variance** Friday, January 14, 2011, 3:45:28 PM

**Data source:** Data 1 in Notebook 1

Dependent Variable: asinsqrt(col(14))

**Normality Test:** Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

**Kruskal-Wallis One Way Analysis of Variance on Ranks** Friday, January 14, 2011, 3:45:28 PM

**Data source:** Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| DMMU 1 | 5 | 0 | 1.571 | 1.455 | 1.571 |
| DMMU 1S | 5 | 0 | 1.571 | 1.052 | 1.571 |
| DMMU 2 | 5 | 0 | 1.107 | 1.052 | 1.571 |
| Site water | 5 | 0 | 1.571 | 1.571 | 1.571 |

H = 4.592 with 3 degrees of freedom. (P = 0.204)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.204)

## Appendix K. Statistical analyses for *Hyalella azteca* sediment toxicity tests

*H. azteca* Survival

**One Way Analysis of Variance** Thursday, January 20, 2011, 9:35:26 PM

**Data source:** Data 1 in Hastats

Dependent Variable: asinsqrt(col(2))

**Normality Test:** Passed (P = 0.177)

**Equal Variance Test:** Passed (P = 0.063)

| Group Name | N | Missing | Mean | Std Dev | SEM |
|---|---|---|---|---|---|
| Reference | 5 | 0 | 1.205 | 0.224 | 0.100 |
| -1 | 5 | 0 | 1.257 | 0.189 | 0.0847 |
| -1S | 5 | 0 | 1.293 | 0.254 | 0.114 |
| -2 | 5 | 0 | 0.867 | 0.0858 | 0.0384 |

| Source of Variation | DF | SS | MS | F | P |
|---|---|---|---|---|---|
| Between Groups | 3 | 0.574 | 0.191 | 4.848 | 0.014 |
| Residual | 16 | 0.632 | 0.0395 | | |
| Total | 19 | 1.206 | | | |

The differences in the mean values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = 0.014).

Power of performed test with alpha = 0.050: 0.715

Multiple Comparisons versus Control Group (Dunnett's Method) :

Comparisons for factor: **Sediment**

| Comparison | Diff of Means | q' | P | P<0.050 |
|---|---|---|---|---|
| Reference vs. -2 | 0.338 | 2.692 | -- | Yes |
| Reference vs. -1S | 0.0875 | 0.697 | -- | No |
| Reference vs. -1 | 0.0516 | 0.410 | -- | Do Not Test |

Note: The P values for Dunnett's and Duncan's tests are currently unavailable except for reporting that the P's are greater or less than the critical values of .05 and .01.

A result of "Do Not Test" occurs for a comparison when no significant difference is found between two means that enclose that comparison. For example, if you had four means sorted in order, and found no difference between means 4 vs. 2, then you would not test 4 vs. 3 and 3 vs. 2, but still test 4 vs. 1 and 3 vs. 1 (4 vs. 3 and 3 vs. 2 are enclosed by 4 vs. 2: 4 3 2 1). Note that not testing the enclosed means is a procedural rule, and a result of Do Not Test should be treated as if there is no significant difference between the means, even though one may appear to exist.

## Appendix L. Statistical analyses for *Chironomus dilutus* sediment toxicity tests

**One Way Analysis of Variance** Tuesday, January 04, 2011, 12:51:28 PM

**Data source:** Data 1 in Notebook 1

**Normality Test:** Failed (P = 0.009)

Test execution ended by user request, ANOVA on Ranks begun

**Kruskal-Wallis One Way Analysis of Variance on Ranks** Tuesday, January 04, 2011, 12:51:28 PM

**Data source:** Data 1 in Notebook 1

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Reference | 5 | 0 | 1.571 | 1.214 | 1.571 |
| DMMU-1 | 5 | 0 | 1.571 | 1.107 | 1.571 |
| DMMU-1S | 5 | 0 | 1.107 | 1.107 | 1.329 |
| DMMU-2 | 5 | 0 | 1.571 | 1.249 | 1.571 |

H = 3.271 with 3 degrees of freedom. (P = 0.352)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.352)

***C. dilutus* Mass**

**One Way Analysis of Variance** Wednesday, January 19, 2011, 4:19:05 PM

**Data source:** Data 1 in CdStats

**Normality Test:** Failed (P = 0.011)

Test execution ended by user request, ANOVA on Ranks begun

**Kruskal-Wallis One Way Analysis of Variance on Ranks** Wednesday, January 19, 2011, 4:19:05 PM

**Data source:** Data 1 in CdStats

| Group | N | Missing | Median | 25% | 75% |
|---|---|---|---|---|---|
| Reference | 5 | 0 | 3.343 | 2.106 | 4.456 |
| DMMU-1 | 5 | 0 | 2.947 | 2.559 | 3.342 |
| DMMU-1S | 5 | 0 | 3.342 | 2.856 | 3.506 |
| DMMU-2 | 5 | 0 | 2.061 | 1.975 | 2.100 |

H = 7.251 with 3 degrees of freedom. (P = 0.064)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.064)

## Appendix M. Raw data sheets for elutriate tests.

**REFERENCE TOXICITY TEST SHEET**

Project: Cleveland Harbor — Test Initiation Date: 11/3/10 — Time: 1220
Laboratory: Wapora — Test Termination Date: 11/9/10 — Time: 1530
Test Species: C. dubia — Page 1 of 1
Exposure duration: 96 hr. — Environmental chamber temperature: 25°C

| Conc. | Repl. | No. Loaded | Number Alive 0 h | 24 h | 48 h | 72 h | 96 h | Temp. (°C) 0 h | 96 h | Salinity (ppt) 0 h | 96 h | pH (SU) 0 h | 96 h | D.O. (mg/L) 0 h | 96 h | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | A | 5 | 5 | | 5 | | 5 | 24.7 | 25.0 | 301 | 350 | 8.31 | 8.14 | 7.3 | 7.7 | |
| | B | 5 | 5 | | 5 | | 5 | 25.3 | | | 329 | | 8.09 | | 7.7 | |
| | C | 5 | 5 | | 5 | | 5 | 25.3 | | | 333 | | 8.06 | | 7.7 | |
| 6.25% | A | 5 | 5 | | 5 | | 5 | 24.5 | 25.3 | 1123 | 1182 | 7.85 | 7.87 | 7.2 | 7.7 | |
| | B | 5 | 5 | | 5 | | 5 | 25.3 | | | 1228 | | 7.90 | | 7.7 | |
| | C | 5 | 5 | | 5 | | 5 | 25.4 | | | 1232 | | 7.90 | | 7.7 | |
| 12.5% | A | 5 | 5 | | 5 | | 5 | 24.5 | 25.3 | 1751 | 1883 | 7.91 | 7.88 | 7.1 | 7.8 | |
| | B | 5 | 5 | | 5 | | 5 | 25.4 | | | 1933 | | 7.89 | | 7.7 | |
| | C | 5 | 5 | | 5 | | 5 | 25.4 | | | 1982 | | 7.90 | | 7.8 | |
| 25% | A | 5 | 5 | | 5 | | 5 | 24.6 | 25.3 | 2754 | 2982 | 7.89 | 7.87 | 7.4 | 7.7 | |
| | B | 5 | 5 | | 5 | | 4 | 25.3 | | | 2889 | | 7.89 | | 7.7 | |
| | C | 5 | 5 | | 4 | | 4 | 25.4 | | | 2997 | | 7.90 | | 7.7 | |
| 50% | A | 5 | 5 | | 3 | | 3 | 24.6 | 25.3 | 3254 | 3319 | 7.90 | 7.88 | 7.5 | 7.8 | |
| | B | 5 | 5 | | 3 | | 3 | 25.3 | | | 3232 | | 7.91 | | 7.8 | |
| | C | 5 | 5 | | 3 | | 3 | 25.3 | | | 3271 | | 7.91 | | 7.8 | |
| 100% | A | 5 | 5 | | 3 | | 3 | 24.5 | 25.3 | 2090 | 2128 | 7.92 | 7.90 | 7.4 | 7.9 | |
| | B | 5 | 5 | | 3 | | 3 | 25.4 | | | 2186 | | 7.91 | | 7.9 | |
| | C | 5 | 5 | | 3 | | 3 | 25.4 | | | 2210 | | 7.93 | | 7.9 | |
| Initials: | | KWM | KWM | | MSW | | KWM | KWM | KWM | KWM | KWM | KWM | KWM | KWM | KWM | |

Reviewed by _____ on 22 NOV 10

## TOXICITY TEST SHEET

Project: Cleveland Harbor
Site/chemical ID: various
Test Species: *Ceriodaphnia dubia*
Exposure duration: 48hR

Test Initiation Date: 11/17/10 Time: 1530
Test Termination Date: 11/19/10 Time: 1530
Page 1 of 1
Environmental chamber temperature: 25

| Conc. | Repl. | No. Loaded | No. Alive 24 h | No. Alive 48 h | Temp. (°C) 0 h | Temp. (°C) 48 h | Conductivity (uS/cm) 0 h | Conductivity (uS/cm) 48 h | pH (SU) 0 h | pH (SU) 48 h | D.O. (mg/L) 0 h | D.O. (mg/L) 48 h | Alkalinity (mg/L) | Hardness (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CON | A | 5 | NA | 5 | 24.6 | 25.6 | 297 | 350 | 8.28 | 8.14 | 7.4 | 7.9 | | |
| | B | 5 | NA | 5 | | 25.3 | | 329 | | 8.09 | | 7.7 | | |
| | C | 5 | NA | 5 | | 25.3 | | 333 | | 8.06 | | 7.7 | | |
| | D | 5 | NA | 5 | | 25.3 | | 327 | | 8.04 | | 7.6 | | |
| | E | 5 | NA | 5 | | 25.2 | | 345 | | 8.01 | | 7.7 | | |
| 0% | A | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | |
| | D | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | |
| DMW 1 | A | 5 | NA | 5 | 24.3 | 25.8 | 681 | 601 | 7.35 | 8.01 | 6.5 | 7.4 | 190 | <10 |
| | B | 5 | NA | 5 | 24.4 | 25.8 | 681 | 588 | 7.48 | 7.93 | 6.6 | 7.2 | | |
| | C | 5 | NA | 5 | 24.5 | 25.8 | 681 | 587 | 7.44 | 7.93 | 6.7 | 6.1 | | |
| | D | 5 | NA | 4 | 24.6 | 25.6 | 681 | 587 | 7.44 | 7.94 | 6.7 | 6.3 | | |
| | E | 5 | NA | 5 | 24.5 | 25.7 | 681 | 588 | 7.44 | 7.98 | 6.8 | 6.1 | | |
| DMW 2 | A | 5 | NA | 3 | 24.8 | 25.1 | 704 | 638 | 7.5 | 7.97 | 7.2 | 5.9 | 190 | <10 |
| | B | 5 | NA | 5 | 24.8 | 25.2 | 703 | 637 | 7.5 | 8.04 | 7.1 | 6.0 | | |
| | C | 5 | NA | 4 | 25.4 | 25.3 | 702 | 648 | 7.5 | 8.04 | 7.1 | 6.3 | | |
| | D | 5 | NA | 4 | 25.4 | 25.4 | 702 | 632 | 7.54 | 8.12 | 7.3 | 6.6 | | |
| | E | 5 | NA | 5 | 25.1 | 25.4 | 703 | 645 | 7.54 | 8.16 | 7.3 | 6.8 | | |
| DMW 15 | A | 5 | NA | 3 | 25.6 | 25.1 | 331 | 324 | 7.51 | 8.00 | 7.9 | 6.3 | 115 | 80 |
| | B | 5 | NA | 5 | 25.8 | 25.0 | 330 | 317 | 7.48 | 7.87 | 7.8 | 6.7 | | |
| | C | 5 | NA | 4 | 25.4 | 25.0 | 329 | 318 | 7.40 | 7.90 | 8.1 | 6.9 | | |
| | D | 5 | NA | 5 | 25.6 | 25.0 | 330 | 319 | 7.42 | 7.91 | 8.2 | 7.0 | | |
| | E | 5 | NA | 5 | 25.4 | 25.0 | 329 | 321 | 7.43 | 7.91 | 8.2 | 7.1 | | |
| | A | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | |
| | D | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | |
| Initials: | | BDM/AK | | BDM | BDM | BDM | BDM | BDM | BDM | BDM | BDM | BDM | BDM | BDM |
| Date: | | 11/17/10 | | 11/19/10 | 11/17/10 | 11/19/10 | 11/17/10 | 11/19/10 | 11/17/10 | 11/19/10 | 11/17/10 | 11/19/10 | 11/17/10 | 11/17/10 |
| Time: | | 1430 | | 1530 | 1400 | 1530 | 1400 | 1530 | 1400 | 1530 | 1400 | 1530 | 1400 | 1400 |
| Initials (QA): | | AK | | AK | | | | | | | | | | |

Reviewed by _____ on 30 NOV 10

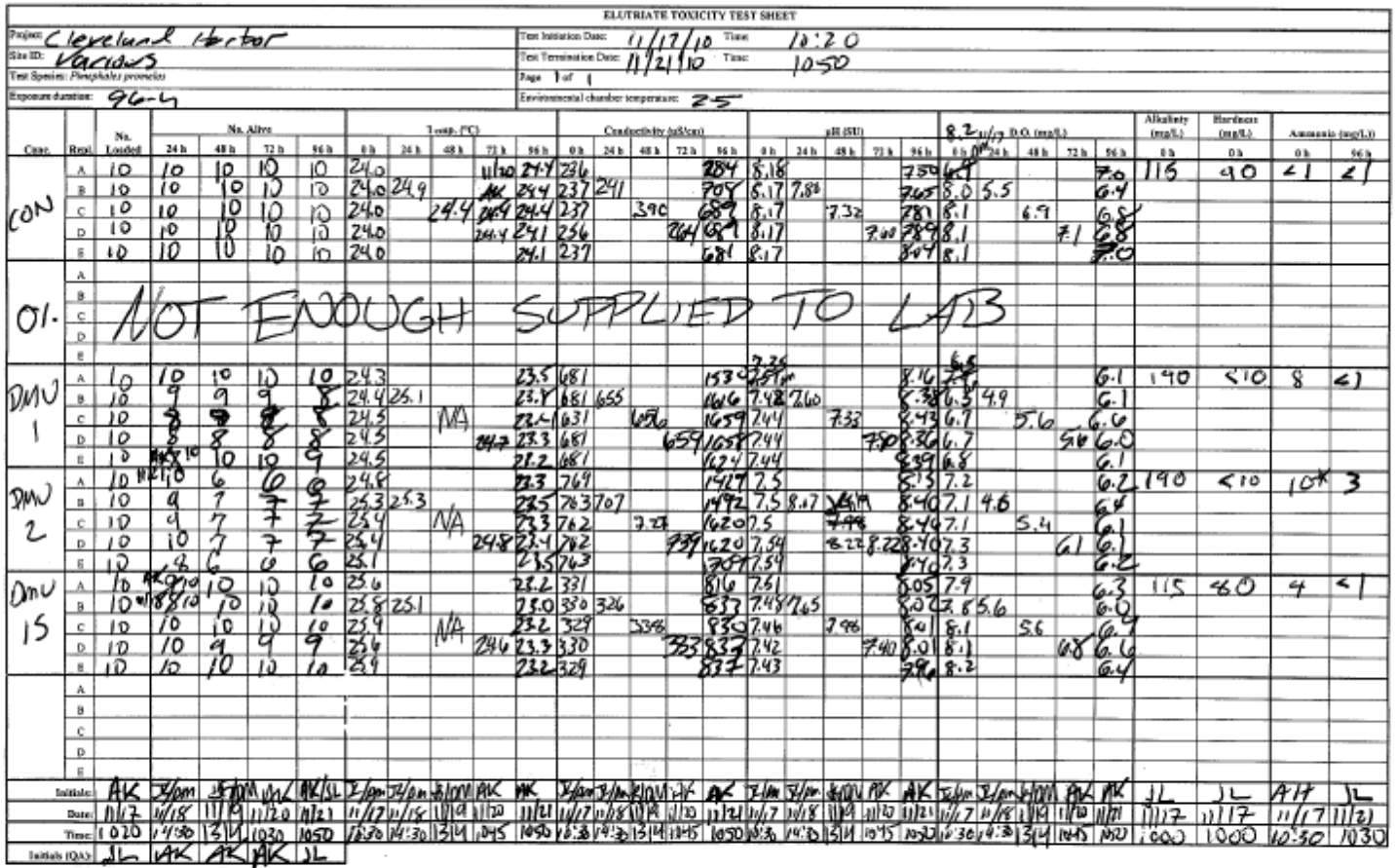
- See Pimephales prometas data sheet for ammonia levels
- counts did not occur @ 24-h due to high sample turbidity

**REFERENCE TOXICITY TEST SHEET**

Project: Black River CDF — Test Initiation Date: 15-NOV-10 — Time: 1330
Laboratory: ERDC-EL — Test Termination Date: 19-NOV-10 — Time: 1400
Test Species: Hyalella azteca — Page 1 of 1
Exposure duration: 96 hrs — Environmental chamber temperature: 25

| Conc. | Repl. | No. Loaded | Number Alive 0 h | 24 h | 48 h | 72 h | 96 h | Temp. (°C) 0 h | 96 h | Salinity (ppt) 0 h | 96 h | pH (SU) 0 h | 96 h | D.O. (mg/L) 0 h | 96 h | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | A | 10 | 10 | 10 | 10 | 10 | 10 | 23.0 | 24.9 | 241 | 277 | 7.70 | 7.57 | 8.8 | 6.4 | |
| | B | 10 | 10 | 10 | TE | TE | TE | TE | TE | TE | TE | TE | TE | TE | TE | TE 6 replicates affected |
| | C | 10 | 10 | 10 | 10 | 10 | 10 | 23.0 | 24.9 | 241 | 353 | 7.64 | 7.49 | 8.8 | 6.5 | |
| 0.25% | A | 10 | 10 | 10 | 10 | 10 | 10 | 23.1 | 25.0 | 564 | 635 | 7.60 | 7.64 | 7.0 | 6.3 | |
| | B | 10 | 10 | 10 | 10 | 10 | 10 | 23.0 | 24.7 | 564 | 635 | 7.75 | 7.68 | 6.6 | 6.3 | |
| | C | 10 | 10 | 10 | 10 | 10 | 10 | 23.0 | 24.6 | 564 | 660 | 7.66 | 7.74 | 5.9 | 6.6 | |
| 1.25% | A | 10 | 10 | 10 | 10 | 10 | 10 | 23.0 | 24.7 | 879 | 984 | 7.80 | 7.70 | 6.1 | 6.8 | |
| | B | 10 | 10 | 10 | 10 | 10 | 10 | 23.0 | 24.8 | 880 | 1019 | 7.69 | 7.76 | 6.4 | 6.8 | |
| | C | 10 | 10 | 10 | 10 | 10 | 10 | 23.0 | 24.6 | 880 | 1024 | 7.90 | 7.79 | 6.6 | 6.8 | |
| 2.5% | A | 10 | 10 | 10 | 9 | 9 | 9 | 23.0 | 24.8 | 1512 | 1682 | 7.86 | 7.76 | 7.5 | 7.0 | |
| | B | 10 | 10 | 8 | 10 | 10 | 7 | 23.0 | 24.8 | 1513 | 1717 | 7.89 | 7.79 | 7.5 | 6.9 | |
| | C | 10 | 10 | 9 | 7 | 6 | 5 | 23.0 | 24.6 | 1514 | 1778 | 7.89 | 7.81 | 7.0 | 6.9 | |
| 5% | A | 10 | 10 | 0 | 0 | 0 | 0 | 23.0 | 24.9 | 2737 | 2755 | 7.81 | 8.02 | 7.3 | 7.1 | |
| | B | 10 | 10 | 0 | 0 | 0 | 0 | 23.1 | 24.6 | 2728 | 2773 | 7.85 | 8.07 | 7.5 | 7.1 | |
| | C | 10 | 10 | 0 | 0 | 0 | 0 | 23.1 | 24.4 | 2722 | 2807 | 7.86 | 8.11 | 7.5 | 7.5 | |
| 10% | A | 10 | 10 | 0 | 0 | 0 | 0 | 23.1 | 24.9 | 5240 | 5170 | 7.72 | 8.00 | 7.5 | 7.1 | |
| | B | 10 | 10 | 0 | 0 | 0 | 0 | 23.1 | 24.9 | 5240 | 5230 | 7.75 | 7.97 | 7.2 | 6.8 | |
| | C | 10 | 10 | 0 | 0 | 0 | 0 | 23.1 | 24.6 | 5230 | 5310 | 7.77 | 7.99 | 7.2 | 6.9 | |
| Initials: | | | KH | BK | DM | DM | TA/DM | TA/DM | TA/DM | TA/DM | TA/DM | TA/DM | TA/DM | TA/DM | TA/DM | |

Reviewed by [signature] on 22NOV10



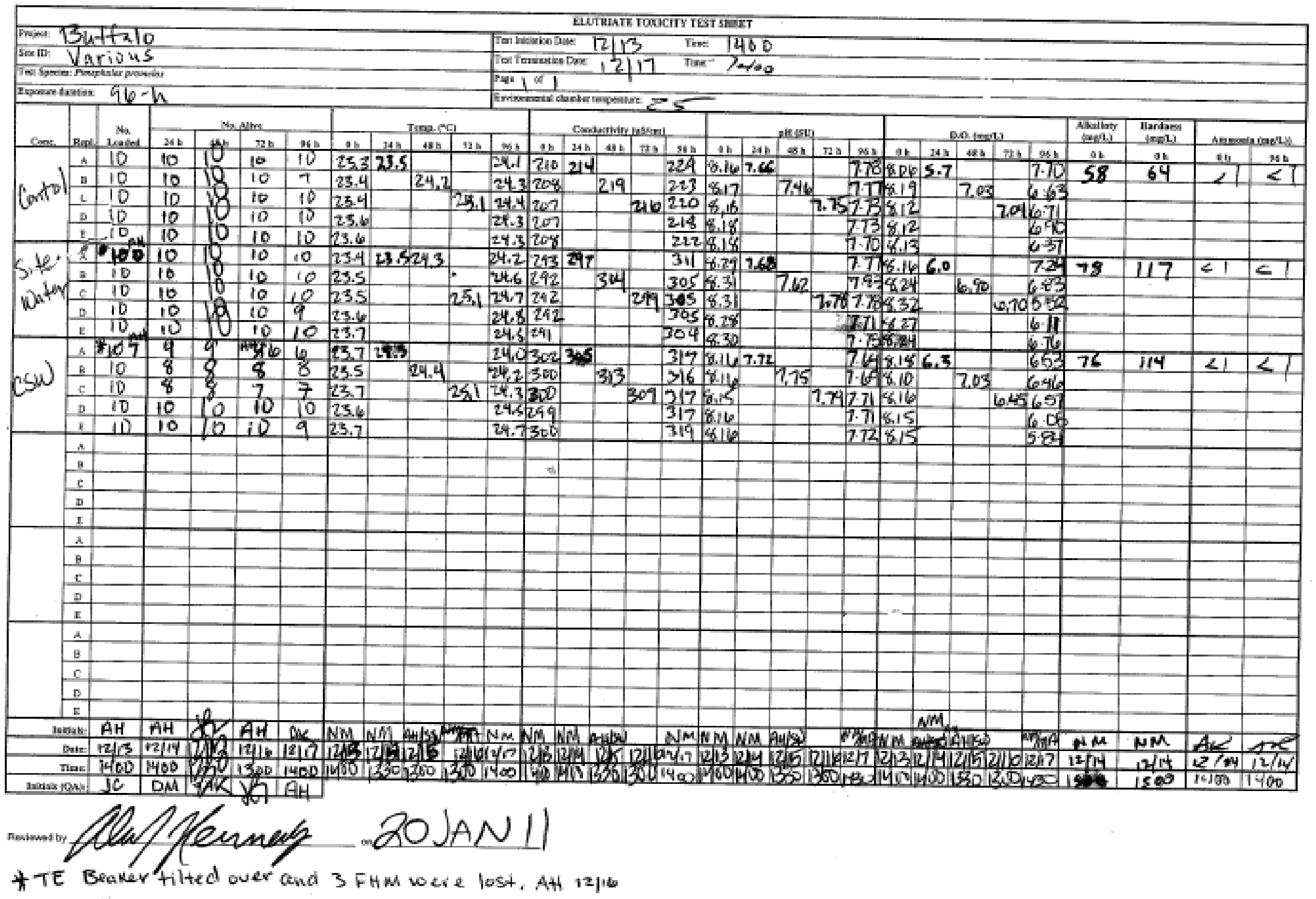
ELUTRIATE TOXICITY TEST SHEET

Project: Cleveland Harbor — Test Initiation Date: 11/17/10 Time: 10:20
Site ID: Vacuws — Test Termination Date: 11/21/10 Time: 10:50
Test Species: *Pimephales promelas* — Page 1 of 1
Exposure duration: 96-h — Environmental chamber temperature: 25

| Conc | Rep | No. Loaded | No. Alive 24 h | 48 h | 72 h | 96 h | Temp. (°C) 0 h | 24 h | 48 h | 72 h | 96 h | Conductivity (uS/cm) 0 h | 24 h | 48 h | 72 h | 96 h | pH (SU) 0 h | 24 h | 48 h | 72 h | 96 h | 8.2 11/17 D.O. (mg/L) 0 h | 24 h | 48 h | 72 h | 96 h | Alkalinity (mg/L) 0 h | Hardness (mg/L) 0 h | Ammonia (mg/L) 0 h | 96 h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CON | A | 10 | 10 | 10 | 10 | 10 | 24.0 | | | 11/20 | 24.4 | 236 | | | | 284 | 8.18 | | | | 7.59 | 6.8 | | | | 7.0 | 115 | 90 | <1 | <1 |
| | B | 10 | 10 | 10 | 10 | 10 | 24.0 | 24.9 | | AK | 24.4 | 237 | 241 | | | 708 | 8.17 | 7.88 | | | 7.65 | 8.0 | 5.5 | | | 6.4 | | | | |
| | C | 10 | 10 | 10 | 10 | 10 | 24.0 | | 24.4 | 24.4 | 24.4 | 237 | | 390 | | 689 | 8.17 | | | 7.32 | 7.81 | 8.1 | | 6.9 | | 6.8 | | | | |
| | D | 10 | 10 | 10 | 10 | 10 | 24.0 | | | 24.4 | 24.1 | 256 | | | 764 | 689 | 8.17 | | | 7.00 | 7.89 | 8.1 | | | 7.1 | 6.8 | | | | |
| | E | 10 | 10 | 10 | 10 | 10 | 24.0 | | | | 24.1 | 237 | | | | 681 | 8.17 | | | | 8.09 | 8.1 | | | | 7.0 | | | | |
| 01 | A | NOT ENOUGH SUPPLIED TO LAB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DMV 1 | A | 10 | 10 | 10 | 10 | 10 | 24.3 | | | | 23.5 | 681 | | | | 1530 | 7.26 | | | | 8.16 | 6.5 | | | | 6.1 | 190 | <10 | 8 | <1 |
| | B | 10 | 9 | 9 | 9 | 8 | 24.4 | 26.1 | | | 23.8 | 681 | 655 | | | 1616 | 7.48 | 7.60 | | | 8.38 | 6.5 | 4.9 | | | 6.1 | | | | |
| | C | 10 | 8 | 8 | 8 | 8 | 24.5 | | NA | | 23.4 | 631 | | 696 | | 1659 | 7.44 | | | 7.33 | 8.43 | 6.7 | | 5.6 | | 6.6 | | | | |
| | D | 10 | 8 | 8 | 8 | 8 | 24.5 | | | 24.7 | 23.3 | 681 | | | 659 | 1658 | 7.44 | | | 7.50 | 8.36 | 6.7 | | | 5.8 | 6.0 | | | | |
| | E | 10 | 10 | 10 | 10 | 9 | 24.5 | | | | 23.2 | 681 | | | | 1624 | 7.44 | | | | 8.39 | 6.8 | | | | 6.1 | | | | |
| DMV 2 | A | 10 | 10 | 6 | 6 | 6 | 24.8 | | | | 23.3 | 769 | | | | 1417 | 7.5 | | | | 8.13 | 7.2 | | | | 6.2 | 190 | <10 | 10* | 3 |
| | B | 10 | 9 | 7 | 7 | 7 | 25.3 | 25.3 | | | 23.5 | 783 | 707 | | | 1492 | 7.5 | 8.07 | | | 8.40 | 7.1 | 4.6 | | | 6.4 | | | | |
| | C | 10 | 9 | 7 | 7 | 7 | 25.4 | | NA | | 23.3 | 762 | | 7.27 | | 1620 | 7.5 | | | | 8.44 | 7.1 | | 5.4 | | 6.1 | | | | |
| | D | 10 | 10 | 7 | 7 | 7 | 25.4 | | | 24.8 | 23.4 | 782 | | | 739 | 1620 | 7.59 | | | 8.22 | 8.28 | 7.3 | | | 6.1 | 6.1 | | | | |
| | E | 10 | 6 | 6 | 6 | 6 | 25.1 | | | | 23.5 | 763 | | | | 1597 | 7.59 | | | | 8.40 | 7.3 | | | | 6.2 | | | | |
| DMV 15 | A | 10 | 10 | 10 | 10 | 10 | 25.6 | | | | 23.2 | 331 | | | | 816 | 7.51 | | | | 8.05 | 7.9 | | | | 6.3 | 115 | 60 | 4 | <1 |
| | B | 10 | 8 | 10 | 10 | 10 | 25.8 | 25.1 | | | 23.0 | 330 | 326 | | | 833 | 7.48 | 7.45 | | | 8.02 | 7.8 | 5.6 | | | 6.0 | | | | |
| | C | 10 | 10 | 10 | 10 | 10 | 25.9 | | NA | | 23.2 | 329 | | 338 | | 830 | 7.46 | | | 7.96 | 8.01 | 8.1 | | 5.6 | | 6.1 | | | | |
| | D | 10 | 10 | 9 | 9 | 9 | 25.6 | | | 24.6 | 23.3 | 330 | | | 333 | 837 | 7.42 | | | 7.40 | 8.01 | 8.1 | | | 6.8 | 6.6 | | | | |
| | E | 10 | 10 | 10 | 10 | 10 | 25.9 | | | | 23.2 | 329 | | | | 827 | 7.43 | | | | 7.96 | 8.2 | | | | 6.4 | | | | |
| | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Initials: | | AK | JL/pm | JL/pm | JL/pm | AK/JL | JL/pm | JL/pm | JL/pm | AK | AK | JL/pm | JL/pm | JL/pm | JL | AK | JL/pm | JL/pm | JL/pm | AK | AK | JL/pm | JL/pm | JL/pm | AK | AK | JL | JL | AH | JL |
| Date: | | 11/17 | 11/18 | 11/19 | 11/20 | 11/21 | 11/17 | 11/18 | 11/19 | 11/20 | 11/21 | 11/17 | 11/18 | 11/19 | 11/20 | 11/21 | 11/17 | 11/18 | 11/19 | 11/20 | 11/21 | 11/17 | 11/18 | 11/19 | 11/20 | 11/21 | 11/17 | 11/17 | 11/17 | 11/21 |
| Time: | | 1020 | 1450 | 1314 | 1030 | 1050 | 1020 | 1430 | 1330 | 1045 | 1050 | 1038 | 1430 | 1315 | 1045 | 1050 | 1038 | 1430 | 1315 | 1045 | 1052 | 1030 | 1438 | 1314 | 1045 | 1052 | 1000 | 1000 | 1030 | 1030 |
| Initials (QA): | | JL | AK | AK | AK | JL | | | | | | | | | | | | | | | | | | | | | | | | |

Reviewed by: [signature] 22NOV10

* Sample not filtered; particles may have interfered with ammonia kit
- Counts at 24, 72-h difficult due to sample turbidity
- Aeration added 18 NOV 10 due to D.O. approaching 40% SATURATION
- Salinity spike likely due to artemia ration. Conductivity



ELUTRIATE TOXICITY TEST SHEET

Project: Buffalo
Site ID: Various
Test Species: *Pimephales promelas*
Exposure duration: 96-h
Test Initiation Date: 12/13 Time: 1400
Test Termination Date: 12/17 Time: 1400
Page 1 of 1
Environmental chamber temperature: 25

| Conc. | Repl. | No. Loaded | No. Alive | | | | Temp. (°C) | | | | | Conductivity (µS/cm) | | | | | pH (SU) | | | | | D.O. (mg/L) | | | | | Alkalinity (mg/L) | Hardness (mg/L) | Ammonia (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24 h | 48 h | 72 h | 96 h | 0 h | 24 h | 48 h | 72 h | 96 h | 0 h | 24 h | 48 h | 72 h | 96 h | 0 h | 24 h | 48 h | 72 h | 96 h | 0 h | 24 h | 48 h | 72 h | 96 h | 0 h | 0 h | 0 h | 96 h |
| Control | A | 10 | 10 | 10 | 10 | 10 | 23.3 | 23.5 | | | 24.1 | 210 | 214 | | | 229 | 8.16 | 7.66 | | | 7.78 | 8.06 | 5.7 | | | 7.70 | 58 | 64 | <1 | <1 |
| | B | 10 | 10 | 10 | 10 | 7 | 23.4 | | 24.2 | | 24.3 | 208 | | 219 | | 223 | 8.17 | | 7.46 | | 7.77 | 8.19 | | 7.03 | | 6.63 | | | | |
| | C | 10 | 10 | 10 | 10 | 10 | 23.4 | | | 25.1 | 24.4 | 207 | | | 216 | 220 | 8.16 | | | 7.75 | 7.73 | 8.12 | | | 7.09 | 6.71 | | | | |
| | D | 10 | 10 | 10 | 10 | 10 | 23.6 | | | | 24.3 | 207 | | | | 218 | 8.18 | | | | 7.73 | 8.12 | | | | 6.90 | | | | |
| | E | 10 | 10 | 10 | 10 | 10 | 23.6 | | | | 24.3 | 208 | | | | 222 | 8.18 | | | | 7.70 | 8.13 | | | | 6.57 | | | | |
| Site Water | A | *10 AH | 10 | 10 | 10 | 10 | 23.4 | 23.5 | 24.3 | | 24.2 | 293 | 297 | | | 311 | 8.29 | 7.68 | | | 7.77 | 8.16 | 6.0 | | | 7.24 | 78 | 117 | <1 | <1 |
| | B | 10 | 10 | 10 | 10 | 10 | 23.5 | | | | 24.6 | 292 | | 304 | | 305 | 8.31 | | 7.62 | | 7.93 | 8.24 | | 6.90 | | 6.83 | | | | |
| | C | 10 | 10 | 10 | 10 | 10 | 23.5 | | | 25.1 | 24.7 | 292 | | | 299 | 305 | 8.31 | | | 7.78 | 7.78 | 8.32 | | | 6.70 | 5.52 | | | | |
| | D | 10 | 10 | 10 | 10 | 9 | 23.6 | | | | 24.8 | 292 | | | | 305 | 8.28 | | | | 7.71 | 8.27 | | | | 6.11 | | | | |
| | E | 10 | 10 | 10 | 10 | 10 | 23.7 | | | | 24.5 | 291 | | | | 304 | 8.30 | | | | 7.75 | 8.24 | | | | 6.76 | | | | |
| CSW | A | *~~10~~ 7 AH | 9 | 9 | ~~9~~ 6 AH | 6 | 23.7 | 23.5 | | | 24.0 | 302 | 305 | | | 317 | 8.16 | 7.72 | | | 7.64 | 8.14 | 6.3 | | | 6.53 | 76 | 114 | <1 | <1 |
| | B | 10 | 8 | 8 | 8 | 8 | 23.5 | | 24.4 | | 24.2 | 300 | | 313 | | 316 | 8.11 | | 7.75 | | 7.65 | 8.10 | | 7.03 | | 6.46 | | | | |
| | C | 10 | 8 | 8 | 7 | 7 | 23.7 | | | 25.1 | 24.3 | 300 | | | 309 | 317 | 8.15 | | | 7.79 | 7.71 | 8.16 | | | 6.45 | 6.57 | | | | |
| | D | 10 | 10 | 10 | 10 | 10 | 23.6 | | | | 24.6 | 299 | | | | 317 | 8.16 | | | | 7.71 | 8.15 | | | | 6.06 | | | | |
| | E | 10 | 10 | 10 | 10 | 9 | 23.7 | | | | 24.7 | 300 | | | | 319 | 8.16 | | | | 7.72 | 8.15 | | | | 5.84 | | | | |
| | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Initials: | | AH | AH | [illegible] | AH | DK | NM | NM | AH/SS | AH/[illegible] | NM | NM | NM | AH/SW | | NM | NM | NM | AH/SW | | [illegible] | NM | NM/AH | AH/SW | | [illegible] | NM | NM | AK | [illegible] |
| Date: | | 12/13 | 12/14 | 12/15 | 12/16 | 12/17 | 12/13 | 12/14 | 12/15 | 12/16 | 12/17 | 12/13 | 12/14 | 12/15 | 12/16 | 12/17 | 12/13 | 12/14 | 12/15 | 12/16 | 12/17 | 12/13 | 12/14 | 12/15 | 12/16 | 12/17 | 12/14 | 12/14 | 12/14 | 12/14 |
| Time: | | 1400 | 1400 | 1330 | 1300 | 1400 | 1400 | 1330 | 1250 | 1300 | 1400 | 1400 | 1415 | 1326 | 1300 | 1400 | 1400 | 1400 | 1350 | 1300 | 1400 | 1400 | 1400 | 1350 | 1300 | 1400 | 1500 | 1500 | 1400 | 1400 |
| Initials (QA): | | JC | DM | YAK | [illegible] | AH | | | | | | | | | | | | | | | | | | | | | | | | |

Reviewed by Alan Kennedy on 20JAN11

*TE Beaker tilted over and 3 FHM were lost. AH 12/16

**TOXICITY TEST SHEET**

Project: Buffalo
Site/chemical ID: EERT / Various
Test Species: *Ceriodaphnia dubia*
Exposure duration: 25

Test Initiation Date: 12/14/10 Time: 14:00
Test Termination Date: 12/16/10 Time: 14:15
Page 1 of 1
Environmental chamber temperature: 25

| Conc. | Repl. | No. Loaded | No. Alive 24 h | No. Alive 48 h | Temp. (°C) 0 h | Temp. (°C) 48 h | Conductivity (uS/cm) 0 h | Conductivity (uS/cm) 48 h | pH (SU) 0 h | pH (SU) 48 h | D.O. (mg/L) 0 h | D.O. (mg/L) 48 h | Alkalinty (mg/L) | Hardness (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | A | 5 | | 5 | 24.6 | 25.1 | 1256* | 1396* | 7.71 | 7.70 | 6.0 | 5.88 | | |
| | B | 5 | | 5 | | | | | | | | | | |
| | C | 5 | | 5 | | | | | | | | | | |
| | D | 5 | | 5 | | | | | | | | | | |
| | E | 5 | | 5 | | | | | | | | | | |
| Site Water | A | 5 | | 5 | 24.6 | 24.9 | 302 | 314 | 7.76 | 7.99 | 6.0 | 6.37 | | |
| | B | 5 | | 5 | | | | | | | | | | |
| | C | 5 | | 5 | | | | | | | | | | |
| | D | 5 | | 4 | | | | | | | | | | |
| | E | 5 | | 4 | | | | | | | | | | |
| ~~MHW~~ | A | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | |
| | D | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | |
| CSW | A | 5 | | 5 | 24.7 | 24.4 | 301 | 308 | 7.80 | 8.02 | 6.5 | 6.42 | | |
| | B | 5 | | 5 | | | | | | | | | | |
| | C | 5 | | 5 | | | | | | | | | | |
| | D | 5 | | 5 | | | | | | | | | | |
| | E | 5 | | 5 | | | | | | | | | | |
| | A | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | |
| | D | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | |
| | A | | | | | | | | | | | | | |
| | B | | | | | | | | | | | | | |
| | C | | | | | | | | | | | | | |
| | D | | | | | | | | | | | | | |
| | E | | | | | | | | | | | | | |
| Initials: | | DM | | DM | DM | AH/DM | DM | AH/DM | DM | AH/DM | DM | AH/DM | | |
| Date: | | 12/14 | | 12/16 | 12/14 | 12/16 | 12/14 | 12/16 | 12/14 | 12/16 | 12/14 | 12/16 | | |
| Time: | | 1400 | | 1400 | 14:00 | 1400 | 14:00 | 1400 | 14:00 | 1400 | 14:00 | 1400 | | |
| Initials (QA): | | AK | | AH | | | | | | | | | | |

AK 17Dec

Reviewed by _____ on 17 Dec 10

* water chemistry shows for control clearly contaminated. Conductivity in test are 210-220 uS/cm.

**Appendix N. Raw data sheets for *Hyalella azteca* sediment test.**

**POREWATER TOTAL AMMONIA TRACKING SHEET**

| | |
|---|---|
| Project: Cleveland Harbor | Test Initiation Date: 12-17-10 Time: |
| Laboratory: ERDC | Test Date(s): Time: |
| Test Species: *H. azteca* | Page 1 of 1 |
| Exposure duration: 10 day | |

| Treatment | Total Porewater Ammonia Bulk Sediment (mg/L) | Date: 12-14-10 | | Date: 12-17-10 | | Date: | | Date: | | Total Porewater Ammonia |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Time (purge 1) | Time (purge 2) | Time (purge 1) | Time (purge 2) | Time (purge 1) | Time (purge 2) | Time (purge 1) | Time (purge 2) | Day 0 (sham 1) |
| Control | 2 | AM | PM | AM | PM | | | | | <1 |
| Reference | 1 | " | " | " | " | | | | | <1 |
| DMMU-1 | 96.9 | " | " | " | " | | | | | 14.5 |
| DMMU-1S | 80.4 | " | " | " | " | | | | | 8.3 |
| DMMU-2 | 91.5 | " | " | " | " | | | | | 10.7 |

**Signature:** _____

**Disclosed and Understood by:** _____

Initial DF

**~~Final~~ Overlying Water Quality**

Project: Cleveland Harbor

Organism: *H. azteca*

Test Day: 0 Date: 12/17/10 Time: AM Technician initials: VM

| Sediment | Replicate | Temp. (20-26°C) | pH | D.O. (>4.0 mg/L) | *Hardness (PPM $CaCO_3$) | *Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | *Ammonia (PPM) |
|---|---|---|---|---|---|---|---|---|
| Control | A | 23.6 | 7.25 | 7.00 | 64 | 64 | 186.3 | <1 |
| Control | B | 23.2 | 7.31 | 6.99 | | | 185.3 | |
| Control | C | 23.4 | 7.30 | 6.80 | | | 185.7 | |
| Control | D | 23.2 | 7.31 | 6.81 | | | 184.1 | |
| Control | E | 23.1 | 7.31 | 7.28 | | | 186.9 | |
| Reference | A | 23.2 | 7.83 | 7.42 | 68 | 68 | 211.2 | <1 |
| Reference | B | 23.1 | 8.00 | 7.13 | | | 212.4 | |
| Reference | C | 23.1 | 8.00 | 7.40 | | | 212.1 | |
| Reference | D | 23.3 | 8.04 | 7.51 | | | 211.7 | |
| Reference | E | 23.3 | 8.05 | 7.38 | | | 211.9 | |
| DMMU-1 | A | 23.3 | 7.53 | 5.83 | 67 | 68 | 252.1 | <1 |
| DMMU-1 | B | 23.4 | 7.49 | 6.19 | | | 246.8 | |
| DMMU-1 | C | 23.3 | 7.46 | 6.15 | | | 246.7 | |
| DMMU-1 | D | 23.6 | 7.42 | 6.45 | | | 252.7 | |
| DMMU-1 | E | 23.5 | 7.39 | 6.30 | | | 241.2 | |
| DMMU-1S | A | 22.9 | 7.31 | 6.06 | 68 | 54 | 225.8 | <1 |
| DMMU-1S | B | 23.4 | 7.37 | 6.58 | | | 224.0 | |
| DMMU-1S | C | 23.4 | 7.44 | 6.54 | | | 223.9 | |
| DMMU-1S | D | 23.2 | 7.46 | 6.13 | | | 222.8 | |
| DMMU-1S | E | 23.3 | 7.48 | 6.44 | | | 220.2 | |
| DMMU-2 | A | 22.9 | 7.36 | 6.33 | 76 | 84 | 275.5 | <1 |
| DMMU-2 | B | 22.9 | 7.47 | 6.58 | | | 236.4 | |
| DMMU-2 | C | 22.9 | 7.50 | 6.48 | | | 255.6 | |
| DMMU-2 | D | 22.8 | 7.45 | 6.18 | | | 308.0 | |
| DMMU-2 | E | 22.8 | 7.53 | 6.27 | | | 244.3 | |

*Measured from a composite of overlying water from all treatment replicates (2-5 mL per replicate).

Signature: [signature]

Disclosed and Understood by: [signature]

**Final Overlying Water Quality**

Project: Cleveland Harbor

Organism: *H. azteca*

Test Day: 0/10 Date: 12/27/10 Time: 0835 Technician initials: MA/SW

| Sediment | Replicate | Temp. (20-26°C) | pH | D.O. (>4.0 mg/L) | *Hardness (PPM $CaCO_3$) | *Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | *Ammonia (PPM) |
|---|---|---|---|---|---|---|---|---|
| Control | A | 21.9 | 7.78 | 7.89 | 74 | 60 | 209.5 | <1 |
| Control | B | 21.9 | 7.51 | 7.85 | | | 209.6 | |
| Control | C | 21.9 | 7.18 | 7.38 | | | 206.8 | |
| Control | D | 22.0 | 7.56 | 8.63 | | | 207.7 | |
| Control | E | 22.1 | 7.77 | 7.87 | | | 227.6 | |
| Reference | A | 21.8 | 8.14 | 7.94 | 72 | 68 | 216.6 | <1 |
| Reference | B | 22.0 | 8.15 | 7.90 | | | 217.6 | |
| Reference | C | 21.9 | 8.09 | 7.84 | | | 217.4 | |
| Reference | D | 21.7 | 7.97 | 7.76 | | | 216.9 | |
| Reference | E | 22.2 | 8.13 | 7.93 | | | 216.5 | |
| DMMU-1 | A | 21.5 | 7.57 | 6.27 | 65 | 62 | 228.9 | <1 |
| DMMU-1 | B | 21.6 | 7.69 | 6.90 | | | 223.2 | |
| DMMU-1 | C | 21.8 | 7.78 | 6.44 | | | 226.2 | |
| DMMU-1 | D | 21.6 | 7.55 | 5.96 | | | 234.6 | |
| DMMU-1 | E | 21.8 | 7.56 | 5.87 | | | 238.9 | |
| DMMU-1S | A | 20.6 | 7.84 | 5.45 | 73 | 80 | 218.0 | <1 |
| DMMU-1S | B | 20.8 | 7.65 | 6.23 | | | 225.3 | |
| DMMU-1S | C | 20.8 | 7.76 | 6.56 | | | 229.3 | |
| DMMU-1S | D | 21.1 | 7.75 | 6.38 | | | 227.6 | |
| DMMU-1S | E | 21.4 | 7.80 | 6.73 | | | 225.1 | |
| DMMU-2 | A | 22.1 | 7.86 | 5.86 | 69 | 60 | 229.3 | <1 |
| DMMU-2 | B | 21.4 | 7.89 | 6.33 | | | 227.1 | |
| DMMU-2 | C | 21.6 | 7.87 | 6.65 | | | 222.9 | |
| DMMU-2 | D | 21.6 | 7.77 | 6.25 | | | 228.5 | |
| DMMU-2 | E | 22.1 | 8.05 | 6.35 | | | 227.6 | |

*Measured from a composite of overlying water from all treatment replicates (2-5 mL per replicate).

Signature:

Disclosed and Understood by:

**Daily Overlying Water Temperature (°C) and D.O. (mg/L), Feeding and Maintenance Checklist**
**Organism:** ***H. azteca***

| Test Day | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. |
| Control | 22.0 | 8.02 | 23.2 | 8.0 | 22.4 | 7.42 | 21.9 | 7.7 | 21.5 | 8.1 | 20.5 | | 20.2 | 7.3 | 23.1 | 8.0 | 22.9 | 7.9 |
| Reference | 22.1 | 8.49 | 23.1 | 7.0 | 22.3 | 8.0 | 22.3 | 7.8 | 21.4 | 8.0 | 20.3 | | 20.8 | 7.3 | 23.1 | 8.0 | 22.7 | 7.8 |
| DMMU-1 | 22.0 | 8.19 | 22.9 | 7.3 | 22.2 | 6.1 | 22.3 | 7.0 | 22.1 | 6.5 | 21.1 | | 20.7 | 7.2 | 22.9 | 8.1 | 22.8 | 8.0 |
| DMMU-1S | 22.1 | 7.51 | 22.8 | 8.1 | 22.2 | 6.3 | 23.0 | 8.1 | 21.5 | 6.9 | 20.4 | | 20.5 | 7.7 | 23.1 | 8.0 | 22.9 | 7.8 |
| DMMU-2 | 22.1 | 7.14 | 23.1 | 7.6 | 22.9 | 6.6 | 23.0 | 7.6 | 21.1 | 7.3 | 21.1 | | 20.6 | 7.6 | 23.1 | 8.0 | 22.0 | 7.7 |
| Water Exchanged AM? | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Water Exchanged PM? | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Fed? | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Aeration OK? | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | |
| Zumwalt needles clear? | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | |
| Timer OK? | ✓ | | ✓ | | ✓ | | | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Remcor OK? | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | | N/A | |
| Daily Observations Recorded? | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Technician intials/date | JS/12/12/10 | | JS/12/13/10 | | JS/12/20/10 | | JS/12/21/10 | | JS/12/22/10 | | JS/12/23/10 | | DF/12/24/10 | | DF/12/27/10 | | JCW/12/26/10 | |

**If temperature falls outside the range of 20-26°C or dissolved oxygen falls below 4.0 mg/L contact the study coordinator**

**Signature:** _____

**Disclosed and Understood by:** _____

**Daily Observations**

**Day: -1**

**Date:** 12/16/16 **Technician Initials:** DF
**Time:** AM

**Water exchange counter:** N/A

**Comments:** Sediment added to beakers. Pore water ammonia concentrations are high. Placed beakers into chamber. Performed full water exchange in AM & PM.

**Day: 0**

**Date:** 12/17 **Technician Initials:** DF
**Time:** PM

**Water exchange counter:** N/A

**Comments:** Performed full water exchange in AM and again in the PM. Pore water ammonia concentrations were below 20 mg/L following the exchanges. Organisms counted into counting cups, number verified and then added to each replicate beaker and water quality measured prior to addition of animals. Animals fed, floaters cleaned late PM. Few observed.

**Daily Observations**

**Day: 1**

**Date:** 12/15/10 **Technician Initials:** JS

**Time:** 11:00

**Water exchange counter:** 9

**Comments:** Parameters taken on first day of treatment, see sheet. Counters by module temp checked. Module temp 26.5°C. Test fish fed A.A.M.

**Day: 2**

**Date:** 12/19/10 **Technician Initials:** K.J.M.

**Time:** 1151

**Water exchange counter:** 17

**Comments:** MODULE TEMP. @ 26.5° C, COUNTERS @ ~~17~~ 17 MIN. AND 13, TEST FISH TO BE FED IN P.M.

**Daily Observations**

**Day: 3**

**Date:** 12/20/10 **Technician Initials:** JS

**Time:** 4:00

**Water exchange counter:** 24

**Comments:** Daily parameters taken (see sheet) S. Mackie
temp 26.0°C. Fed fish

**Day: 4**

**Date:** 12/21/10 **Technician Initials:** JS

**Time:** 4:00

**Water exchange counter:** 32

**Comments:** Daily parameters taken (see sheet) Mackie
temp 23.5°C. Fed fish

**Daily Observations**

**Day: 5**

**Date:** 12/22/10 **Technician Initials:** JS

**Time:** 10:30

**Water exchange counter:** 39

**Comments:** Daily parameters taken (see sheet) Moderate temp 23.5°C. Fertilized. DMMU-1 sediments have developed a layer of fluffy sediment at the water-sediment interface. Air bubbles appear to be rising from the sediment bottom through this layer of sediment.

**Day: 6**

**Date:** 12/23 **Technician Initials:** JS

**Time:** 11:00

**Water exchange counter:** 46

**Comments:** Daily parameters taken (see sheet) Moderate temp 23.5°C (PHOTO) Heavy sedimentation in DMMU-1. Fertilized.

**Daily Observations**

**Day: 7**

**Date:** 12/24 **Technician Initials:** JS

**Time:** 7:30

**Water exchange counter:** 52

**Comments:** Weekend, temp 23.5°C, Temp slightly low, page sheet daily parameters taken. Test fish. Temp in chamber ↑ to offset evaporative cooling.

**Day: 8**

**Date:** 12/25 **Technician Initials:** DF

**Time:** Am

**Water exchange counter:** 056

**Comments:** Daily parameters recorded. Animals fed.

**Daily Observations**

**Day: 9**

**Date:** 12/26/10 **Technician Initials:** T.M.

**Time:** 1100

**Water exchange counter:** 66

**Comments:** A.M. - MODULE TEMPERATURE @ 26.5°C, WATER CHANGE CONDUCTED, $NH_3^+$ TAKEN ON ALL TREATMENTS - LESS THA 2 PPM - CONTROL REFERENCE, DMMU-1S, DMMU-1, DMMU-2. AERATION O.K., FLOATER CHECK O.K., TEST FED.

**Day: 10**

**Date:** 12/27/10 **Technician Initials:** T.M. / D.F.

**Time:** 1117

**Water exchange counter:**

**Comments:** T.M. MODULE TEMP. @ 26.2°C, ~~$NH_3^+$ TAKEN - ALL LESS THAN 1 PPM, AERATION OK~~, TEST TERMINATED - PARAMETER TAKEN.

**Signature:**

**Disclosed and Understood by:**

**Final Survival ~~and Growth~~ Information**

**Project:** Cleveland Harbor

**Organism:** *H. azteca*

**Day:** 10

**Date:** 12/27/10 **Time:** 1520

| Sediment | Replicate | Technician Initials | # live recovered | Comments |
|---|---|---|---|---|
| Control | A | JS | 10 | |
| Control | B | JS | 10 | |
| Control | C | JS | 10 | |
| Control | D | JW | 9 | |
| Control | E | JS | 8 | |
| Reference | A | JS | 9 | |
| Reference | B | JS | 8 | |
| Reference | C | JS | 10 | |
| Reference | D | JS | 8 | |
| Reference | E | JS | 7 | |
| DMMU-1 | A | JS | 8 | |
| DMMU-1 | B | DF | 10 | |
| DMMU-1 | C | JW | 9 | |
| DMMU-1 | D | JS | 8 | |
| DMMU-1 | E | JS | 9 | |
| DMMU-1S | A | JW | 8 | |

**Final Survival ~~and Growth~~ Information**

**Project:** Cleveland Harbor

**Organism:** *H. azteca*

**Day:** 10

**Initials of Technician performing masss determinations:** N/A

**Date:** 12/27/10 **Time:** 1520

**Date dry mass determined:** N/A

| Sediment | Replicate | Technician Initials | # live recovered | Comments |
|---|---|---|---|---|
| DMMU-1S | B | DF | 10 | |
| DMMU-1S | C | DF | 10 | |
| DMMU-1S | D | DF | 8 | |
| DMMU-1S | E | DF | 8 | |
| DMMU-2 | A | JW | 6 | |
| DMMU-2 | B | JJ | 6 | |
| DMMU-2 | C | JJ | 5 | |
| DMMU-2 | D | JJ | 7 | |
| DMMU-2 | E | JW | 5 | |

**Signature:** [signature]

**Disclosed and Understood by:** [signature]

**REFERENCE TOXICITY TEST SHEET**

| | | | |
|---|---|---|---|
| Project: | Cleveland Harbor | Test Initiation Date: 12-17-16 | Time: |
| Laboratory: ERDC | | Test Termination Date: 12-17-16 | Time: |
| Test Species: *H. azteca* | | Page 1 of 1 | |
| Exposure duration: 96 hour | | | |

| $CdCl_2$ (g/l) | Repl. | No. Loaded | Survival 96 h | Temp. (°C) 0 h | Temp. (°C) 96 h | Hardness 0 h | Hardness 96 h | pH (SU) 0 h | pH (SU) 96 h | D.O. (mg/L) 0 h | D.O. (mg/L) 96 h | Alkalinity 0 h | Alkalinity 96 h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 5 | 5 | | | 68 | 66 | 7.51 | 7.71 | 7.6 | 6.7 | 62 | 68 |
| | 2 | 5 | 5 | | | 70 | 68 | 7.53 | 7.71 | 7.1 | 6.8 | 61 | 66 |
| | 3 | 5 | 5 | | | 70 | 68 | 7.50 | 7.73 | 7.1 | 6.7 | 65 | 66 |
| 0.01 | 1 | 5 | 5 | | | 68 | 67 | 7.49 | 7.72 | 7.1 | 6.7 | 65 | 65 |
| | 2 | 5 | 4 | | | 72 | 65 | 7.45 | 7.72 | 7.1 | 6.8 | 66 | 66 |
| | 3 | 5 | 5 | | | 68 | 66 | 7.50 | 7.73 | 7.2 | 6.8 | 65 | 66 |
| 0.025 | 1 | 5 | 2 | | | 66 | 66 | 7.50 | 7.77 | 7.2 | 6.7 | 17 | 13 |
| | 2 | 5 | 3 | | | 70 | 68 | 7.52 | 7.76 | 7.1 | 6.8 | 61 | 65 |
| | 3 | 5 | 2 | | | 71 | 65 | 7.53 | 7.72 | 7.1 | 6.7 | 13 | 18 |
| 0.05 | 1 | 5 | 1 | | | 72 | 68 | 7.49 | 7.74 | 7.1 | 6.5 | 62 | 65 |
| | 2 | 5 | 0 | | | 69 | 67 | 7.57 | 7.70 | 7.1 | 6.5 | 65 | 66 |
| | 3 | 5 | 2 | | | 66 | 66 | 7.50 | 7.71 | 7.1 | 6.7 | 66 | 63 |
| 0.1 | 1 | 5 | 0 | | | 70 | 70 | 7.48 | 7.78 | 7.1 | 6.7 | 66 | 12 |
| | 2 | 5 | 0 | | | 70 | 71 | 7.48 | 7.71 | 7.1 | 6.8 | 67 | 67 |
| | 3 | 5 | 0 | | | 72 | 69 | 7.49 | 7.72 | 7.2 | 6.7 | 65 | 68 |

Signature: _____

Disclosed and Understood by: _____

## Appendix O. Raw data sheets for *Chironomus dilutus* sediment test.

**POREWATER TOTAL AMMONIA TRACKING SHEET**

Project: Cleveland Harbor — Test Initiation Date: 12-17-16 Time:

Laboratory: ERDC — Test Date(s): Time:

Test Species: *C. dilutus* — Page 1 of 1

Exposure duration: 10 day

| Treatment | Total Porewater Ammonia Bulk Sediment (mg/L) | Date: 12/14/16 Time (purge 1) | Time (purge 2) | Date: 12/17/16 Time (purge 1) | Time (purge 2) | Date: Time (purge 1) | Time (purge 2) | Date: Time (purge 1) | Time (purge 2) | Total Porewater Ammonia Day 0 (sham 1) |
|---|---|---|---|---|---|---|---|---|---|---|
| Control | 2 | AM | PM | AM | PM | | | | | 7.1 |
| Reference | 1 | " | " | " | " | | | | | 7.1 |
| DMMU-1 | 90.8 | " | " | " | " | | | | | 14.5 |
| DMMU-1S | 60.4 | " | " | " | " | | | | | 8.3 |
| DMMU-2 | 91.5 | " | " | " | " | | | | | 10.7 |

Signature: _____

Disclosed and Understood by: _____

**Initial Growth Information**

**Project: Cleveland Harbor**
**Organism: *C. dilutus***

**Day: 0** **Initials of Technician performing masss determinations:** DF
**Date:** 12/17/16 **Date inial mass determined:** 12/18/16

| Replicate | Pan # | No. animals on pan | Pan Weight (g) | Pan & animal dry weight (g) |
|---|---|---|---|---|
| 1 | 1 | 10 | 94.606 | 97.086 |
| 2 | 2 | 10 | 104.742 | 107.842 |
| 3 | 3 | 10 | 96.902 | 99.176 |

**Signature:** D. F

**Disclosed and Understood by:**

**Initial Overlying Water Quality**

**Project:** Cleveland Harbor
**Organism:** *C. dilutus*

**Test Day: 0** **Date:**_____ **Time:**_____ **Technician initials:**_____

| Sediment | Replicate | Temp. (20-26°C) | pH | D.O. (>2.5 mg/L) | *Hardness (PPM $CaCO_3$) | *Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | *Ammonia (PPM) |
|---|---|---|---|---|---|---|---|---|
| Control | A | 23.8 | 7.42 | 7.35 | 68 | 60 | 182.0 | <1 |
| Control | B | 23.3 | 7.46 | 7.57 | | | 183.3 | |
| Control | C | 23.5 | 7.42 | 7.09 | | | 192.4 | |
| Control | D | 23.7 | 7.44 | 7.62 | | | 182.7 | |
| Control | E | 23.7 | 7.45 | 7.51 | | | 193.8 | |
| Reference | A | 22.5 | 8.03 | 7.64 | 67 | 68 | 228.1 | <1 |
| Reference | B | 22.7 | 8.03 | 7.64 | | | 214.3 | |
| Reference | C | 23.5 | 8.04 | 7.78 | | | 210.7 | |
| Reference | D | 23.1 | 8.03 | 7.61 | | | 213.1 | |
| Reference | E | 23.5 | 8.03 | 7.86 | | | 211.4 | |
| DMMU-1 | A | 22.3 | 7.38 | 6.68 | 73 | 80 | 242.6 | 1 |
| DMMU-1 | B | 22.9 | 7.41 | 6.88 | | | 242.3 | |
| DMMU-1 | C | 22.5 | 7.41 | 6.62 | | | 245.3 | |
| DMMU-1 | D | 23.0 | 7.41 | 6.67 | | | 242.8 | |
| DMMU-1 | E | 22.7 | 7.37 | 6.52 | | | 242.6 | |
| DMMU-1S | A | 22.6 | 7.55 | 6.51 | 76 | 62 | 222.9 | <1 |
| DMMU-1S | B | 22.8 | 7.54 | 6.47 | | | 224.1 | |
| DMMU-1S | C | 22.9 | 7.56 | 6.55 | | | 217.0 | |
| DMMU-1S | D | 22.7 | 7.66 | 6.73 | | | 222.8 | |
| DMMU-1S | E | 23.2 | 7.59 | 6.71 | | | 219.7 | |
| DMMU-2 | A | 22.8 | 7.58 | 6.65 | 68 | 64 | 245.8 | <1 |
| DMMU-2 | B | 23.0 | 7.54 | 6.56 | | | 247.1 | |
| DMMU-2 | C | 23.0 | 7.54 | 6.57 | | | 246.4 | |
| DMMU-2 | D | 23.0 | 7.54 | 6.80 | | | 244.4 | |
| DMMU-2 | E | 22.6 | 7.58 | 6.86 | | | 242.3 | |

*Measured from a composite of overlying water from all treatment replicates (2-5 mL per replicate).

Signature:_____

Disclosed and Understood by:_____

**Final Overlying Water Quality**

Project: Cleveland Harbor
Organism: *C. dilutus*
Test Day: 10 Date: 12/27/10 Time: 0953 Technician initials: MA/SW

| Sediment | Replicate | Temp. (20-26°C) | pH | D.O. (>2.5 mg/L) | *Hardness (PPM $CaCO_3$) | *Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | *Ammonia (PPM) |
|---|---|---|---|---|---|---|---|---|
| Control | A | 22.1 | 7.76 | 6.15 | 74 | 80 | 212.9 | <1 |
| Control | B | 23.1 | 7.66 | 6.43 | | | 205.2 | |
| Control | C | 22.8 | 7.63 | 6.52 | | | 206.4 | |
| Control | D | 22.5 | 7.64 | 6.88 | | | 207.3 | |
| Control | E | 22.5 | 7.66 | 7.05 | | | 207.3 | |
| Reference | A | 21.3 | 7.99 | 7.09 | ~~78~~ MA (80 | ~~68~~ MA 60 | 225.4 | <1 |
| Reference | B | 21.9 | 8.01 | 7.41 | | | 217.2 | |
| Reference | C | 21.6 | 8.00 | 6.50 | | | 225.8 | |
| Reference | D | 22.0 | 7.81 | 6.70 | | | 221.0 | |
| Reference | E | 21.9 | 7.92 | 6.99 | | | 217.8 | |
| DMMU-1 | A | 21.1 | 7.69 | ~~2.84~~ 3.36 MK | 68 | ~~62~~ MA 78 | 286.8 | 1 |
| DMMU-1 | B | 21.6 | 7.61 | 2.84 | | | 242.9 | |
| DMMU-1 | C | 21.5 | 7.41 | 3.32 | | | 240.4 | |
| DMMU-1 | D | 21.8 | 7.50 | 2.72 | | | 242.7 | |
| DMMU-1 | E | 21.6 | 7.42 | 3.21 | | | 247.4 | |
| DMMU-1S | A | 21.1 | 7.29 | 5.98 | 72 | 72 | 237.7 | 1 |
| DMMU-1S | B | 21.5 | 7.17 | 5.61 | | | 283.6 | |
| DMMU-1S | C | 21.6 | 7.26 | 5.88 | | | 286.7 | |
| DMMU-1S | D | 21.4 | 7.32 | 6.15 | | | 240.5 | |
| DMMU-1S | E | 21.1 | 7.26 | 6.51 | | | 243.6 | |
| DMMU-2 | A | 21.9 | 7.53 | ~~6.7~~ 7.42 | 67 | 70 | 227.5 | <1 |
| DMMU-2 | B | 21.6 | 7.42 | 6.78 | | | 239.4 | |
| DMMU-2 | C | 21.5 | 7.47 | ~~6.78~~ 7.28 | | | 233.4 | |
| DMMU-2 | D | 21.6 | 7.49 | 7.04 | | | 235.3 | |
| DMMU-2 | E | 21.7 | 7.35 | 7.08 | | | 244.8 | |

*Measured from a composite of overlying water from all treatment replicates (2-5 mL per replicate).

Signature: [signature]

Disclosed and Understood by: [signature]

DO

DMMU1 A 3.36

**Daily Overlying Water Temperature (°C) and D.O. (mg/L), Feeding and Maintenance Checklist**
Organism: *C. dilutus*

| Test Day | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. | Temperature | D.O. |
| Control | E/23.1 | 6.61 | A/22.4 | 6.4 | D/22.3 | 7.60 | 22.2 | 7.0 | B/21.3 | 6.99 | C/20.8 | 7.0 | 21.0 | 6.7 | 23.2 | 7.3 | B/23.2°C | 7.1 |
| Reference | D/22.9 | 7.56 | C/22.4 | 6.4 | C/22.4 | 6.76 | 22.3 | 7.1 | C/21.4 | 5.05 | E/21.0 | 7.0 | 21.0 | 7.0 | 23.2 | 7.3 | D/23.0°C | 6.8 |
| DMMU-1 | B/22.9 | 7.56 | E/23.1 | 4.4 | E/22.4 | 6.96 | 22.3 | 7.3 | D/21.2 | 3.04 | C/21.0 | 3.0 | 21.0 | 4.0 | 23.2 | 7.0 | D/23.1°C | 7.1 |
| DMMU-1S | C/22.9 | 7.17 | A/22.2 | 4.6 | B/22.5 | 6.31 | 22.6 | 7.7 | C/21.3 | 4.98 | D/20.5 | 5.1 | 19.8 | 5.5 | 23.2 | 6.2 | B/22.7°C | 6.7 |
| DMMU-2 | E/22.9 | 7.35 | C/22.9 | 5.3 | E/22.4 | 6.90 | 22.3 | 7.6 | C/21.5 | 5.01 | C/21.2 | 4.8 | 21.1 | 4.1 | 23.2 | 2.5 | E/22.9°C | 7.3 |
| Water Exchanged AM? (Counter) | 7 | | 14 | | 24 | | 32 | | 38 | | 46 | | 52 | | 62 | | 70 | |
| Water Exchanged PM? | — | | — | | — | | — | | — | | — | | — | | — | | — | |
| Fed? | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | — | | — | |
| Aeration OK? | — | | — | | — | | — | | — | | — | | — | | — | | — | |
| Zumwalt needles clear? | — | | — | | — | | — | | — | | — | | — | | — | | — | |
| Timer OK? | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Remcor OK? | — | | — | | — | | — | | ✓ | | — | | — | | — | | — | |
| Daily Observations Recorded? | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Technician intials/date | JS 12/18 | | JS 12/19 | | JS 12/20 | | JS 12/21 | | JS 12/22 | | JS 12/23 | | JS 12/24 | | DF 12/25 | | AT/11 12/26/10 | |

If temperature falls outside the range of 20-26°C or dissolved oxygen falls below 2.5 mg/L contact the study coordinator

Signature: _____

Disclosed and Understood by: _____

**Daily Observations**

**Day: -1**

**Date:** 12/16/10 **Technician Initials:** DF
**Time:** AM

**Water exchange counter:** N/A

**Comments:** Added Sediment to beakers Pore water ammonia conc. were high. Performed 1st AM and PM full water exchange. Beakers were placed into chamber prior to water exchange.

**Day: 0**

**Date:** 12/17/10 **Technician Initials:** DF
**Time:** PM

**Water exchange counter:** N/A

**Comments:** Performed early AM and PM water exchange. Broke down chemistry chart for per water ammonia measurement following PM exchange. All ammonia values below 20 mg/L. Counted 10 larvae into each beakers measured and recorded quantity water quality prior to adding organisms. Fed organisms.

**Daily Observations**

**Day: 1**

**Date:** 12/18/10 **Technician Initials:** JS

**Time:** 11.15

**Water exchange counter:** 7

**Comments:** Observations overall looking. Parameters taken prior to treatment. Module temp 26.5°C Test fed.

**Day: 2**

**Date:** 12/19/10 **Technician Initials:** [illegible]

**Time:** 1157

**Water exchange counter:** 13

**Comments:** MODULE TEMP. @ 26.5°C, TEST TO BE FED IN P.M. Test fed.

**Daily Observations**

**Day: 3**

**Date:** 12/20/10 **Technician Initials:** SF

**Time:** 4:15

**Water exchange counter:** 24

**Comments:** Module temp 23°C. Daily parameters taken. (see sheet) Tested

**Day: 4**

**Date:** 12/21/10 **Technician Initials:** JS

**Time:** 4:00

**Water exchange counter:** 32

**Comments:** Module temp 23.5°C. Daily parameters taken. (see sheet). Tested

**Daily Observations**

**Day: 5**

**Date:** 12/22/10 **Technician Initials:** JS

**Time:** 10:30

**Water exchange counter:** 38

**Comments:** Daily parameters taken, see sheet. Moderate temp 23.5°C. Tan fluffy like substance in DMMU-1 beaker. Fluffy layer of sediment observed at soil/water interface. Air bubbles seen rising from sediment below and pushing through this layer of sediment.

**Day: 6**

**Date:** 12/23/10 **Technician Initials:** JS

**Time:** 11:30

**Water exchange counter:** 76

**Comments:** Daily parameters taken (see sheet). Moderate temp 23.5°C. Fluff-like substance on top of sediment DMMU). Low D.O. observed in DMMU-1 b/A may be instrument interference from material in water column.

**Daily Observations**

**Day: 7**

**Date:** 10/24/10 **Technician Initials:** JS

**Time:** 8:00

**Water exchange counter:** 52

**Comments:** Mercyle temp 23.5°C. Observations on all heaters, gauge on heaters slightly lower test feel chamber temp 1° to offset evaporative cooling

**Day: 8**

**Date:** 12/25/10 **Technician Initials:** DF

**Time:** 10 Am

**Water exchange counter:** 62

**Comments:** Daily Parameters recorded. Animals fed.

**Daily Observations**

**Day: 9**

**Date:** 12/26/10 **Technician Initials:** T.T.M.
**Time:** 1217

**Water exchange counter:** 40

**Comments:** MOD. TEMP. @ 26.5°C, FLOATER CHECK O.K., ~~TEST~~ FED.

**Day: 10**

**Date:** 12/27/10 **Technician Initials:** J.S. / T.T.M.
**Time:** 0800

**Water exchange counter:**

**Comments:** MODULE TEMP. @ 26.2°C, TEST TERMINATION.

**Signature:**

**Disclosed and Understood by:**

## Final Survival and Growth Information

**Project:** Cleveland Harbor

**Organism:** *C. dilutus*

**Day:** 10 **Initials of Technician performing masss determinations:** [illegible]

**Date:** 12/22/10 **Time:** 1547 **Date dry mass determined:** 01/03/11 **Date ash-free dry mass determined:**

| Sediment | Replicate | Technician Initials | # live recovered | # animals Weighed | Pan # | Pan Weight (g) | Pan & animal dry weight (g) | Comments |
|---|---|---|---|---|---|---|---|---|
| Control | A | DF | 9 | 9 | 1 | 171.448 | 191.420 | |
| Control | B | DF | 8 | 8 | 2 | 167.800 | 183.598 | |
| Control | C | DF | 9 | 9 | 3 | 167.060 | 189.930 | |
| Control | D | DF | 9 | 9 | 4 | 158.774 | 186.192 | |
| Control | E | JW | 8 | 8 | 5 | 164.920 | 193.444 | |
| Reference | A | JS | 10 | 10 | 6 | 172.194 | 205.622 | |
| Reference | B | JS | 10 | 10 | 7 | 165.786 | 186.272 | |
| Reference | C | JS | 10 | 10 | 8 | 159.080 | 216.768 | |
| Reference | D | JS | 8 | 8 | 9 | 179.512 | 196.509 | |
| Reference | E | JS | 9 | 9 | 10 | 181.418 | 217.230 | |
| DMMU-1 | A | JS | 8 | 8 | 11 | 176.999 | 199.378 | |
| DMMU-1 | B | JS | 10 | 10 | 12 | 173.440 | 202.907 | |
| DMMU-1 | C | JS | 10 | 10 | 13 | 189.916 | 233.232 | |
| DMMU-1 | D | JS | 10 | 10 | 14 | 176.797 | 195.232 | |
| DMMU-1 | E | JS | 8 | 8 | 15 | 170.104 | 194.206 | |
| DMMU-1S | A | JS | 8 | 8 | 16 | 176.578 | 199.310 | |
| DMMU-1S | B | JS | 9 | 9 | 17 | 160.998 | 194.768 | |
| DMMU-1S | C | JS | 8 | 8 | 18 | 161.937 | 189.328 | |

**Final Survival and Growth Information**

**Project:** Cleveland Harbor

**Organism:** *C. dilutus*

**Day:** 10 **Initials of Technician performing masss determinations:** AP/11.1

**Date:** 12/27/10 **Time:** 1547 **Date dry mass determined:** _____ **Date ash-free dry mass determined:** _____

| Sediment | Replicate | Technician Initials | # live recovered | # animals Weighed | Pan # | Pan Weight (g) | Pan & animal dry weight (g) | Comments |
|---|---|---|---|---|---|---|---|---|
| DMMU-1S | D | JS | 10 | 19 | 19 | 156.908 | 185.520 | |
| DMMU-1S | E | JS | 8 | 8 | 20 | 165.497 | 192.230 | |
| DMMU-2 | A | JS | 9 | 9 | 21 | 168.001 | 184.836 | |
| DMMU-2 | B | JS | 10 | 10 | 22 | 166.438 +80.572 | 187.612 | |
| DMMU-2 | C | JS | 9 | 9 | 23 | 133.164 | DF 192.128 | |
| DMMU-2 | D | JS | 10 | 10 | 24 | 172.036 | 192.128 | |
| DMMU-2 | E | JS | 10 | 10 | 25 | 165.176 | 185.782 | |

**Signature:** _____

**Disclosed and Understood by:** _____

**REFERENCE TOXICITY TEST SHEET**

| | | | |
|---|---|---|---|
| Project: Cleveland Harbor | | Test Initiation Date: 12-17-16 | Time: |
| Laboratory: ERDC | | Test Termination Date: 12-21-16 | Time: |
| Test Species: *C. dilutus* | | Page 1 of 1 | |
| Exposure duration: 96 hour | | | |

| NaCl (g/l) | Repl. | No. Loaded | Survival 96 h | Temp. (°C) 0 h | Temp. (°C) 96 h | Hardness 0 h | Hardness 96 h | pH (SU) 0 h | pH (SU) 96 h | D.O. (mg/L) 0 h | D.O. (mg/L) 96 h | Alkalinity 0 h | Alkalinity 96 h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 10 | 10 | 20.1 | 20.8 | 70 | 65 | 7.43 | 7.83 | 7.0 | 7.1 | 65 | 68 |
| | 2 | 10 | 10 | 20.1 | 20.9 | 67 | 68 | 7.41 | 7.64 | 7.1 | 7.1 | 65 | 67 |
| 1.25 | 1 | 10 | 10 | 20.1 | 20.7 | 70 | 65 | 7.43 | 7.76 | 7.1 | 7.1 | 60 | 66 |
| | 2 | 10 | 10 | 20.1 | 20.8 | 68 | 62 | 7.42 | 7.77 | 7.1 | 7.1 | 61 | 68 |
| 2.5 | 1 | 10 | 10 | 20.1 | 20.8 | 70 | 63 | 7.41 | 7.53 | 7.1 | 7.1 | 68 | 65 |
| | 2 | 10 | 10 | 20.1 | 20.8 | 71 | 65 | 7.48 | 7.52 | 7.0 | 7.1 | 65 | 68 |
| 5 | 1 | 10 | 8 | 20.1 | 20.7 | 68 | 68 | 7.57 | 7.67 | 7.0 | 7.1 | 62 | 62 |
| | 2 | 10 | 9 | 20.1 | 20.8 | 69 | 68 | 7.54 | 7.72 | 7.1 | 7.1 | 64 | 66 |
| 10 | 1 | 10 | 2 | 20.1 | 20.7 | 70 | 67 | 7.49 | 7.83 | 7.1 | 7.0 | 64 | 67 |
| | 2 | 10 | 0 | 20.2 | 20.8 | 72 | 68 | 7.51 | 7.80 | 7.1 | 7.0 | 62 | 63 |
| 20 | 1 | 10 | 0 | 20.1 | 20.7 | 70 | 66 | 7.46 | 7.77 | 7.1 | 6.8 | 60 | 62 |
| | 2 | 10 | 0 | 20.1 | 20.8 | 70 | 65 | 7.53 | 7.75 | 7.1 | 6.9 | 62 | 64 |

## Appendix P. Raw data sheets for *Lumbriculus variegatus* bioaccumulation test.

**POREWATER TOTAL AMMONIA TRACKING SHEET**

Project: Cleveland Harbor — Test Initiation Date: 12-16-16 Time:

Laboratory: ERDC — Test Date(s): Time:

Test Species: *L. variagtus* — Page of

Exposure duration: 10 day

| Treatment | Total Porewater Ammonia Bulk Sediment (mg/L) | Date: 12-15-16 Time (purge 1) | Time (purge 2) | Date: 12-16-16 Time (purge 1) | Time (purge 2) | Date: Time (purge 1) | Time (purge 2) | Date: Time (purge 1) | Time (purge 2) | Total Porewater Ammonia Day 0 (sham 1) |
|---|---|---|---|---|---|---|---|---|---|---|
| Control | 2 | AM | PM | AM | PM | | | | | <1 |
| Reference | 1 | " | " | " | " | | | | | <1 |
| DMMU-1 | 90.9 | " | " | " | " | | | | | 15.2 |
| DMMU-1S | 80.4 | " | " | " | " | | | | | 9.4 |
| DMMU-2 | 91.5 | " | " | " | " | | | | | 12.1 |

Signature: _____

Disclosed and Understood by: _____

**INITIAL WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Initiation Date: 12/16/16 Time:
Test Date(s): 12/18/16 Time:
Page 1 of 2 Test day: 0

| Treatment | Repl. | Date | Temp. (°C) (17- 23°C) | pH (6.5 - 9.0) | D.O. (>4 mg/L) | Hardness (PPM CaCO3) | Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | Ammonia (mg/L)* |
|---|---|---|---|---|---|---|---|---|---|
| Control | 1 | 12/16/16 | 23.3 | 6.63 | 7.8 | 81 | 75 | 157 | 1 |
| | 2 | | 23.0 | 6.99 | 8.4 | | | | |
| | 3 | | 23.4 | 7.13 | 8.2 | | | | |
| | 4 | | 23.1 | 7.24 | 8.3 | | | | |
| | 5 | | 23.1 | 7.32 | 8.3 | | | | |
| Reference | 1 | | 23.1 | 7.97 | 8.4 | 85 | 64 | 220 | <1 |
| | 2 | | 23.6 | 8.09 | 8.0 | | | | |
| | 3 | | 24.0 | 8.13 | 8.5 | | | | |
| | 4 | | 23.3 | 8.13 | 8.6 | | | | |
| | 5 | | 23.1 | 8.14 | 8.5 | | | | |
| DMMU-1 | 1 | | 23.7 | 7.76 | 7.2 | 80 | 85 | 291 | 4 |
| | 2 | | 23.5 | 7.66 | 6.6 | | | | |
| | 3 | | 23.5 | 8.08 | 8.2 | | | | |
| | 4 | | 23.0 | 7.91 | 7.0 | | | | |
| | 5 | | 23.3 | 7.42 | 4.7 | | | | |
| DMMU-1S | 1 | | 23.2 | 7.46 | 6.3 | 92 | 83 | 240 | <1 |
| | 2 | | 23.3 | 7.83 | 7.7 | | | | |
| | 3 | | 23.3 | 7.71 | 6.8 | | | | |
| | 4 | | 23.3 | 7.77 | 7.6 | | | | |
| | 5 | ~" | 23.8 | 7.90 | 7.8 | | | | |

**INITIAL WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Initiation Date: 12/16/10 Time:
Test Date(s): 12/18/10 Time:
Page 2 of 4 Test day: 0

| Treatment | Repl. | Date | Temp. (°C) (17- 23°C) | pH (6.5 - 9.0) | D.O. (>4 mg/L) | Hardness (PPM CaCO3) | Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | Ammonia (mg/L)* |
|---|---|---|---|---|---|---|---|---|---|
| DMMU-2 | 1 | 12/16/10 | 23.6 | 7.74 | 5.8 | 70 | 76 | 246 | 4 |
| | 2 | | 23.9 | 7.53 | 3.6 | | | | |
| | 3 | | 22.5 | 7.74 | 4.2 | | | | |
| | 4 | | 22.5 | 8.10 | 7.1 | | | | |
| | 5 | ↓ | 22.5 | 7.91 | 5.9 | | | | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

**FINAL WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Initiation Date: 12/16/10 Time:
Test Date(s): 1/13/11 Time:
Page 1 of 1 Test day: 28

| Treatment | Repl. | Date | Temp. (°C) (17- 23°C) | pH (6.5 - 9.0) | D.O. (>4 mg/L) | Hardness (PPM CaCO3) | Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | Ammonia (mg/L)* |
|---|---|---|---|---|---|---|---|---|---|
| Control | 1 | 1/13/11 | 23.4 | 8.24 | 8.5 | 80 | 80 | 170 | <1 |
| | 2 | | 23.5 | 8.20 | 8.5 | | | | |
| | 3 | | 23.5 | ~~7.84~~ 8.28 (PD) | 8.5 | | | | |
| | 4 | | 23.8 | 7.54 | 8.7 | | | | |
| | 5 | | 23.9 | 7.63 | 8.6 | | | | |
| Reference | 1 | | 23.3 | 7.96 | 8.4 | 76 | 80 | 246 | <1 |
| | 2 | | 24.0 | 7.98 | 8.5 | | | | |
| | 3 | | 23.8 | 8.11 | 8.7 | | | | |
| | 4 | | 23.8 | 7.07 | 8.5 | | | | |
| | 5 | | 23.7 | 6.53 | 8.4 | | | | |
| DMMU-1 | 1 | | 23.9 | 8.36 | 8.6 | 83 | 70 | 252 | 1 |
| | 2 | | 24.0 | 8.34 | 8.5 | | | | |
| | 3 | | 23.8 | 8.35 | 8.5 | | | | |
| | 4 | | 23.4 | 7.58 | 8.6 | | | | |
| | 5 | | 23.9 | 8.17 | 8.6 | | | | |
| DMMU-1S | 1 | | 23.7 | 8.24 | 8.5 | 88 | 85 | 260 | <1 |
| | 2 | | 23.6 | 8.21 | 8.6 | | | | |
| | 3 | | 23.5 | 8.17 | 8.6 | | | | |
| | 4 | | 23.0 | 7.21 | 8.5 | | | | |
| | 5 | ↓ | 23.1 | 7.69 | 8.5 | | | | |

**FINAL WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Initiation Date: 12/16/10 Time:
Test Date(s): 1/13/11 Time:
Page 2 of 2 Test day: 28

| Treatment | Repl. | Date | Temp. (°C) (17- 23°C) | pH (6.5 - 9.0) | D.O. (>4 mg/L) | Hardness (PPM CaCO3) | Alkalinity (PPM $CaCO_3$) | Conductivity (uS) | Ammonia (mg/L)* |
|---|---|---|---|---|---|---|---|---|---|
| DMMU-2 | 1 | 1/13/11 | 23.4 | 7.13 | 8.6 | 80 | 78 | 263 | .1 |
| | 2 | | 23.4 | 7.11 | 8.6 | | | | |
| | 3 | | 23.5 | 7.09 | 8.5 | | | | |
| | 4 | | 23.5 | 8.21 | 8.5 | | | | |
| | 5 | | 23.2 | 8.11 | 8.5 | | | | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12-18-10
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | A | 20.7 | 8.7 | |
| Reference | A | 20.4 | 8.0 | |
| DMMU-1 | A | 20.2 | 8.4 | |
| DMMU-1S | A | 20.3 | 8.6 | |
| DMMU-2 | A | 20.5 | 7.8 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: Jane Lewis

Daily

~~WEEKLY~~ WATER QUALITY MONITORING SHEET

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12-19-16
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | B | 20.1 | 8.19 | |
| Reference | B | 20.5 | 8.01 | |
| DMMU-1 | B | 20.8 | 8.00 | |
| DMMU-1S | B | 20.4 | 8.04 | |
| DMMU-2 | B | 20.2 | 8.01 | |

* Composite sample from all replicates

Signature: [signature]

Disclosed and Understood by: [signature]

Daily

**WEEKLY WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/20/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | C | 20.9 | 8.17 | |
| Reference | C | 20.9 | 8.10 | |
| DMMU-1 | C | 21.7 | 7.73 | |
| DMMU-1S | C | 20.4 | 7.74 | |
| DMMU-2 | C | 21.7 | 7.93 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/21/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | D | 21.1 | 7.48 8.28 | |
| Reference | D | 20.9 | 7.48 | |
| DMMU-1 | D | 21.3 | 7.39 | |
| DMMU-1S | D | 20.8 | 6.81 | |
| DMMU-2 | D | 20.9 | 7.05 | |

* Composite sample from all replicates

Signature: Jane Lee

Disclosed and Understood by:

Daily

**WEEKLY WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/22/10 10.00
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | E | 20.9 | 8.8 | |
| Reference | E | 21.0 | 7.8 | |
| DMMU-1 | E | 21.2 | 7.4 | |
| DMMU-1S | E | 21.4 | 8.0 | |
| DMMU-2 | E | 20.8 | 8.7 | |

* Composite sample from all replicates

Signature: Jane Lee

Disclosed and Understood by: _____

Daily

~~WEEKLY~~ WATER QUALITY MONITORING SHEET

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/23/10
Test Day:
Page of 11:30

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | A | 21.1 | 8.6 | Temp ↑ |
| Reference | A | 20.7 | 8.4 | |
| DMMU-1 | A | 20.7 | 7.5 | |
| DMMU-1S | A | 21.4 | 8.3 | |
| DMMU-2 | A | 21.4 | 8.5 | |

* Composite sample from all replicates

Signature: Jane Lin

Disclosed and Understood by: _____

Daily

**WEEKLY WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 8'30 12/24/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | B | 21.0 | 8.0 | |
| Reference | B | 21.4 | 8.3 | |
| DMMU-1 | B | 21.3 | 8.0 | |
| DMMU-1S | B | 21.3 | 8.1 | |
| DMMU-2 | B | 21.3 | 7.9 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/25/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | A | 23.4 | 7.9 | |
| Reference | A | 23.1 | 7.8 | |
| DMMU-1 | A | 23.0 | 7.9 | |
| DMMU-1S | A | 23.0 | 7.9 | |
| DMMU-2 | A | 22.9 | 7.7 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Day 14

**WEEKLY WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/26/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | B | 23.1 | 7.7 | |
| Reference | B | 23.0 | 7.8 | |
| DMMU-1 | B | 23.1 | 7.6 | |
| DMMU-1S | B | 23.1 | 7.7 | |
| DMMU-2 | B | 23.1 | 7.3 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

~~WEEKLY~~ WATER QUALITY MONITORING SHEET

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/22/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | C | 23.2 | 7.8 | |
| Reference | C | 23.1 | 7.6 | |
| DMMU-1 | C | 23.5 | 7.9 | |
| DMMU-1S | C | 23.4 | 7.7 | |
| DMMU-2 | C | 23.0 | 7.7 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/28/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | D | 23.9 | 7.5 | |
| Reference | D | 23.6 | 7.7 | |
| DMMU-1 | D | 23.5 | 7.6 | |
| DMMU-1S | D | 23.6 | 7.6 | |
| DMMU-2 | D | 23.3 | 7.6 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/29/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | E | 23.7 | 7.4 | |
| Reference | E | 23.4 | 7.3 | |
| DMMU-1 | E | 23.4 | 7.4 | |
| DMMU-1S | E | 23.5 | 7.8 | |
| DMMU-2 | E | 23.2 | 7.6 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/30/20
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | A | 23.1 | 7.1 | |
| Reference | A | 23.0 | 7.3 | |
| DMMU-1 | A | 22.9 | 7.4 | |
| DMMU-1S | A | 23.0 | 7.6 | |
| DMMU-2 | A | 23.2 | 7.3 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

~~WEEKLY~~ WATER QUALITY MONITORING SHEET

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 12/31/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | B | 22.8 | 7.46 | |
| Reference | B | 23.2 | 7.31 | |
| DMMU-1 | B | 23.5 | 7.54 | |
| DMMU-1S | B | 23.2 | 7.87 | |
| DMMU-2 | B | 23.3 | 7.98 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

~~WEEKLY~~ WATER QUALITY MONITORING SHEET

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/1/11
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | C | 23.1 | 7.87 | |
| Reference | C | 23.1 | 8.01 | |
| DMMU-1 | C | 23.1 | 8.02 | |
| DMMU-1S | C | 23.1 | 8.03 | |
| DMMU-2 | C | 23.2 | 8.05 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

~~WEEKLY~~ **WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/2/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | B | 23.2 | 7.47 | |
| Reference | B | 23.3 | 7.48 | |
| DMMU-1 | B | 23.3 | 7.41 | |
| DMMU-1S | B | 23.3 | 7.52 | |
| DMMU-2 | B | 22.1 | 7.66 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/3/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | D | 23.2 | 7.73 | |
| Reference | D | 23.2 | 7.76 | |
| DMMU-1 | D | 23.2 | 7.43 | |
| DMMU-1S | D | 23.1 | 7.48 | |
| DMMU-2 | D | 23.2 | 7.51 | |

* Composite sample from all replicates

Signature: D.Z

Disclosed and Understood by: June Lui

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/4/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | A | 23.6 | 6.87 | |
| Reference | A | 23.5 | 6.95 | |
| DMMU-1 | A | 23.5 | 7.10 | |
| DMMU-1S | A | 23.2 | 7.23 | |
| DMMU-2 | A | 23.3 | 7.14 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

~~WEEKLY~~ WATER QUALITY MONITORING SHEET

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 11/5/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | B | 23.4 | 7.32 | |
| Reference | B | 23.4 | 7.29 | |
| DMMU-1 | B | 23.4 | 7.36 | |
| DMMU-1S | B | 23.4 | 7.41 | |
| DMMU-2 | B | 23.4 | 7.35 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/6/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | E | 23.7 | 7.32 | |
| Reference | E | 23.7 | 7.45 | |
| DMMU-1 | E | 23.5 | 7.41 | |
| DMMU-1S | E | 23.6 | 7.26 | |
| DMMU-2 | E | 23.6 | 7.37 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

~~WEEKLY~~ WATER QUALITY MONITORING SHEET

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/7/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | D | 23.5 | 7.64 | |
| Reference | D | 23.1 | 7.53 | |
| DMMU-1 | D | 22.9 | 7.53 | |
| DMMU-1S | D | 23.1 | 7.62 | |
| DMMU-2 | D | 23.0 | 7.64 | |

* Composite sample from all replicates

Signature: [signature]

Disclosed and Understood by: [signature]

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/18/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | A | 23.9 | 6.98 | |
| Reference | A | 24.0 | 7.13 | |
| DMMU-1 | A | 23.8 | 7.26 | |
| DMMU-1S | A | 23.8 | 7.14 | |
| DMMU-2 | A | 23.9 | 7.21 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 11/9/10
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | C | 23.1 | 7.43 | |
| Reference | C | 23.1 | 7.40 | |
| DMMU-1 | C | 23.1 | 7.36 | |
| DMMU-1S | C | 23.1 | 7.27 | |
| DMMU-2 | C | 23.1 | 7.21 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 11/6/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | D | 23.5 | 7.63 | |
| Reference | D | 23.5 | 7.52 | |
| DMMU-1 | D | 23.5 | 7.48 | |
| DMMU-1S | D | 23.5 | 7.47 | |
| DMMU-2 | D | 23.6 | 7.31 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/11/11
Test Day:
Page 1 of 1

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | E | 23.4 | 7.42 | |
| Reference | E | 23.3 | 7.31 | |
| DMMU-1 | E | 23.3 | 7.37 | |
| DMMU-1S | E | 23.3 | 7.38 | |
| DMMU-2 | E | 23.2 | 7.35 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Daily

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 1/21/11
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | B | 23.0 | 7.23 | |
| Reference | B | 22.5 | 7.41 | |
| DMMU-1 | B | 22.5 | 7.28 | |
| DMMU-1S | B | 23.0 | 7.13 | |
| DMMU-2 | B | 22.5 | 7.14 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

Pdy

**~~WEEKLY~~ WATER QUALITY MONITORING SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Date: 111314
Test Day:
Page of

| Treatment | Repl. | Temperature (23-26 °C) | D.O. (>4 mg/L) | Comments |
|---|---|---|---|---|
| Control | D | 23.1 | 7.61 | |
| Reference | D | 23.1 | 7.84 | |
| DMMU-1 | D | 23.1 | 7.48 | |
| DMMU-1S | D | 23.1 | 7.45 | |
| DMMU-2 | D | 23.2 | 7.23 | |

* Composite sample from all replicates

Signature: _____

Disclosed and Understood by: _____

**DAILY NOTES SHEET**

Day: -1
Date: 12/15/10
Initials: DF
Observations/notes: Added sediment to all aquaria. Performed water exchanges to reduce ammonia levels (AM/PM) Placed aerators on air. Added ~ 2 liters of sediment to each aquarium.

Day: 0
Date: 12/16/10 / 12/17/10
Initials: DF
Observations/notes: Performed AM & PM water exchanges Pre water ammonia levels < 20 ppm after second exchange of day. Added ~ 10 grams of worms to first 3 repl of each sediment. Initial wt recorded prior to adding worms. 12/17/10 - Added 10 grams of worms to final 3 replicates of each sediment

Day: 2/1
Date: 12/18/10
Initials: JS
Observations/notes: Observations on all treatments. Operation passed. Max/min temp. 22.9°C Parameters recorded, AM overlying water ammonia < 3 ppm in all trts.

Signature: [signature]
Disclosed and Understood by: [signature]

**DAILY NOTES SHEET**

Day: 3 | 2
Date: 12/19/10
Initials: [illegible]
Observations/notes: MODULE TEMP. @ 23.0°C, ALL WORMS BURROWED, AERATION O.K.. Daily parameters taken (see sheet)

Day: 4 | 3
Date: 12/20/10
Initials: JS
Observations/notes: Module temp 23°C. Upwaters good. Worms in sediment. Parameters taken (see sheet). Overlying water ammonia & pH in all reps.

Day: 5 | 4
Date: 12/21/10
Initials: JS
Observations/notes: Module temp 23°C. Upwaters good in all aquaria. Parameters taken (see sheet)

Signature: [signature]
Disclosed and Understood by:

**DAILY NOTES SHEET**

Day: 6/5
Date: 12/22/10
Initials: SS
Observations/notes: Aeration verified in all beakers. Daily paramaters taken (see sheet) Water Chem. overlying water ammonia < 3ppm.

Day: 7/6
Date: 12/23/10
Initials: SS
Observations/notes: Possible problem w/ DMMU 1+2. Water change (each day). Two stones placed in DMMU 1+2. DMMU 1+E (cracked) placed in 10 gal tank. Module temp 9°. Ammonia concentrations in overlying water appear to be increasing. Highest conc. measured was 6ppm in DMMU-1. Air stones added in place of pipets to help dispose ammonia. DMMU-2 Ammonia < 3ppm.

Day: 8/7
Date: 12/24/10
Initials: SS/SW
Observations/notes: Water exchange. Daily parameters taken see sheet. Incubator temp. 25°C. Ammonia on DMMU 2: B (2), DMMU-D (3), before water change

Signature: [signature]
Disclosed and Understood by: [signature]

**DAILY NOTES SHEET**

Day: 8/ 8
Date: 12/25/10
Initials: DK
Observations/notes: Water exchange Conducted. Chamber Temp Tx Target = 23°C. Ammonias all < 2 ppm. in all tstr.

P.M. @ 1900
WATER EXCHANGE CONDUCTED. CHAMBER TEMP. @ 26.5°C, $NH_3^+$ CHECKED IN DMMU-15, DMMU-1, DMMU-2 - ALL LESS THAN 2PPM

Day: 10/ 9
Date: 12/26/10
Initials: JW/SS
Observations/notes: AM- water change. Parameters taken.

PM @ 1600
Water change. Temp of module 24.9°C. Ammonia DMMU-11 type B - less than 1 & DMMU-2 type D - less than 1 ppm.

Day: 11/10
Date: 12/27/10
Initials: A.F.M.
Observations/notes: MODULE TEMP. @ 24.7°C, AERATION O.K., $NH_3^+$ DMMU-4, DMMU-15, DMMU-7 - ALL LESS THAN 1.

Signature:
Disclosed and Understood by:

**DAILY NOTES SHEET**

Day: 11/12
Date: 12/28/10
Initials: A.F.M.
Observations/notes: MODULE TEMP. @ 26.3°C, AERATION O.K., $NH_3^+$ CHECK@ <1 FOR ALL REPS.

Day: 12/13
Date: 12/29/10
Initials: A.F.M.
Observations/notes: MODULE TEMP. @ 26.2°C, AERATION O.K., $NH_3^+$ CHECK O.K. - ALL TREATMENTS <1. WATER CHANGED, PARAMETERS TAKEN.

Day: 13/14
Date: 12/30/10
Initials: A.F.M.
Observations/notes: MODULE 25.2°C, AERATION O.K., $NH_3^+$ CHECK

Signature:
Disclosed and Understood by:

**DAILY NOTES SHEET**

Day: 1/ 14
Date: 12/31/10
Initials: [illegible]
Observations/notes: MODULE TEMP. @ 25.0°C, AERATION O.K., PARAMETERS TAKEN - TEMP., $NH_3^+$, D.O. WATER EXCHANGED. $NH_3^+$ CHECK ON ALL TREATMENTS - <1 PPM.

Day: 16/ 15
Date: 01/01/11
Initials: [illegible]
Observations/notes: MODULE TEMP. @ 26.7°C

Day: 17/ 16
Date: 01/02/11
Initials: [illegible]
Observations/notes: MOD. TEMP. @ 25.1°C, AERATION O.K., WORMS BURROWED. $NH_3^+$ CHECK CONDUCTED ON DMHU-1, DMHU-1S DMHU-2, REFERENCE, AND CONTROL - ALL <1 PPM WITH THE EXCEPTION OF CONTROL - 1 PPM.

Signature: [signature]
Disclosed and Understood by: [signature]

**DAILY NOTES SHEET**

Day: 18/17
Date: 01/03/10
Initials: [illegible]
Observations/notes: MOD. TEMP. @ 25.0°C, AERATION O.K., $NH_3^+$ O.K., DMMU 1S - <1PPM, DMMU - 1 - <1PPM, DMMU - 2 - <1PPM, CONTROL - 1, REFERENCE - <1PPM WATER CHANGED.

Day: 19/18
Date: 1/4/11
Initials: DF, JW
Observations/notes: Water change conducted. Aeration OK.

Day: 20/19
Date: 1/5/11
Initials: DF, JW
Observations/notes: Water change conducted. Aeration adjusted. Ammonia levels all 1 or lower.

Signature: [signature]
Disclosed and Understood by: [signature]

**DAILY NOTES SHEET**

Day: 21/20
Date: 11/6/11
Initials: DF, JW
Observations/notes: Water exchange conducted. Aeration ok.

Day: 22/21
Date: 11/7/11
Initials: DF, JW
Observations/notes: Water exchg conducted. Aeration ok.

Day: 23/22
Date: 11/8/11
Initials: DF, JW
Observations/notes: Water exchge conducted. Aeration ok

Signature:
Disclosed and Understood by: June Sims

**DAILY NOTES SHEET**

Day: 24/23
Date: 1/9/11
Initials: DF, JW
Observations/notes: Water exchange Conducted, Aeration OK

Day: 25/24
Date: 1/10/11
Initials: DF JW
Observations/notes: Water exchange Conducted, Aeration adjusted, All ammonia 1ppm or less.

Day: 26/25
Date: 1/11/11
Initials: DF, JW
Observations/notes: Water exchange conducted, Aeration ok.

Signature: D. F
Disclosed and Understood by: Jessica

**DAILY NOTES SHEET**

Day: 27/26
Date: 11/12/11
Initials: DF, JW
Observations/notes: Water exchange conducted, Aeration established,

Day: 28/27
Date: 11/13/11
Initials: DF, JT
Observations/notes: Final WQ parameter recorded, Repl A-C terminated. Animals placed in clean water for 24 hour purge.

Day: 29/28
Date: 11/14/11
Initials: DF, JT
Observations/notes: Tissue from repl A-C weighed and placed in clean vial for tissue analysis. Repl D-E terminated. Animals placed in clean water for 24 hour purge.

11/15/11
Tissue from repl D-E weighed and placed in clean vials for tissue analysis

Signature:
Disclosed and Understood by:

**TEST INITIATION/TERMINATION SHEET**

Project: Cleveland Harbor
Laboratory: US Army ERDC
Test Species: *L. variegatus*
Exposure duration: 28 days

Test Initiation Date: 12/16/10 Time:
Test Termination Date: 1/13/11 Time:
Page 1 of 1 1/14/11

| Treatment | Repl. | Day 0 Mass Added Tissue Mass (g) | Day 28 Mass Tissue Mass (g) | Comments |
|---|---|---|---|---|
| 12:15 12-16-10 Control | A | 10.015 | 0.265 | |
| | B | 10.523 | 5.283 | |
| | C | ~~10.103~~ 10.105 | 3.968 | |
| 1:30 12-17-10 | D | 10.548 | ~~6.848~~ 4.839 | |
| | E | 10.076 | ~~4.714~~ 0.860 | |
| Reference | A | 10.231 | 2.525 | |
| | B | 10.342 | 2.410 | |
| | C | 10.446 | 1.778 | |
| | D | 10.238 | 6.848 | |
| | E | 10.500 | 4.714 | |
| DMMU-1 | A | 10.246 | 5.243 | |
| | B | 10.204 | 5.634 | |
| | C | 10.060 | 5.648 | |
| | D | 10.339 | 5.867 | |
| | E | 10.056 | 6.160 | |
| DMMU-IS | A | 10.059 | 5.337 | |
| | B | 10.237 | 5.117 | |
| | C | 10.105 | 6.537 | |
| | D | 10.734 | 7.957 | |
| | E | 10.299 | 6.555 | |
| DMMU-2 | A | 10.132 | 6.556 | |
| | B | 10.229 | 5.978 | |
| | C | 10.090 | 5.084 | |
| | D | 10.335 | 6.051 | |
| | E | 10.066 | 5.683 | |

Signature: _____

Disclosed and Understood by: _____

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

04 March 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 18-Jan-2011. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| Background L variegatus 1 | 1011801-01 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| Reference L variegatus 1 | 1011801-02 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| Reference L variegatus 2 | 1011801-03 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| Reference L variegatus 3 | 1011801-04 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| Reference L variegatus 4 | 1011801-05 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| Reference L variegatus 5 | 1011801-06 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 L variegatus 1 | 1011801-07 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 L variegatus 2 | 1011801-08 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 L variegatus 3 | 1011801-09 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 L variegatus 4 | 1011801-10 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 L variegatus 5 | 1011801-11 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 S L variegatus 1 | 1011801-12 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 S L variegatus 2 | 1011801-13 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 S L variegatus 3 | 1011801-14 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 S L variegatus 4 | 1011801-15 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-1 S L variegatus 5 | 1011801-16 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-2 L variegatus 1 | 1011801-17 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-2 L variegatus 2 | 1011801-18 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-2 L variegatus 3 | 1011801-19 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-2 L variegatus 4 | 1011801-20 | Tissue | 14-Jan-2011 | 18-Jan-2011 |
| DMMU-2 L variegatus 5 | 1011801-21 | Tissue | 14-Jan-2011 | 18-Jan-2011 |

**USACE ERDC-EP-C**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Background L variegatus 1

**1011801-01 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **0.9** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.817 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *45.0 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *162 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Background L variegatus 1

**1011801-01 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 1

**1011801-02 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.9** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 1.12 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *43.9 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *145 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 1

**1011801-02 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 22.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 22.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 22.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 22.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 22.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 22.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 22.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 2

**1011801-03 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.5** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.991 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *47.8 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *131 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 2

**1011801-03 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 19.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 19.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 19.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 19.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 19.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 19.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 19.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 3

**1011801-04 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.4** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 1.76 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *47.4 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *136 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 3

**1011801-04 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 35.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 35.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 35.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 35.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 35.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 35.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 35.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 4

**1011801-05 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.0** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.802 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *44.7 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *149 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 4

**1011801-05 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 5

**1011801-06 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.5** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.806 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *43.7 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *142 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Reference L variegatus 5

**1011801-06 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 1

**1011801-07 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.5** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *43.6 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *148 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 1

**1011801-07 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 2

**1011801-08 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.8** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.798 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *43.8 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *109 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 2

**1011801-08 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 3

**1011801-09 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.2** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.826 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.6 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *135 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 3

**1011801-09 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 4

**1011801-10 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.2** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.804 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *37.7 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *132 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 4

**1011801-10 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.1 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 5

**1011801-11 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **0.9** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.833 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.0 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *129 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 L variegatus 5

**1011801-11 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.7 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.7 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.7 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.7 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.7 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.7 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.7 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 1

**1011801-12 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.3** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.831 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *38.8 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *125 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 1

**1011801-12 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.6 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.6 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.6 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.6 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.6 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.6 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.6 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 2

**1011801-13 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.6** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.813 | ug/kg | 1 | 27-Jan-2011 | 23-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.4 %* | *40-125* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *137 %* | *55-130* | | *27-Jan-2011* | *23-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 2

**1011801-13 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 3

**1011801-14 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.9** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.825 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.9 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *130 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 3

**1011801-14 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 4

**1011801-15 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.2** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.788 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.2 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *132 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 4

**1011801-15 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 15.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 15.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 15.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 15.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 15.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 15.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 15.8 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

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**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 5

**1011801-16 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **2.0** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.796 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.4 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *147 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-1 S L variegatus 5

**1011801-16 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 15.9 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 15.9 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 15.9 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 15.9 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 15.9 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 15.9 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 15.9 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

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**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 1

**1011801-17 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.6** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.822 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.9 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *74.9 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 1

**1011801-17 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.4 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.4 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.4 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.4 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.4 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.4 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.4 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 2

**1011801-18 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.8** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.801 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *42.5 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *90.1 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 2

**1011801-18 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 3

**1011801-19 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.8** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.815 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.3 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *118 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Buffalo District | Project: Cleveland Harbor BU | |
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| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 3

**1011801-19 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.3 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 4

**1011801-20 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **2.2** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.799 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.7 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *114 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 4

**1011801-20 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.0 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 5

**1011801-21 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **0.9** | 0.01 | % by Weight | 1 | 26-Jan-2011 | 28-Feb-2011 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.823 | ug/kg | 1 | 27-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.6 %* | *40-125* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *113 %* | *55-130* | | *27-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU-2 L variegatus 5

**1011801-21 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polychlorinated Biphenyls by EPA Method 8082**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 27-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B102008-BLK2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| 4,4´-DDD | ND | 1.25 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 1.25 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 1.25 | ug/kg | | | | | | | U |
| Aldrin | ND | 1.25 | ug/kg | | | | | | | U |
| alpha-BHC | ND | 1.25 | ug/kg | | | | | | | U |
| alpha-Chlordane | ND | 1.25 | ug/kg | | | | | | | U |
| beta-BHC | ND | 1.25 | ug/kg | | | | | | | U |
| delta-BHC | ND | 1.25 | ug/kg | | | | | | | U |
| Dieldrin | ND | 1.25 | ug/kg | | | | | | | U |
| Endosulfan I | ND | 1.25 | ug/kg | | | | | | | U |
| Endosulfan II | ND | 1.25 | ug/kg | | | | | | | U |
| Endosulfan sulfate | ND | 1.25 | ug/kg | | | | | | | U |
| Endrin | ND | 1.25 | ug/kg | | | | | | | U |
| Endrin aldehyde | ND | 1.25 | ug/kg | | | | | | | U |
| Endrin ketone | ND | 1.25 | ug/kg | | | | | | | U |
| gamma-BHC (Lindane) | ND | 1.25 | ug/kg | | | | | | | U |
| gamma-Chlordane | ND | 1.25 | ug/kg | | | | | | | U |
| Heptachlor | ND | 1.25 | ug/kg | | | | | | | U |
| Heptachlor epoxide | ND | 1.25 | ug/kg | | | | | | | U |
| Methoxychlor | ND | 1.25 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *29.3* | | *ug/kg* | *50.00* | | *58.6* | *40-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *64.3* | | *ug/kg* | *50.00* | | *129* | *55-130* | | | |
| **LCS (B102008-BS1)** | | | | Prepared: 27-Jan-2011 Analyzed: 23-Feb-2011 | | | | | | |
| 4,4'-DDD [2C] | 15.8 | 1.25 | ug/kg | 20.00 | | 79.0 | 30-135 | | | |
| 4,4´-DDE | 15.6 | 1.25 | ug/kg | 20.00 | | 78.0 | 70-125 | | | |
| 4,4'-DDT [2C] | 16.0 | 1.25 | ug/kg | 20.00 | | 79.8 | 45-140 | | | |
| Aldrin [2C] | 15.2 | 1.25 | ug/kg | 20.00 | | 75.8 | 45-140 | | | |
| alpha-BHC [2C] | 15.9 | 1.25 | ug/kg | 20.00 | | 79.6 | 60-125 | | | |
| alpha-Chlordane | 14.2 | 1.25 | ug/kg | 20.00 | | 71.1 | 65-120 | | | |
| beta-BHC [2C] | 14.4 | 1.25 | ug/kg | 20.00 | | 72.1 | 60-125 | | | |
| delta-BHC [2C] | 13.9 | 1.25 | ug/kg | 20.00 | | 69.4 | 55-130 | | | |
| Dieldrin | 13.0 | 1.25 | ug/kg | 20.00 | | 64.8 | 65-125 | | | |
| Endrin | 15.2 | 1.25 | ug/kg | 20.00 | | 75.9 | 60-135 | | | |
| Endrin aldehyde | 16.4 | 1.25 | ug/kg | 20.00 | | 81.8 | 35-145 | | | |
| Endrin ketone [2C] | 17.0 | 1.25 | ug/kg | 20.00 | | 85.2 | 65-135 | | | |
| gamma-BHC [Lindane] [2C] | 16.0 | 1.25 | ug/kg | 20.00 | | 80.2 | 60-125 | | | |
| gamma-Chlordane | 12.5 | 1.25 | ug/kg | 20.00 | | 62.5 | 65-125 | | | |
| Heptachlor [2C] | 13.8 | 1.25 | ug/kg | 20.00 | | 69.2 | 50-140 | | | |
| Heptachlor epoxide [2C] | 14.7 | 1.25 | ug/kg | 20.00 | | 73.5 | 65-130 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS (B102008-BS1)** | | | | Prepared: 27-Jan-2011 Analyzed: 23-Feb-2011 | | | | | | |
| Methoxychlor | 14.7 | 1.25 | ug/kg | 20.00 | | 73.3 | 55-145 | | | |
| Methoxychlor [2C] | 16.4 | 1.25 | ug/kg | 20.00 | | 82.1 | 55-145 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *32.9* | | *ug/kg* | *50.00* | | *65.8* | *40-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *68.5* | | *ug/kg* | *50.00* | | *137* | *55-130* | | | |
| **LCS (B102008-BS2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| 4,4´-DDD | ND | 1.25 | ug/kg | | | | 30-135 | | | U |
| 4,4'-DDD [2C] | ND | 1.25 | ug/kg | | | | 30-135 | | | U |
| 4,4´-DDE | ND | 1.25 | ug/kg | | | | 70-125 | | | U |
| 4,4'-DDE [2C] | ND | 1.25 | ug/kg | | | | 70-125 | | | U |
| 4,4´-DDT | ND | 1.25 | ug/kg | | | | 45-140 | | | U |
| 4,4'-DDT [2C] | ND | 1.25 | ug/kg | | | | 45-140 | | | U |
| Aldrin | ND | 1.25 | ug/kg | | | | 45-140 | | | U |
| Aldrin [2C] | ND | 1.25 | ug/kg | | | | 45-140 | | | U |
| alpha-BHC | ND | 1.25 | ug/kg | | | | 60-125 | | | U |
| alpha-BHC [2C] | ND | 1.25 | ug/kg | | | | 60-125 | | | U |
| alpha-Chlordane | ND | 1.25 | ug/kg | | | | 65-120 | | | U |
| alpha-Chlordane [2C] | ND | 1.25 | ug/kg | | | | 65-120 | | | U |
| beta-BHC | ND | 1.25 | ug/kg | | | | 60-125 | | | U |
| beta-BHC [2C] | ND | 1.25 | ug/kg | | | | 60-125 | | | U |
| delta-BHC | ND | 1.25 | ug/kg | | | | 55-130 | | | U |
| delta-BHC [2C] | ND | 1.25 | ug/kg | | | | 55-130 | | | U |
| Dieldrin | ND | 1.25 | ug/kg | | | | 65-125 | | | U |
| Dieldrin [2C] | ND | 1.25 | ug/kg | | | | 65-125 | | | U |
| Endosulfan I | ND | 1.25 | ug/kg | | | | 15-135 | | | U |
| EndoSulfan I [2C] | ND | 1.25 | ug/kg | | | | 15-135 | | | U |
| Endosulfan II | ND | 1.25 | ug/kg | | | | 35-140 | | | U |
| Endosulfan II [2C] | ND | 1.25 | ug/kg | | | | 35-140 | | | U |
| Endosulfan sulfate | ND | 1.25 | ug/kg | | | | 60-135 | | | U |
| Endosulfan sulfate [2C] | ND | 1.25 | ug/kg | | | | 60-135 | | | U |
| Endrin | ND | 1.25 | ug/kg | | | | 60-135 | | | U |
| Endrin [2C] | ND | 1.25 | ug/kg | | | | 60-135 | | | U |
| Endrin aldehyde | ND | 1.25 | ug/kg | | | | 35-145 | | | U |
| Endrin aldehyde [2C] | ND | 1.25 | ug/kg | | | | 35-145 | | | U |
| Endrin ketone | ND | 1.25 | ug/kg | | | | 65-135 | | | U |
| Endrin ketone [2C] | ND | 1.25 | ug/kg | | | | 65-135 | | | U |
| gamma-BHC (Lindane) | ND | 1.25 | ug/kg | | | | 60-125 | | | U |
| gamma-BHC [Lindane] [2C] | ND | 1.25 | ug/kg | | | | 60-125 | | | U |
| gamma-Chlordane | ND | 1.25 | ug/kg | | | | 65-125 | | | U |
| gamma-Chlorodane [2C] | ND | 1.25 | ug/kg | | | | 65-125 | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS (B102008-BS2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| Heptachlor | ND | 1.25 | ug/kg | | | | 50-140 | | | U |
| Heptachlor [2C] | ND | 1.25 | ug/kg | | | | 50-140 | | | U |
| Heptachlor epoxide | ND | 1.25 | ug/kg | | | | 65-130 | | | U |
| Heptachlor epoxide [2C] | ND | 1.25 | ug/kg | | | | 65-130 | | | U |
| Methoxychlor | ND | 1.25 | ug/kg | | | | 55-145 | | | U |
| Methoxychlor [2C] | ND | 1.25 | ug/kg | | | | 55-145 | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *ND* | | *ug/kg* | *50.00* | | | *40-125* | | | *U* |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *ND* | | *ug/kg* | *50.00* | | | *40-125* | | | *U* |
| *Surrogate: Decachlorobiphenyl* | *ND* | | *ug/kg* | *50.00* | | | *55-130* | | | *U* |
| *Surrogate: Decachorobiphenyl [2C]* | *ND* | | *ug/kg* | *50.00* | | | *55-130* | | | *U* |
| **LCS Dup (B102008-BSD1)** | | | | Prepared: 27-Jan-2011 Analyzed: 23-Feb-2011 | | | | | | |
| 4,4'-DDD [2C] | 14.5 | 1.25 | ug/kg | 20.00 | | 72.7 | 30-135 | 8.36 | 30 | |
| 4,4´-DDE | 15.6 | 1.25 | ug/kg | 20.00 | | 78.0 | 70-125 | 0.0769 | 30 | |
| 4,4´-DDT | 16.4 | 1.25 | ug/kg | 20.00 | | 81.8 | 45-140 | 8.63 | 30 | |
| Aldrin [2C] | 14.5 | 1.25 | ug/kg | 20.00 | | 72.7 | 45-140 | 4.09 | 30 | |
| alpha-BHC [2C] | 14.9 | 1.25 | ug/kg | 20.00 | | 74.5 | 60-125 | 6.65 | 30 | |
| alpha-Chlordane | 14.0 | 1.25 | ug/kg | 20.00 | | 69.8 | 65-120 | 1.84 | 30 | |
| beta-BHC [2C] | 14.3 | 1.25 | ug/kg | 20.00 | | 71.6 | 60-125 | 0.689 | 30 | |
| delta-BHC [2C] | 13.1 | 1.25 | ug/kg | 20.00 | | 65.5 | 55-130 | 5.74 | 30 | |
| Dieldrin | 13.4 | 1.25 | ug/kg | 20.00 | | 67.1 | 65-125 | 3.58 | 30 | |
| Endrin | 14.3 | 1.25 | ug/kg | 20.00 | | 71.6 | 60-135 | 5.86 | 30 | |
| Endrin aldehyde | 16.2 | 1.25 | ug/kg | 20.00 | | 80.9 | 35-145 | 1.19 | 30 | |
| Endrin ketone [2C] | 17.1 | 1.25 | ug/kg | 20.00 | | 85.6 | 65-135 | 0.562 | 30 | |
| gamma-BHC [Lindane] [2C] | 15.2 | 1.25 | ug/kg | 20.00 | | 76.1 | 60-125 | 5.20 | 30 | |
| gamma-Chlordane | 12.0 | 1.25 | ug/kg | 20.00 | | 60.2 | 65-125 | 3.66 | 30 | |
| Heptachlor [2C] | 14.0 | 1.25 | ug/kg | 20.00 | | 69.8 | 50-140 | 0.892 | 30 | |
| Heptachlor epoxide [2C] | 14.1 | 1.25 | ug/kg | 20.00 | | 70.3 | 65-130 | 4.49 | 30 | |
| Methoxychlor [2C] | 17.2 | 1.25 | ug/kg | 20.00 | | 86.2 | 55-145 | 4.95 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *31.5* | | *ug/kg* | *50.00* | | *63.0* | *40-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *70.4* | | *ug/kg* | *50.00* | | *141* | *55-130* | | | |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS Dup (B102008-BSD2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| 4,4´-DDD | ND | 1.25 | ug/kg | | | | 30-135 | | 30 | U |
| 4,4'-DDD [2C] | ND | 1.25 | ug/kg | | | | 30-135 | | 30 | U |
| 4,4´-DDE | ND | 1.25 | ug/kg | | | | 70-125 | | 30 | U |
| 4,4'-DDE [2C] | ND | 1.25 | ug/kg | | | | 70-125 | | 30 | U |
| 4,4´-DDT | ND | 1.25 | ug/kg | | | | 45-140 | | 30 | U |
| 4,4'-DDT [2C] | ND | 1.25 | ug/kg | | | | 45-140 | | 30 | U |
| Aldrin | ND | 1.25 | ug/kg | | | | 45-140 | | 30 | U |
| Aldrin [2C] | ND | 1.25 | ug/kg | | | | 45-140 | | 30 | U |
| alpha-BHC | ND | 1.25 | ug/kg | | | | 60-125 | | 30 | U |
| alpha-BHC [2C] | ND | 1.25 | ug/kg | | | | 60-125 | | 30 | U |
| alpha-Chlordane | ND | 1.25 | ug/kg | | | | 65-120 | | 30 | U |
| alpha-Chlordane [2C] | ND | 1.25 | ug/kg | | | | 65-120 | | 30 | U |
| beta-BHC | ND | 1.25 | ug/kg | | | | 60-125 | | 30 | U |
| beta-BHC [2C] | ND | 1.25 | ug/kg | | | | 60-125 | | 30 | U |
| delta-BHC | ND | 1.25 | ug/kg | | | | 55-130 | | 30 | U |
| delta-BHC [2C] | ND | 1.25 | ug/kg | | | | 55-130 | | 30 | U |
| Dieldrin | ND | 1.25 | ug/kg | | | | 65-125 | | 30 | U |
| Dieldrin [2C] | ND | 1.25 | ug/kg | | | | 65-125 | | 30 | U |
| Endosulfan I | ND | 1.25 | ug/kg | | | | 15-135 | | 30 | U |
| EndoSulfan I [2C] | ND | 1.25 | ug/kg | | | | 15-135 | | 30 | U |
| Endosulfan II | ND | 1.25 | ug/kg | | | | 35-140 | | 30 | U |
| Endosulfan II [2C] | ND | 1.25 | ug/kg | | | | 35-140 | | 30 | U |
| Endosulfan sulfate | ND | 1.25 | ug/kg | | | | 60-135 | | 30 | U |
| Endosulfan sulfate [2C] | ND | 1.25 | ug/kg | | | | 60-135 | | 30 | U |
| Endrin | ND | 1.25 | ug/kg | | | | 60-135 | | 30 | U |
| Endrin [2C] | ND | 1.25 | ug/kg | | | | 60-135 | | 30 | U |
| Endrin aldehyde | ND | 1.25 | ug/kg | | | | 35-145 | | 30 | U |
| Endrin aldehyde [2C] | ND | 1.25 | ug/kg | | | | 35-145 | | 30 | U |
| Endrin ketone | ND | 1.25 | ug/kg | | | | 65-135 | | 30 | U |
| Endrin ketone [2C] | ND | 1.25 | ug/kg | | | | 65-135 | | 30 | U |
| gamma-BHC (Lindane) | ND | 1.25 | ug/kg | | | | 60-125 | | 30 | U |
| gamma-BHC [Lindane] [2C] | ND | 1.25 | ug/kg | | | | 60-125 | | 30 | U |
| gamma-Chlordane | ND | 1.25 | ug/kg | | | | 65-125 | | 30 | U |
| gamma-Chlorodane [2C] | ND | 1.25 | ug/kg | | | | 65-125 | | 30 | U |
| Heptachlor | ND | 1.25 | ug/kg | | | | 50-140 | | 30 | U |
| Heptachlor [2C] | ND | 1.25 | ug/kg | | | | 50-140 | | 30 | U |
| Heptachlor epoxide | ND | 1.25 | ug/kg | | | | 65-130 | | 30 | U |
| Heptachlor epoxide [2C] | ND | 1.25 | ug/kg | | | | 65-130 | | 30 | U |
| Methoxychlor | ND | 1.25 | ug/kg | | | | 55-145 | | 30 | U |
| Methoxychlor [2C] | ND | 1.25 | ug/kg | | | | 55-145 | | 30 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS Dup (B102008-BSD2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *ND* | | *ug/kg* | *50.00* | | | *40-125* | | | *U* |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *ND* | | *ug/kg* | *50.00* | | | *40-125* | | | *U* |
| *Surrogate: Decachlorobiphenyl* | *ND* | | *ug/kg* | *50.00* | | | *55-130* | | | *U* |
| *Surrogate: Decachorobiphenyl [2C]* | *ND* | | *ug/kg* | *50.00* | | | *55-130* | | | *U* |
| **Matrix Spike (B102008-MS1)** | **Source: 1011801-16** | | | Prepared: 27-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| 4,4'-DDD [2C] | 16.7 | 1.25 | ug/kg | 19.93 | ND | 84.0 | 30-135 | | | |
| 4,4´-DDE | 10.4 | 1.25 | ug/kg | 19.93 | ND | 52.0 | 70-125 | | | |
| 4,4´-DDT | 14.9 | 1.25 | ug/kg | 19.93 | ND | 74.8 | 45-140 | | | |
| Aldrin [2C] | 12.4 | 1.25 | ug/kg | 19.93 | ND | 62.2 | 45-140 | | | |
| alpha-BHC | 8.47 | 1.25 | ug/kg | 19.93 | ND | 42.5 | 60-125 | | | |
| alpha-Chlordane | 8.91 | 1.25 | ug/kg | 19.93 | ND | 44.7 | 65-120 | | | |
| beta-BHC | 10.4 | 1.25 | ug/kg | 19.93 | ND | 52.1 | 60-125 | | | |
| delta-BHC | 8.34 | 1.25 | ug/kg | 19.93 | ND | 41.8 | 55-130 | | | |
| Dieldrin | 9.35 | 1.25 | ug/kg | 19.93 | ND | 46.9 | 65-125 | | | |
| Endrin [2C] | 15.9 | 1.25 | ug/kg | 19.93 | ND | 79.9 | 60-135 | | | |
| Endrin aldehyde [2C] | 12.5 | 1.25 | ug/kg | 19.93 | ND | 62.9 | 35-145 | | | |
| Endrin ketone [2C] | 16.0 | 1.25 | ug/kg | 19.93 | ND | 80.2 | 65-135 | | | |
| gamma-BHC [Lindane] [2C] | 8.96 | 1.25 | ug/kg | 19.93 | ND | 45.0 | 60-125 | | | |
| gamma-Chlordane | 13.4 | 1.25 | ug/kg | 19.93 | ND | 67.0 | 65-125 | | | |
| Heptachlor [2C] | 9.73 | 1.25 | ug/kg | 19.93 | ND | 48.8 | 50-140 | | | |
| Heptachlor epoxide | 12.1 | 1.25 | ug/kg | 19.93 | ND | 60.9 | 65-130 | | | |
| Methoxychlor | 13.9 | 1.25 | ug/kg | 19.93 | ND | 69.6 | 55-145 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *21.2* | | *ug/kg* | *49.83* | | *42.6* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *71.2* | | *ug/kg* | *49.83* | | *143* | *55-130* | | | |
| **Matrix Spike (B102008-MS2)** | **Source: 1011801-15** | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| 4,4´-DDD | ND | 1.24 | ug/kg | | ND | | 30-135 | | | U |
| 4,4'-DDD [2C] | ND | 1.24 | ug/kg | | ND | | 30-135 | | | U |
| 4,4´-DDE | ND | 1.24 | ug/kg | | ND | | 70-125 | | | U |
| 4,4'-DDE [2C] | ND | 1.24 | ug/kg | | ND | | 70-125 | | | U |
| 4,4´-DDT | ND | 1.24 | ug/kg | | ND | | 45-140 | | | U |
| 4,4'-DDT [2C] | ND | 1.24 | ug/kg | | ND | | 45-140 | | | U |
| Aldrin | ND | 1.24 | ug/kg | | ND | | 45-140 | | | U |
| Aldrin [2C] | ND | 1.24 | ug/kg | | ND | | 45-140 | | | U |
| alpha-BHC | ND | 1.24 | ug/kg | | ND | | 60-125 | | | U |
| alpha-BHC [2C] | ND | 1.24 | ug/kg | | ND | | 60-125 | | | U |
| alpha-Chlordane | ND | 1.24 | ug/kg | | ND | | 65-120 | | | U |
| alpha-Chlordane [2C] | ND | 1.24 | ug/kg | | ND | | 35-120 | | | U |

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**3909 Halls Ferry Road**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **Matrix Spike (B102008-MS2)** | **Source: 1011801-15** | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| beta-BHC | ND | 1.24 | ug/kg | | ND | | 60-125 | | | U |
| beta-BHC [2C] | ND | 1.24 | ug/kg | | ND | | 60-125 | | | U |
| delta-BHC | ND | 1.24 | ug/kg | | ND | | 55-130 | | | U |
| delta-BHC [2C] | ND | 1.24 | ug/kg | | ND | | 55-130 | | | U |
| Dieldrin | ND | 1.24 | ug/kg | | ND | | 65-125 | | | U |
| Dieldrin [2C] | ND | 1.24 | ug/kg | | ND | | 65-125 | | | U |
| Endosulfan I | ND | 1.24 | ug/kg | | ND | | 15-135 | | | U |
| EndoSulfan I [2C] | ND | 1.24 | ug/kg | | ND | | 15-135 | | | U |
| Endosulfan II | ND | 1.24 | ug/kg | | ND | | 35-140 | | | U |
| Endosulfan II [2C] | ND | 1.24 | ug/kg | | ND | | 35-140 | | | U |
| Endosulfan sulfate | ND | 1.24 | ug/kg | | ND | | 60-135 | | | U |
| Endosulfan sulfate [2C] | ND | 1.24 | ug/kg | | ND | | 60-135 | | | U |
| Endrin | ND | 1.24 | ug/kg | | ND | | 60-135 | | | U |
| Endrin [2C] | ND | 1.24 | ug/kg | | ND | | 60-135 | | | U |
| Endrin aldehyde | ND | 1.24 | ug/kg | | ND | | 35-145 | | | U |
| Endrin aldehyde [2C] | ND | 1.24 | ug/kg | | ND | | 35-145 | | | U |
| Endrin ketone | ND | 1.24 | ug/kg | | ND | | 65-135 | | | U |
| Endrin ketone [2C] | ND | 1.24 | ug/kg | | ND | | 65-135 | | | U |
| gamma-BHC (Lindane) | ND | 1.24 | ug/kg | | ND | | 60-125 | | | U |
| gamma-BHC [Lindane] [2C] | ND | 1.24 | ug/kg | | ND | | 60-125 | | | U |
| gamma-Chlordane | ND | 1.24 | ug/kg | | ND | | 65-125 | | | U |
| gamma-Chlorodane [2C] | ND | 1.24 | ug/kg | | ND | | 65-125 | | | U |
| Heptachlor | ND | 1.24 | ug/kg | | ND | | 50-140 | | | U |
| Heptachlor [2C] | ND | 1.24 | ug/kg | | ND | | 50-140 | | | U |
| Heptachlor epoxide | ND | 1.24 | ug/kg | | ND | | 65-130 | | | U |
| Heptachlor epoxide [2C] | ND | 1.24 | ug/kg | | ND | | 65-130 | | | U |
| Methoxychlor | ND | 1.24 | ug/kg | | ND | | 55-145 | | | U |
| Methoxychlor [2C] | ND | 1.24 | ug/kg | | ND | | 55-145 | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *ND* | | *ug/kg* | *49.73* | | | *40-125* | | | *U* |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *ND* | | *ug/kg* | *49.73* | | | *40-125* | | | *U* |
| *Surrogate: Decachlorobiphenyl* | *ND* | | *ug/kg* | *49.73* | | | *55-130* | | | *U* |
| *Surrogate: Decachorobiphenyl [2C]* | *ND* | | *ug/kg* | *49.73* | | | *55-130* | | | *U* |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **Matrix Spike Dup (B102008-MSD1)** | **Source: 1011801-16** | | | Prepared: 27-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| 4,4´-DDD | 17.7 | 1.17 | ug/kg | 18.74 | ND | 94.5 | 30-135 | 2.81 | 30 | |
| 4,4´-DDE | 11.5 | 1.17 | ug/kg | 18.74 | ND | 61.4 | 70-125 | 10.4 | 30 | |
| 4,4'-DDT [2C] | 15.9 | 1.17 | ug/kg | 18.74 | ND | 84.6 | 45-140 | 6.35 | 30 | |
| Aldrin [2C] | 13.3 | 1.17 | ug/kg | 18.74 | ND | 71.2 | 45-140 | 7.23 | 30 | |
| alpha-BHC | 8.62 | 1.17 | ug/kg | 18.74 | ND | 46.0 | 60-125 | 1.74 | 30 | |
| alpha-Chlordane | 9.21 | 1.17 | ug/kg | 18.74 | ND | 49.2 | 65-120 | 3.28 | 30 | |
| beta-BHC | 10.9 | 1.17 | ug/kg | 18.74 | ND | 58.0 | 60-125 | 4.43 | 30 | |
| delta-BHC | 9.63 | 1.17 | ug/kg | 18.74 | ND | 51.4 | 55-130 | 14.4 | 30 | |
| Dieldrin | 9.81 | 1.17 | ug/kg | 18.74 | ND | 52.3 | 65-125 | 4.82 | 30 | |
| Endrin | 7.61 | 1.17 | ug/kg | 18.74 | ND | 40.6 | 60-135 | 0.327 | 30 | |
| Endrin aldehyde [2C] | 12.2 | 1.17 | ug/kg | 18.74 | ND | 65.2 | 35-145 | 2.47 | 30 | |
| Endrin ketone [2C] | 16.2 | 1.17 | ug/kg | 18.74 | ND | 86.6 | 65-135 | 1.49 | 30 | |
| gamma-BHC [Lindane] [2C] | 9.32 | 1.17 | ug/kg | 18.74 | ND | 49.8 | 60-125 | 3.94 | 30 | |
| gamma-Chlordane | 16.0 | 1.17 | ug/kg | 18.74 | ND | 85.6 | 65-125 | 18.2 | 30 | |
| Heptachlor [2C] | 10.2 | 1.17 | ug/kg | 18.74 | ND | 54.4 | 50-140 | 4.70 | 30 | |
| Heptachlor epoxide | 13.1 | 1.17 | ug/kg | 18.74 | ND | 69.7 | 65-130 | 7.32 | 30 | |
| Methoxychlor | 13.7 | 1.17 | ug/kg | 18.74 | ND | 73.4 | 55-145 | 0.943 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *20.6* | | *ug/kg* | *46.84* | | *44.1* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *70.4* | | *ug/kg* | *46.84* | | *150* | *55-130* | | | |
| **Matrix Spike Dup (B102008-MSD2)** | **Source: 1011801-15** | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| 4,4´-DDD | ND | 1.22 | ug/kg | | ND | | 30-135 | | 30 | U |
| 4,4'-DDD [2C] | ND | 1.22 | ug/kg | | ND | | 30-135 | | 30 | U |
| 4,4´-DDE | ND | 1.22 | ug/kg | | ND | | 70-125 | | 30 | U |
| 4,4'-DDE [2C] | ND | 1.22 | ug/kg | | ND | | 70-125 | | 30 | U |
| 4,4´-DDT | ND | 1.22 | ug/kg | | ND | | 45-140 | | 30 | U |
| 4,4'-DDT [2C] | ND | 1.22 | ug/kg | | ND | | 45-140 | | 30 | U |
| Aldrin | ND | 1.22 | ug/kg | | ND | | 45-140 | | 30 | U |
| Aldrin [2C] | ND | 1.22 | ug/kg | | ND | | 45-140 | | 30 | U |
| alpha-BHC | ND | 1.22 | ug/kg | | ND | | 60-125 | | 30 | U |
| alpha-BHC [2C] | ND | 1.22 | ug/kg | | ND | | 60-125 | | 30 | U |
| alpha-Chlordane | ND | 1.22 | ug/kg | | ND | | 65-120 | | 30 | U |
| alpha-Chlordane [2C] | ND | 1.22 | ug/kg | | ND | | 35-120 | | 30 | U |
| beta-BHC | ND | 1.22 | ug/kg | | ND | | 60-125 | | 30 | U |
| beta-BHC [2C] | ND | 1.22 | ug/kg | | ND | | 60-125 | | 30 | U |
| delta-BHC | ND | 1.22 | ug/kg | | ND | | 55-130 | | 30 | U |
| delta-BHC [2C] | ND | 1.22 | ug/kg | | ND | | 55-130 | | 30 | U |
| Dieldrin | ND | 1.22 | ug/kg | | ND | | 65-125 | | 30 | U |
| Dieldrin [2C] | ND | 1.22 | ug/kg | | ND | | 65-125 | | 30 | U |
| Endosulfan I | ND | 1.22 | ug/kg | | ND | | 15-135 | | 30 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **Matrix Spike Dup (B102008-MSD2)** | **Source: 1011801-15** | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| EndoSulfan I [2C] | ND | 1.22 | ug/kg | | ND | | 15-135 | | 30 | U |
| Endosulfan II | ND | 1.22 | ug/kg | | ND | | 35-140 | | 30 | U |
| Endosulfan II [2C] | ND | 1.22 | ug/kg | | ND | | 35-140 | | 30 | U |
| Endosulfan sulfate | ND | 1.22 | ug/kg | | ND | | 60-135 | | 30 | U |
| Endosulfan sulfate [2C] | ND | 1.22 | ug/kg | | ND | | 60-135 | | 30 | U |
| Endrin | ND | 1.22 | ug/kg | | ND | | 60-135 | | 30 | U |
| Endrin [2C] | ND | 1.22 | ug/kg | | ND | | 60-135 | | 30 | U |
| Endrin aldehyde | ND | 1.22 | ug/kg | | ND | | 35-145 | | 30 | U |
| Endrin aldehyde [2C] | ND | 1.22 | ug/kg | | ND | | 35-145 | | 30 | U |
| Endrin ketone | ND | 1.22 | ug/kg | | ND | | 65-135 | | 30 | U |
| Endrin ketone [2C] | ND | 1.22 | ug/kg | | ND | | 65-135 | | 30 | U |
| gamma-BHC (Lindane) | ND | 1.22 | ug/kg | | ND | | 60-125 | | 30 | U |
| gamma-BHC [Lindane] [2C] | ND | 1.22 | ug/kg | | ND | | 60-125 | | 30 | U |
| gamma-Chlordane | ND | 1.22 | ug/kg | | ND | | 65-125 | | 30 | U |
| gamma-Chlorodane [2C] | ND | 1.22 | ug/kg | | ND | | 65-125 | | 30 | U |
| Heptachlor | ND | 1.22 | ug/kg | | ND | | 50-140 | | 30 | U |
| Heptachlor [2C] | ND | 1.22 | ug/kg | | ND | | 50-140 | | 30 | U |
| Heptachlor epoxide | ND | 1.22 | ug/kg | | ND | | 65-130 | | 30 | U |
| Heptachlor epoxide [2C] | ND | 1.22 | ug/kg | | ND | | 65-130 | | 30 | U |
| Methoxychlor | ND | 1.22 | ug/kg | | ND | | 55-145 | | 30 | U |
| Methoxychlor [2C] | ND | 1.22 | ug/kg | | ND | | 55-145 | | 30 | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *ND* | | *ug/kg* | *48.62* | | | *40-125* | | | *U* |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *ND* | | *ug/kg* | *48.62* | | | *40-125* | | | *U* |
| *Surrogate: Decachlorobiphenyl* | *ND* | | *ug/kg* | *48.62* | | | *55-130* | | | *U* |
| *Surrogate: Decachorobiphenyl [2C]* | *ND* | | *ug/kg* | *48.62* | | | *55-130* | | | *U* |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B102008 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B102008-BLK2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB-1016 | ND | 25.0 | ug/kg | | | | | | | U |
| PCB-1221 | ND | 25.0 | ug/kg | | | | | | | U |
| PCB-1232 | ND | 25.0 | ug/kg | | | | | | | U |
| PCB-1242 | ND | 25.0 | ug/kg | | | | | | | U |
| PCB-1248 | ND | 25.0 | ug/kg | | | | | | | U |
| PCB-1254 | ND | 25.0 | ug/kg | | | | | | | U |
| PCB-1260 | ND | 25.0 | ug/kg | | | | | | | U |
| **LCS (B102008-BS2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB 1016 [2C] | 193 | 25.0 | ug/kg | 248.0 | | 77.8 | 75-125 | | | |
| PCB 1260 [2C] | 228 | 25.0 | ug/kg | 248.0 | | 91.9 | 75-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *34.6* | | *ug/kg* | *50.00* | | *69.2* | *45-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *80.9* | | *ug/kg* | *50.00* | | *162* | *45-125* | | | |
| **LCS Dup (B102008-BSD2)** | | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB-1016 | 177 | 25.0 | ug/kg | 248.0 | | 71.4 | 75-125 | 3.88 | 30 | |
| PCB-1260 | 211 | 25.0 | ug/kg | 248.0 | | 85.1 | 75-125 | 14.9 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *31.2* | | *ug/kg* | *50.00* | | *62.4* | *45-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *71.4* | | *ug/kg* | *50.00* | | *143* | *45-125* | | | |
| **Matrix Spike (B102008-MS2)** | **Source: 1011801-15** | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB 1016 [2C] | 146 | 24.9 | ug/kg | 246.6 | ND | 59.3 | 75-125 | | | |
| PCB-1260 | 232 | 24.9 | ug/kg | 246.6 | ND | 94.0 | 75-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *20.8* | | *ug/kg* | *49.73* | | *41.8* | *45-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *68.5* | | *ug/kg* | *49.73* | | *138* | *45-125* | | | |
| **Matrix Spike Dup (B102008-MSD2)** | **Source: 1011801-15** | | | Prepared: 27-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB-1016 | 190 | 24.3 | ug/kg | 241.2 | ND | 78.6 | 75-125 | | 30 | |
| PCB-1260 | 223 | 24.3 | ug/kg | 241.2 | ND | 92.3 | 75-125 | 3.97 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *20.6* | | *ug/kg* | *48.62* | | *42.4* | *45-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *68.6* | | *ug/kg* | *48.62* | | *141* | *45-125* | | | |

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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

# Appendix D4: Terrestrial Earthworm Toxicity and Bioaccumulation Test Data

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## EXECUTIVE SUMMARY

This report summarizes the Tier III biological testing of sediment collected from Cleveland Harbor Federal Navigation Channel (Cuyahoga River) conducted in accordance with the Upland Testing Manual (USACE, 2003), ASTM Standard Procedure SE-1676 (ASTM 1997), and in compliance with the CWA and NEPA. Bioassays were performed to determine the potential for toxicity and bioaccumulation of contaminants under freshwater terrestrial conditions by earthworms, a representative soil invertebrate known to accumulate a wide variety of contaminants from the soil in which it lives.

The survival and weight of worms exposed to the sediment samples and reference soil were similar at the conclusion of the 28-day test. Mean percent of worms recovered after the 28-day exposure was 98% in both DMMUs and Reference Soil. Mean weight retention during the test was higher in DMMU1 than in DMMU2 and Reference Soil.

Tissue concentrations of metals, chlorinated pesticides and PCBs measured in earthworms exposed to DMMU-1 and DMMU-2 were compared to tissue concentrations from the Reference Soil, as well as to Ecological Biota Screening Levels (Eco-BSLs), where available. Tissue concentrations of silver, arsenic, nickel, selenium, zinc, and chlordane were statistically higher in worms exposed to sediment collected from DMMU-1 than in worms exposed to the Reference soil. The worm tissue concentrations exposed to DMMU-1 exceeded the mammal Eco-BSL only for selenium. The tissue concentrations of worms exposed to DMMU-2 were statistically higher than the Reference soil for arsenic, nickel, selenium, zinc, dieldrin and chlordane. The average concentration of the sum of DDT and its degradation products DDE and DDD (Total DDT) were found to be higher in worm tissue exposed to the Reference soil than in worm tissue exposed to either sediment sample, DMMU-1 or DMMU-2. The tissue concentration of worms exposed to DMMU-2 exceeded the mammal Eco-BSL for the metals arsenic and selenium. While higher risks may be associated with gamma-Chlordane and slightly higher risks for As and Se in dredged material, the Reference soil may contribute to higher risks for Total DDT and Pb. Although higher concentrations of the metals As and Se were found in earthworms exposed to sediment the concentration of these metals in the sediment test samples is lower than the regional background concentrations that have been established for the Erie Ontario Lake Plain (EOLP) by Ohio EPA. The concentration of gamma-chlordane measured in worm tissues (12.8 µg/kg) was modestly higher than the EcoBSL screening value (10 µg/kg) developed for mammalian receptors. This screening value has assumed 100% of the diet of mammalian receptors results from consumption of exposed worms which is a conservative estimate of contaminant exposure.

## INTRODUCTION

The Buffalo District of the U.S. Army Corps of Engineers (USACE) requested assistance from the U.S. Army Engineer Research and Development Center (ERDC, Vicksburg, MS) to perform an evaluation of material collected from the Cuyahoga River Federal Navigation Channel. The evaluation consisted Tier III biological testing. All analyses were conducted in accordance with the Upland Testing Manual (USACE, 2003), ASTM Standard Procedure SE-1676 (ASTM 1997), and in compliance with the CWA and NEPA, and the results are presented in this report. Bioassays were performed to determine the potential bioaccumulation of any contaminant under freshwater terrestrial conditions by earthworms, a representative soil invertebrate known to accumulate a wide variety of contaminants from the soil in which it lives. Three (3) composite Dredged Material Management Units (DMMUs) were prepared at the ERDC using distinct, field-collected sediments. Analytical chemistry and survival and toxicity data were generated during the months of November and December 2010 and January and February 2011.

## METHODS

### Sample collection and preparation

Samples of dredged material and reference soils were collected by USACE-LRB personnel during November 2010 and shipped to the ERDC. Surface grab samples collected at the various river locations were tested to determine grain size distribution for consolidation into two DMMUs based on their grain-size distribution. Samples CH-1 – CH-3 consisted of coarser grain size particles (primarily fine sand) and were composited. Half of this composite was then sieved and separated by mixing with RO water and allowing coarse grain particles to settle to the bottom. Suspended fine grain silts and clays in the effluent were siphoned and discarded. Coarse grained material was labeled DMMU1-Sieved (DMMU-1S). The remaining half was labeled DMMU1. Samples CH-4 – CH-8 were composited and labeled DMMU2, PB-1 – PB-4 were composited and labeled reference sediment, and BS-1 –BS-4 were composited and labeled reference soil.

### Earthworm bioassay setup and operation

Sufficient amounts of DMMU1, DMMU2, and reference soil were placed in individual aluminum drying pans and were allowed to dry and oxidize in the greenhouse for three weeks. The dried material was then ground, placed in five-gallon buckets, and transferred to the lab. Five replicates of each material were setup according to the method found in the UTM. On day 0, a random selection of earthworms were collected, rinsed, and frozen for analysis, and approximately 30 grams of mature earthworms (75-110) were handpicked, weighed, and added to each test cylinder. Earthworm food was added to each cylinder on day 0 only. The control was the only material to receive food throughout the test, due to low nutrients in the media. A sample of the food was also submitted for analysis. On day 28, the earthworms were removed, counted, rinsed, blotted dry, and weighed. The earthworms were then depurated for 24 hours on

moist filter paper, rerinsed, reweighed, and froze in preparation for analysis. During the breakdown, cocoons were also observed and counted.

### Evaluation parameters

Earthworms were collected at the end of the bioassay period, counted and weighed to determine effects on survival and growth. Survival is reported as a percent of Day 0 individuals and compared to the reference material. Survival in the laboratory control must not fall below 90% for the test to be considered valid. While the survival may be considered a measure of toxicity, physical and other chemical properties may result in lower survival and be misinterpreted for contaminant effects. Earthworms are selective feeders and given the lack of available food source in the test materials they will lose weight and die. The supplemental feeding to maintain a healthy food source may result in reduced exposure to food sources and their associated contaminants within the test materials. As such, continuous feeding defeats the purpose of the test and is usually avoided. In many cases, survival over the 28-day exposure period is simply a measure of adaptability to a new environment.

Earthworm tissues were ground and analyzed for mercury, TAL metals, PCBs, pesticides, and lipids. Tissue concentrations of contaminants in earthworms exposed to the dredged material were statistically compared to reference soil tissues. For determination of means, values below the method detection limit (MDL) were set at the MDL numerical value.

### Statistical Analysis: Cleveland Terrestrial Earthworm Survival and Tissue Data Analysis

All terrestrial earthworm survival data were evaluated using the same sequence of statistical procedures. These procedures are described in Appendix D of USEPA/USACE (1998). The Statistical Analysis System (SAS) release 9.2 was used to perform the data analysis (SAS Institute Inc. 1989a; 1989b).

Step (1): (A) Arc Sine transform the survival data and evaluate the normality and equality of variances assumptions. PROC UNIVARIATE with the NORMAL option was used to test normality of residuals using the Shapiro-Wilk's Test (Conover 1980). This test provides a test statistic W which is compared to values of W expected from a normal distribution. Because normality is desired, one looks for a high value of W with an associated probability greater than 0.05. An associated probability less than 0.05 indicates the inappropriateness of the normality assumption. Data from earthworms exposed to DMMU1, DMMU2 and the field reference were used. There were five replicates from each site. (B) Levene's Test was used to evaluate the equality of variances assumption (Snedecor and Cochran 1980). Levene's Test was accomplished using the PROC GLM, MEANS /HOVTEST feature. The calculated F statistic was compared to a critical value from a F distribution. The equality of variances assumption was rejected if the F statistic was greater than or equal to the critical value at $F_{(2,12,0.10)}$. (C) If the normality assumption in (A) or the equality of variances assumption in (B) was rejected, Step (2) was utilized. If the normality and equality of variances assumptions were not rejected, PROC

TTEST was used to compare the arc sine transformed reference and DMMU1 survival means (SAS Institute Inc. 1989b). Another PROC TTEST compared the arc sine transformed reference and DMMU2 survival means. The TTEST was conducted at $\alpha$=0.05.

Step (2): Treatment survival data ranks were transformed into rankits (i.e., Proc Rank normal=BLOM; Var surv; ranks rankit;) (SAS Institute Inc. 1988). Evaluate the transformed data with the Shapiro-Wilk and Levene Tests as described in (A) and (B) of Step (1) above. If the normality assumption in (A) or the equality of variances assumption in (B) was rejected, Step (3) was utilized.

Step (3): Evaluate the untransformed tissue concentrations using PROC TTEST. Use the results from the Satterthwaite's approximation of the degrees of freedom with unequal variances (SAS Institute Inc. 1988).

Earthworm tissue metal, PCB, and pesticide concentrations were evaluated using two similar steps. Two differences are the arc sine transformation was not utilized in Step (1), instead the untransformed concentrations were used. The ranks used in Step (2) were based on the tissue concentrations rather than survival percentages. If the concentration was less than the detection limit, half the detection limit was used as the actual concentration.

## RESULTS

### Physical and Chemical Soil Characteristics

Particle size analysis (Table 1) shows the Reference soil has considerably more sand than the CDF dredged material. Agricultural analysis (Appendix A) of the Cleveland DMMU1 and DMMU2 and Reference site are shown in Table 2. Generally, sediments from DMMU1 and DMMU2 have higher concentrations of major nutrients, higher pH and a higher cation exchange capacity. These are indicators that sediments from the upper and lower sections of the Cuyahoga River navigation channel have the potential for producing excellent growth of plant cover when used for beneficial upland or emergent wetland uses. These materials used as topsoil would not require additions of organic or inorganic fertilizers to produce robust plant growth, reducing additional inputs of nutrients into the Cuyahoga watershed.

**Table 1.** Particle Size and Total Organic Carbon.

| Sample | Particle Size Analysis (%) | | | TOC (mg/kg) |
|---|---|---|---|---|
| | Sand | Silt | Clay | |
| DMMU1 | 17.5 | 61.1 | 21.2 | 39000 |
| DMMU2 | 7.5 | 59.7 | 32.8 | 25900 |
| Reference | 23.5 | 42.5 | 28.2 | 65800 |

**Table 2.** Agricultural Analysis.

| | DMMU1 | DMMU2 | Reference |
|---|---|---|---|
| Soil pH | 7.4 | 7.7 | 4.9 |
| Buffer pH | NA | NA | 6.36 |
| Phosphorus, lb/acre | 1006 | 80 | 52 |
| Potassium, lb/acre | 262 | 264 | 196 |
| Calcium, lb/acre | 9042 | 9180 | 2264 |
| Magnesium, lb/acre | 602 | 572 | 278 |
| Sulfur, lb/acre | 368 | 296 | 74 |
| Sodium, lb/acre | 384 | 312 | 60 |
| Organic Matter | 4.2% ENR 128 | 3.0% ENR 104 | 3.9% ENR 122 |
| Nitrate Nitrogen, lb/acre | 70 | 10 | 10 |
| Calculated Cation Exchange Capacity, meq/100g | 21.3 | 21.3 | 10.5 |
| K:Mg Ratio | 0.13 | 0.14 | 0.22 |

## Earthworm Growth and Uptake of Contaminants

Initial (Day 0) and 28-day earthworm weights and counts are shown in Table 3. Mean percent of worms recovered after the 28-day exposure was 98% in both DMMUs and Reference, nearly that of the lab control. Mean weight retention was higher in DMMU1 than in DMMU 2 and Reference while weight increased slightly in the Control (which received food additions throughout the exposure period). Mean lipid content of earthworms at the start of the test procedure was 1.67 % (Table 4). After 28 days, the % lipid response was similar to the recovered weight response showing higher retention in DMMU1 than in DMMU2 and Reference. This is consistent with the higher organic matter (food) content in shown previously for DMMU1 in Table 2.

**Table 3.** Earthworm survival and growth.

| | | Day 0 Count | Day 0 wt. (g) | Day 28 Count | Day 28 wt. (g) | % Count | % Weight |
|---|---|---|---|---|---|---|---|
| DMMU1 | **mean** | **79** | **31.48** | **77.2** | **23.27** | **97.8** | **75.3** |
| | max | 85 | 32.3 | 85 | 25.19 | | |
| | min | 75 | 31.0 | 73 | 21.66 | | |
| DMMU2 | **mean** | **92** | **30.36** | **90** | **19.58** | **97.8** | **64.5** |
| | max | 100 | 30.8 | 100 | 22.08 | | |
| | min | 80 | 30.0 | 76 | 17.12 | | |
| Reference | **mean** | **98** | **31.38** | **95.8** | **20.28** | **97.8** | **64.6** |
| | max | 100 | 32.1 | 100 | 22.14 | | |
| | min | 90 | 30.8 | 90 | 18.59 | | |
| Control | **mean** | **106** | **30.96** | **105.6** | **32.93** | **99.6** | **106.4** |
| | max | 110 | 31.8 | 110 | 35.75 | | |
| | min | 100 | 30.0 | 100 | 30.78 | | |

**Table 4.** Dissolved percent lipds, % by weight.

| | DMMU1 Mean | DMMU1 STDEV | DMMU2 Mean | DMMU2 STDEV | Reference Mean | Reference STDEV | Day 0 Blank |
|---|---|---|---|---|---|---|---|
| **% Lipids** | 1.56 | 0.1990 | 1.398 | 0.3474 | 1.338 | 0.3822 | 1.67 |

The 28-day exposure of earthworms to test materials resulted in tissue concentrations of metals as shown in Table 5. Tissue concentrations were not all that dissimilar between DMMU1, DMMU2 and Reference soil except that uptake of lead (Pb) was nearly an order of magnitude higher in the reference soil. For DMMU1, only silver (Ag), arsenic (As), nickel (Ni) selenium (Se) and zinc (Zn) tissue concentrations were statistically higher than from the Reference soil. Of these only Se exceeded the Eco-BSL for mammalian receptors, which also occurred for the Reference soil. For DMMU2 only As, Ni, Se and Zn tissue concentrations were statistically higher with As exceeding the Eco-BSL for mammalian receptors. Additionally, tissue concentrations of lead from the Reference soil exceeded the Eco-SSL for avian species.

Results of PCB and pesticide analysis of earthworm tissues are shown in Table 6 and show that no detectable concentrations were determined for tested Arochlors 1016, 1232, 1248, 1254 or 1260. DDT, DDE and DDD, Dieldrin and Gamma-Chlordane were all detected in earthworm tissues for DMMU1 but only Gamma-Chlordane was statistically higher than the Reference. DDT, DDE and DDD, Dieldrin and Gamma-Chlordane were also detected in earthworm tissues from DMMU 2 and DDT, Dieldrin and Gamma-Chlordane were statistically higher than the Reference. The Eco-BSLs for both avian and mammalian receptors was exceeded by DMMU1 and DMMU2 for DDT, DDE and Dieldrin and mammalian species for DDD. Mammalian Eco-BSLs were exceeded by DMMU2 for gamma-Chlordane. In addition, earthworm tissues from Reference soil exceeded Eco-BSLs for DDT and Dieldrin and were nearly an order of magnitude higher than the DMMUs for DDE. See Appendix B for all analytical chemistry data.

**Table 5.** Metals uptake by earthworms, mg $kg^{-1}$.

| Metals | DMMU1 Mean | DMMU1 STDEV | DMMU2 Mean | DMMU2 STDEV | Reference Mean | Reference STDEV | Eco-BSL† | BLANK | Worm Food |
|---|---|---|---|---|---|---|---|---|---|
| Ag | **0.1932*** | 0.0673 | 0.1414 | 0.0187 | 0.1173 | 0.0221 | 9.4/28.8 | 0.1000 | 0.0506 |
| As | **4.610** | 0.3450 | **6.498**** | 0.7135 | 3.822 | 0.4523 | 10.5/5 | 2.890 | 0.1280 |
| Ba | 0.6392 | 0.1827 | 0.7284 | 0.2964 | 1.830 | 0.4886 | na/247.8 | 0.1760 | 4.580 |
| Be | 0.0013 | 0.0006 | 0.0021 | 0.0011 | 0.00726 | 0.0028 | na/2.5 | <0.0004 | 0.0138 |
| Cd | 0.5220 | 0.1706 | 0.4028 | 0.0823 | 1.072 | 0.1651 | 6.87/3.68 | 0.1400 | 0.0605 |
| Co | 2.524 | 0.0695 | 2.942 | 0.2558 | 3.108 | 0.1616 | 35.6/35.1 | 3.670 | 0.2160 |
| Cr | 0.2498 | 0.0462 | 0.5602 | 0.2369 | 1.069 | 0.4938 | 12.4/11.5 | 0.1930 | 0.7310 |
| Cu | 8.16 | 1.180 | 11.82 | 1.171 | 12.816 | 6.074 | 18.9/26.8 | 3.370 | 3.700 |
| Pb | 0.2968 | 0.0409 | 0.4114 | 0.1381 | **9.304** | 1.285 | 7.6/22.5 | 0.1450 | 0.3460 |
| Mn | 8.732 | 0.6333 | *11.508* | 2.3722 | 9.446 | 1.839 | na | 3.000 | 43.50 |
| Ni | **0.8954** | 0.1557 | **0.6788** | 0.0902 | 0.5014 | 0.0888 | 31.4/8.1 | 0.369 | 3.690 |
| Sb | 0.05394 | 0.0148 | 0.05292 | 0.0186 | 0.07968 | 0.00890 | na/0.3 | 0.0067 | 0.0599 |
| Se | ***1.882*** | 0.0554 | ***1.848*** | 0.1071 | **1.356** | 0.1016 | 1.4/0.7 | 0.7170 | 0.177 |
| Sn | *0.2534* | 0.07286 | *0.2484* | 0.06476 | 0.2089 | 0.1181 | na | 0.0681 | 0.124 |
| Th | 0.02604 | 0.0016 | 0.03236 | 0.0067 | 0.0475 | 0.00237 | na | 0.0297 | 0.0151 |
| V | 0.1242 | 0.0188 | 0.1924 | 0.0990 | 0.5240 | 0.1736 | 1.6/19.9 | 0.1270 | 1.810 |
| Zn | **20.54** | 0.7162 | **20.30** | 0.5338 | 17.32 | 0.2490 | 308.9/361 | 15.40 | 25.60 |
| Hg | 0.01582 | 0.0046 | 0.01172 | 0.0009 | 0.04196 | 0.0013 | na | 0.00451 | 0.00138 |

† Ecological Biota Screening Level. Earthworm tissue concentrations exceeding these levels potentially harmful to avian/mammalian receptors.

* Values in **bold** – DMMU statistically exceeds reference at P=0.05.

** Values in **red** – tissue concentration exceeds Eco-BSL.

**Table 6.** PCB/Pesticide uptake by earthworms, ug $kg^{-1}$.

| PCB/Pest | DMMU1 Mean | DMMU1 STDEV | DMMU2 Mean | DMMU2 STDEV | Reference Mean | Reference STDEV | Eco-BSL† | Day 0 Blank | Worm Food |
|---|---|---|---|---|---|---|---|---|---|
| **1016** | ND | NA | ND | NA | ND | NA | 0.5/2.4 | ND | ND |
| **1232** | ND | NA | ND | NA | ND | NA | 0.5/2.4 | ND | ND |
| **1248** | ND | NA | ND | NA | ND | NA | 0.5/2.4 | ND | ND |
| **1254** | ND | NA | ND | NA | ND | NA | 0.5/2.4 | ND | ND |
| **1260** | ND | NA | ND | NA | ND | NA | 0.5/2.4 | ND | ND |
| **DDT*** | 4.254 | 0.2213 | **5.278** | 0.1983 | 4.466 | 0.4002 | 1.1/0.7 | ND | ND |
| **DDE** | 1.22 | 0.0283 | 1.964 | 0.2237 | 12.32 | 0.7014 | 1.1/0.7 | ND | ND |
| **DDD** | 1.02 | NA | 0.964 | NA | ND | NA | 1.1/0.7 | ND | ND |
| **Dieldrin** | 3.718 | 0.4559 | **3.202** | 0.3114 | 1.59 | 0.1304 | 0.3/0.1 | ND | ND |
| **Gamma-Chlordane** | **12.775** | 1.7689 | **9.834** | 2.0793 | ND | NA | NA/10 | ND | ND |

† Ecological Biota Screening Level. Earthworm tissue concentrations exceeding these levels potentially harmful to avian/mammalian receptors.

* Values in **bold** – DMMU statistically exceeds reference at P=0.05.

** Values in **red** – tissue concentration exceeds Eco-BSL.

## Statistical Analysis: Cleveland Terrestrial Earthworm Survival and Tissue Data Analysis

Earthworm survival data analysis results are shown in Appendix C1. Using the arc sine transformed data, the normality and equality of variance null hypotheses were not rejected. The survival of earthworms exposed to DMMU1 was not statistically different from the survival of earthworms exposed to the reference. The survival of earthworms exposed to DMMU2 was not statistically different from the survival of earthworms exposed to the reference (Table 4s).

Earthworm tissue data analysis results are shown in Appendix C2. Using the untransformed tissue concentration data, the normality and equality of variance null hypotheses were evaluated. In instances where neither assumption was rejected, the analysis was completed as described in Step (1). If either assumption was rejected, the analysis was completed as described in Step (2). These instances are denoted by the # symbol in Tables 5s and 6s. If either assumption was rejected in Step (2), the analysis was completed as described in Step (3). These instances are

denoted by the & symbol in Tables 5s and 6s. The mean tissue concentrations of earthworms exposed to DMMU1 that were not statistically different from mean tissue concentrations of earthworms exposed to the Reference are denoted by the same uppercase alphabet. The mean tissue concentrations of earthworms exposed to DMMU2 that were not statistically different from mean tissue concentrations of earthworms exposed to the Reference are denoted by the same lowercase alphabet (Tables 5s and 6s).

**Table 4s.** Earthworm survival and growth data analysis summary.

| | | **Day 28 Count** | **Day 28 wt. (g)** |
|---|---|---|---|
| DMMU1* | **Mean** | **77.2 A** | **23.27** |
| DMMU2@ | **Mean** | **90 a** | **19.58** |
| Reference | **Mean** | **95.8 Aa** | **20.28** |

*DMMU1 exposed earthworm tissue concentration mean is not statistically different from the mean of earthworms exposed to the Reference if the means are followed by the same uppercase alphabet.
@DMMU2 exposed earthworm tissue concentration mean is not statistically different from the mean of earthworms exposed to the Reference if the means are followed by the same lowercase alphabet.

**Table 5s.** Metals uptake by earthworms (mg $kg^{-1}$) data analysis summary.

| Metals | DMMU1* Mean | DMMU2@ Mean | Reference Mean |
|---|---|---|---|
| **Ag #** | 0.1932 A | 0.1414 a | 0.1173 Ba |
| **As** | 4.610 A | 6.498 a | 3.822 Bb |
| **Ba** | 0.6392 B | 0.7284 b | 1.830 Aa |
| **Be &** | 0.0013 A | 0.0021 b | 0.0073 Aa |
| **Cd #** | 0.5220 B | 0.4028 b | 1.072 Aa |
| **Co #** | 2.524 B | 2.942 a | 3.108 Aa |
| **Cr** | 0.2498 B | 0.5602 a | 1.069 Aa |
| **Cu &** | 8.16 A | 11.82 a | 12.816 Aa |
| **Pb #** | 0.2968 B | 0.4114 b | 9.304 Aa |
| **Mn #** | 8.732 A | 11.508 a | 9.446 Aa |
| **Ni** | 0.8954 A | 0.6788 a | 0.5014 Bb |
| **Sb** | 0.05394 A | 0.0529 b | 0.0797 Aa |
| **Se** | 1.882 A | 1.848 a | 1.356 Bb |
| **Sn** | 0.2534 A | 0.2484 a | 0.2089 Aa |
| **Th #** | 0.02604 B | 0.03236 b | 0.0475 Aa |
| **V** | 0.1242 B | 0.1924 b | 0.5240 Aa |
| **Zn #** | 20.54 A | 20.30 a | 17.32 Bb |
| **Hg #** | 0.01582 B | 0.01172 b | 0.0420 Aa |

*DMMU1 exposed earthworm tissue concentration mean is not statistically different from the mean of earthworms exposed to the Reference if the means are followed by the same uppercase alphabet.
@DMMU2 exposed earthworm tissue concentration mean is not statistically different from the mean of earthworms exposed to the Reference if the means are followed by the same lowercase alphabet.
# rankits transformation used in the data analysis
& Satterthwaite's approximation of the degrees of freedom used in the data analysis

**Table 6s.** PCB/Pesticide uptake by earthworms (ug $kg^{-1}$) data analysis summary.

| PCB/Pest | DMMU1* Mean | DMMU2@ Mean | Reference Mean |
|---|---|---|---|
| **1016** | ND | ND | ND |
| **1232** | ND | ND | ND |
| **1248** | ND | ND | ND |
| **1254** | ND | ND | ND |
| **1260** | ND | ND | ND |
| **DDT** | 4.254 A | 5.278 a | 4.466 Ab |
| **DDE** | 0.513 B | 1.964 b | 12.32 Aa |
| **DDD #** | 1.02 A | 0.964 a | 1.04 Aa |
| **Dieldrin&** | 2.98 A | 3.202 a | 1.59 Ab |
| **Gamma-Clordane** | 12.775 A | 9.834 a | 0.042 Bb |

*DMMU1 exposed earthworm tissue concentration mean is not statistically different from the mean of earthworms exposed to the Reference if the means are followed by the same uppercase alphabet.
@DMMU2 exposed earthworm tissue concentration mean is not statistically different from the mean of earthworms exposed to the Reference if the means are followed by the same lowercase alphabet.
# rankits transformation used in the data analysis
& Satterthwaite's approximation of the degrees of freedom used in the data analysis

## TIER III Conclusion

Table 7 summarizes results of tissue analysis for earthworms exposed to Cuyahoga navigation sediments proposed for dredging and subsequent beneficial use in upland environments. Evaluation includes a comparison to the Reference soil and to Eco-BSLs and provides an indication of potential risks. While higher risks may be associated with gamma-Chlordane and slightly higher risks for As and Se in dredged material, Reference soil may contribute to higher risks for DDE and Pb. Additional analysis of specific receptors, exposure time, and other site specific conditions may be required to determine if sediment in the Cuyahoga River or soil in the public use areas pose the greatest risk to wildlife.

**Table 7.** Earthworm Tissue Summary.

| DMMU1>REF | DMMU2>REF | DMMU1>Eco-BSL | DMMU2>Eco-BSL | REF>Eco-BSL |
|---|---|---|---|---|
| Ag | | | | |
| As | As | | As | |
| Ni | Ni | | | |
| | | | | Pb |
| Se | Se | Se | Se | Se |
| Si | Si | | | |
| Zn | Zn | | | |
| | DDT | DDT | DDT | DDT |
| DDD | DDD | DDD* | DDD* | |
| | | DDE | DDE | DDE |
| Dieldrin | Dieldrin | Dieldrin | Dieldrin | Dieldrin |
| Chlordane | Chlordane | Chlordane* | | |

* Tissue concentration exceeds mammalian screening value. An EcoBSL is not available for avian species.

## Appendix A- Agricultural Analysis

www.allabs.com

# A&L Analytical Laboratories, Inc.

2790 Whitten Rd. Memphis, TN 38133 (901) 213-2400 Fax (901) 213-2440

## SOIL ANALYSIS

Client :
ERDC
RICHARD A. PRICE
Attn: RICHARD A. PRICE
3909 Halls Ferry Rd
Vicksburg MS 39180

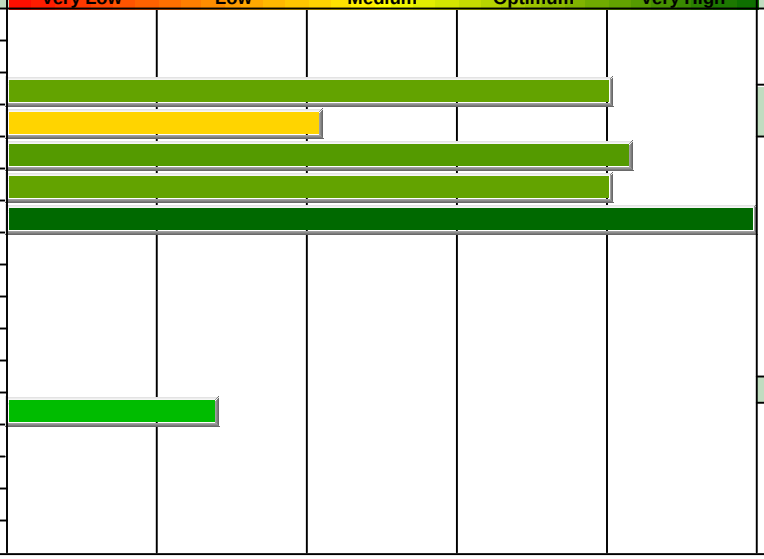
Grower :

Report No: 11-006-0508
Cust No: 02181
Date Printed: 01/07/2011
Date Received : 01/06/2011
PO:
Page : 1 of 3

**Lab Number :** 58560 **Field Id :** **Sample Id :** DMMU1

| Test | Method | Results |
|---|---|---|
| Soil pH | 1:1 | 7.4 |
| Buffer pH | BPH | |
| Phosphorus (P) | M3 | 106 LB/ACRE |
| Potassium (K) | M3 | 262 LB/ACRE |
| Calcium (Ca) | M3 | 9042 LB/ACRE |
| Magnesium (Mg) | M3 | 602 LB/ACRE |
| Sulfur (S) | M3 | 368 LB/ACRE |
| Boron (B) | | |
| Copper (Cu) | | |
| Iron (Fe) | | |
| Manganese (Mn) | | |
| Zinc (Zn) | | |
| Sodium (Na) | M3 | 384 LB/ACRE |
| Soluble Salts | | |
| Organic Matter | WB | 4.2 % ENR 128 |
| Nitrate Nitrogen | NO3N | 70 LB/ACRE |
| | | |

**SOIL TEST RATINGS**




Calculated Cation Exchange Capacity

**21.3**
**meq/100g**

**Calculated Cation Saturation**

| | |
|---|---|
| %K | 1.5 |
| %Ca | 83.8 |
| %Mg | 10.8 |
| %H | 0.0 |
| Hmeq | 0.0 |
| %Na | 3.9 |

**K : Mg Ratio**

**0.13**

## SOIL FERTILITY GUIDELINES

**Crop :** **Rec Units:**

| (lbs) LIME (tons) | N | $P_2O_5$ | $K_2O$ | Mg | S | B | Cu | Mn | Zn | Fe |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

**Crop :** **Rec Units:**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

Comments :

BPH - Lime Index M3 - Mehlich 3 NO3N - Nitrate-N WB - Walkley Black Color 1:1 - Water pH

Analysis prepared by: A&L Analytical Laboratories, Inc.

www.allabs.com

A&L Analytical Laboratories, Inc.

2790 Whitten Rd. Memphis, TN 38133 (901) 213-2400 Fax (901) 213-2440

## SOIL ANALYSIS

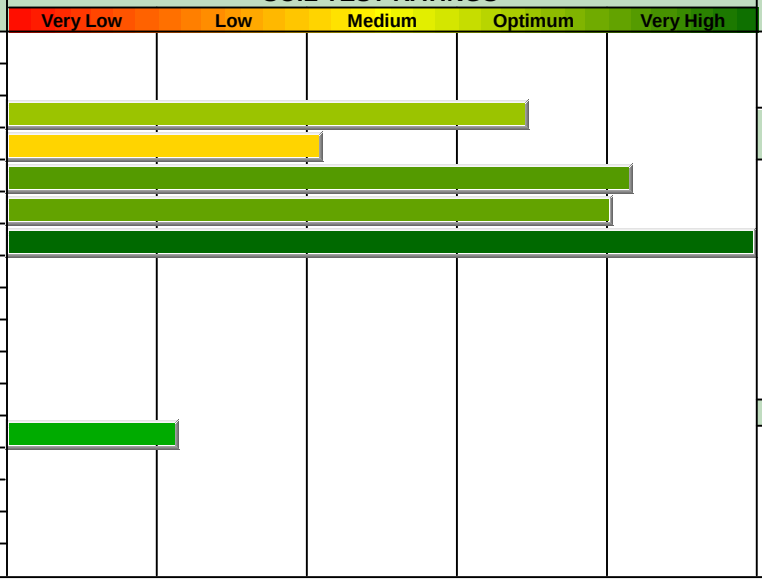
Client :
ERDC
RICHARD A. PRICE
Attn: RICHARD A. PRICE
3909 Halls Ferry Rd
Vicksburg MS 39180

Grower :

Report No: 11-006-0508
Cust No: 02181
Date Printed: 01/07/2011
Date Received : 01/06/2011
PO:


**Lab Number :** 58561 **Field Id :** **Sample Id :** DMMU2

| Test | Method | Results |
|---|---|---|
| Soil pH | 1:1 | 7.7 |
| Buffer pH | BPH | |
| Phosphorus (P) | M3 | 80 LB/ACRE |
| Potassium (K) | M3 | 264 LB/ACRE |
| Calcium (Ca) | M3 | 9180 LB/ACRE |
| Magnesium (Mg) | M3 | 572 LB/ACRE |
| Sulfur (S) | M3 | 296 LB/ACRE |
| Boron (B) | | |
| Copper (Cu) | | |
| Iron (Fe) | | |
| Manganese (Mn) | | |
| Zinc (Zn) | | |
| Sodium (Na) | M3 | 312 LB/ACRE |
| Soluble Salts | | |
| Organic Matter | WB | 3.0 % ENR 104 |
| Nitrate Nitrogen | NO3N | 10 LB/ACRE |
| | | |




Calculated Cation Exchange Capacity

**21.3**
**meq/100g**

**Calculated Cation Saturation**

| | |
|---|---|
| %K | 1.5 |
| %Ca | 85.1 |
| %Mg | 10.3 |
| %H | 0.0 |
| Hmeq | 0.0 |
| %Na | 3.2 |

**K : Mg Ratio**

**0.14**

## SOIL FERTILITY GUIDELINES

**Crop :** **Rec Units:**

| (lbs) LIME (tons) | N | $P_2O_5$ | $K_2O$ | Mg | S | B | Cu | Mn | Zn | Fe |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

**Crop :** **Rec Units:**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

Comments :

**Nitrate-nitrogen analysis will detect levels no lower than 5 ppm nitrate-nitrogen. Results that indicate undetected levels of nitrate-nitrogen will display 5 ppm or 10 lb/acre.**

BPH - Lime Index M3 - Mehlich 3 NO3N - Nitrate-N WB - Walkley Black Color 1:1 - Water pH

Analysis prepared by: A&L Analytical Laboratories, Inc.

www.allabs.com

A&L Analytical Laboratories, Inc.

2790 Whitten Rd. Memphis, TN 38133 (901) 213-2400 Fax (901) 213-2440

## SOIL ANALYSIS

Client :
ERDC
RICHARD A. PRICE
Attn: RICHARD A. PRICE
3909 Halls Ferry Rd
Vicksburg MS 39180

Grower :

Report No: 11-006-0508
Cust No: 02181
Date Printed: 01/07/2011
Date Received : 01/06/2011
PO:
Page : 3 of 3

**Lab Number :** 58563 **Field Id :** **Sample Id :** REF

| Test | Method | Results |
|---|---|---|
| Soil pH | 1:1 | 4.9 |
| Buffer pH | BPH | 6.36 |
| Phosphorus (P) | M3 | 52 LB/ACRE |
| Potassium (K) | M3 | 196 LB/ACRE |
| Calcium (Ca) | M3 | 2264 LB/ACRE |
| Magnesium (Mg) | M3 | 278 LB/ACRE |
| Sulfur (S) | M3 | 74 LB/ACRE |
| Boron (B) | | |
| Copper (Cu) | | |
| Iron (Fe) | | |
| Manganese (Mn) | | |
| Zinc (Zn) | | |
| Sodium (Na) | M3 | 60 LB/ACRE |
| Soluble Salts | | |
| Organic Matter | WB | 3.9 % ENR 122 |
| Nitrate Nitrogen | NO3N | 10 LB/ACRE |
| | | |

**SOIL TEST RATINGS**


Calculated Cation Exchange Capacity

**10.5**
**meq/100g**

**Calculated Cation Saturation**

| | |
|---|---|
| %K | 2.2 |
| %Ca | 42.6 |
| %Mg | 10.1 |
| %H | 44.2 |
| Hmeq | 4.6 |
| %Na | 1.2 |

**K : Mg Ratio**

**0.22**

## SOIL FERTILITY GUIDELINES

**Crop :** **Rec Units:**

| (lbs) LIME (tons) | N | $P_2O_5$ | $K_2O$ | Mg | S | B | Cu | Mn | Zn | Fe |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

**Crop :** **Rec Units:**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

Comments :

**Nitrate-nitrogen analysis will detect levels no lower than 5 ppm nitrate-nitrogen. Results that indicate undetected levels of nitrate-nitrogen will display 5 ppm or 10 lb/acre.**

BPH - Lime Index M3 - Mehlich 3 NO3N - Nitrate-N WB - Walkley Black Color 1:1 - Water pH

Analysis prepared by: A&L Analytical Laboratories, Inc.

## Appendix B- Analytical Chemistry

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

04 March 2011

James Miller
Buffalo District
-
-, - -

RE: Cleveland Harbor BU

Enclosed are the results of analyses for samples received by the laboratory on 20-Jan-2011. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| DMMU1 - A (Earthworm) | 1012001-01 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU1 - B (Earthworm) | 1012001-02 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU1 - C (Earthworm) | 1012001-03 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU1 - D (Earthworm) | 1012001-04 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU1 - E (Earthworm) | 1012001-05 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU2 - A (Earthworm) | 1012001-06 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU2 - B (Earthworm) | 1012001-07 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU2 - C (Earthworm) | 1012001-08 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU2 - D (Earthworm) | 1012001-09 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| DMMU2 - E (Earthworm) | 1012001-10 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| REF - A (Earthworm) | 1012001-11 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| REF - B (Earthworm) | 1012001-12 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| REF - C (Earthworm) | 1012001-13 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| REF - D (Earthworm) | 1012001-14 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| REF - E (Earthworm) | 1012001-15 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| BLANK (Earthworm) | 1012001-16 | Tissue | 18-Jan-2011 | 20-Jan-2011 |
| Worm Food | 1012001-17 | Solid | 18-Jan-2011 | 20-Jan-2011 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - A (Earthworm)

**1012001-01 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.71** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0123** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| Antimony | ND | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Arsenic** | **5.18** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.445** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.318** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | J |
| **Chromium** | **0.223** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | J |
| **Cobalt** | **2.46** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **7.02** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.285** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | J |
| **Manganese** | **7.92** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.757** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.94** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.309** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | J |
| Thallium | ND | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Tin** | **0.349** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | J |
| Vanadium | ND | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Zinc** | **20.1** | 0.400 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4'-DDT [2C]** | **4.46** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **4.23** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - A (Earthworm)

**1012001-01 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin aldehyde | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **15.1** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.8 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *109 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - B (Earthworm)

**1012001-02 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.69** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0160** | 1.0E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0529** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **4.55** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.649** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0009** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | J |
| **Cadmium** | **0.537** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.279** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.58** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **7.81** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.365** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **8.90** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.814** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.89** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.181** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0280** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.206** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.139** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **20.4** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4'-DDT [2C]** | **4.48** | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **3.77** | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - B (Earthworm)

**1012001-02 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **12.7** | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.796 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *38.9 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *113 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - C (Earthworm)

**1012001-03 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.71** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0237** | 1.0E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0377** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **4.52** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.599** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.789** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.211** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.59** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **10.1** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.255** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **8.73** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **1.11** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.93** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.171** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0270** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.315** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.126** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **21.0** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **1.24** | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **4.00** | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **3.75** | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - C (Earthworm)

**1012001-03 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.819 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.6 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *100 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - D (Earthworm)

**1012001-04 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.39** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0132** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0656** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **4.56** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.566** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.493** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.219** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.55** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **8.31** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.294** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **9.65** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **1.01** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.83** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.172** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0264** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.202** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.124** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **21.5** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4'-DDT [2C]** | **4.06** | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - D (Earthworm)

**1012001-04 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **12.5** | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.812 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.6 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *109 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - E (Earthworm)

**1012001-05 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.30** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0139** | 1.00E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0415** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **4.24** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.937** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.473** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.317** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.44** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **7.56** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.285** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **8.46** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.786** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.82** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.133** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0248** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.195** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.139** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **19.7** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4'-DDD [2C]** | **5.10** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDE [2C]** | **1.20** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **4.27** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **3.12** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU1 - E (Earthworm)

**1012001-05 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **10.8** | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.3 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *114 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - A (Earthworm)

**1012001-06 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.64** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0119** | 1.00E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0799** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **6.97** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.513** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.392** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.379** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.74** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **10.3** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.442** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **10.2** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.589** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.86** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.120** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0300** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.309** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.112** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **20.4** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **2.11** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **5.33** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **3.35** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - A (Earthworm)

**1012001-06 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **9.91** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.2 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *91.2 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - B (Earthworm)

**1012001-07 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **0.790** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0108** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0560** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **6.96** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.513** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.298** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.446** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **3.14** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **10.9** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.264** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **9.14** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.628** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.88** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.167** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0240** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.234** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.123** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **19.8** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **2.18** | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **5.55** | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **3.68** | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - B (Earthworm)

**1012001-07 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlordane** | **8.03** | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.818 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *43.4 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *98.8 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.4 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - C (Earthworm)

**1012001-08 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.49** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0130** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0486** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **7.10** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.646** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0029** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cadmium** | **0.393** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.343** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **3.26** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **12.3** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.302** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **11.5** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.715** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.96** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.137** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0301** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.323** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.166** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **20.7** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **2.06** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **5.31** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **3.06** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - C (Earthworm)

**1012001-08 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **13.3** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *36.8 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *99.0 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - D (Earthworm)

**1012001-09 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.47** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0109** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0522** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **5.90** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.740** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.402** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.814** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.91** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **13.1** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.435** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **11.3** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.644** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.87** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.153** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0362** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.192** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.204** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **19.7** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **1.83** | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **5.19** | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **2.97** | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - D (Earthworm)

**1012001-09 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **9.47** | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.810 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *36.8 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *92.7 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - E (Earthworm)

**1012001-10 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.60** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0120** | 1.0E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0279** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **5.56** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **1.23** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0013** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | J |
| **Cadmium** | **0.529** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.819** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.66** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **12.5** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.614** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **15.4** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.818** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.67** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.130** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0415** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.184** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.357** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **20.9** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **4.82** | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDE [2C]** | **1.64** | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **5.01** | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **2.95** | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## DMMU2 - E (Earthworm)

**1012001-10 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **gamma-Chlorodane [2C]** | **8.46** | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Heptachlor | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.808 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *33.7 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *100 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.2 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

# REF - A (Earthworm)

**1012001-11 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **0.960** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0423** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0874** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **4.14** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **1.98** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0093** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cadmium** | **1.04** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **1.11** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **3.00** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **13.6** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **10.9** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **8.91** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.531** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.53** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.102** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0492** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.264** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.584** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **17.1** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **11.7** | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4'-DDT [2C]** | **4.42** | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **1.48** | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - A (Earthworm)

**1012001-11 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.813 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *37.0 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *108 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - B (Earthworm)

**1012001-12 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.14** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0435** | 8.70E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0685** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **3.07** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **1.46** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0043** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cadmium** | **1.36** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.328** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **3.30** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **4.93** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **9.20** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **8.88** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.431** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.28** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.129** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0472** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.0763** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.372** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **17.7** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **12.2** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4´-DDT** | **5.15** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **1.81** | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - B (Earthworm)

**1012001-12 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.825 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *37.3 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *112 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - C (Earthworm)

**1012001-13 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.10** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0400** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0897** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **3.85** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **2.58** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0111** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cadmium** | **0.951** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **1.31** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **2.94** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **16.1** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **9.99** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **12.6** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.641** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.30** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.139** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0503** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.185** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.790** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **17.4** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **12.3** | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4´-DDT** | **4.11** | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **1.54** | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - C (Earthworm)

**1012001-13 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.828 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *38.9 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *108 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.6 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.6 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.6 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.6 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.6 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.6 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.6 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - D (Earthworm)

**1012001-14 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.83** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0415** | 1.0E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0741** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **4.21** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **1.35** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0059** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cadmium** | **0.979** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.938** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **3.26** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **8.95** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **7.44** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **7.76** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.426** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.36** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.130** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0466** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.138** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.374** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **17.3** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **13.5** | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4´-DDT** | **4.28** | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **1.60** | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - D (Earthworm)

**1012001-14 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.817 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.8 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *123 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.3 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - E (Earthworm)

**1012001-15 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.66** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.0425** | 1.00E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0787** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **3.84** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **1.78** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0057** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cadmium** | **1.03** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **1.66** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **3.04** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **20.5** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **8.99** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **9.08** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.478** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **1.31** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.0865** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0442** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.381** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.500** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **17.1** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **4,4´-DDE** | **11.9** | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| **4,4´-DDT** | **4.37** | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Aldrin | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| **Dieldrin [2C]** | **1.52** | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | |
| Endosulfan I | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## REF - E (Earthworm)

**1012001-15 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.833 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *43.7 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *118 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.7 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.7 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.7 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.7 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.7 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.7 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.7 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## BLANK (Earthworm)

**1012001-16 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| ***** DEFAULT GENERAL METHOD ***** | | | | | | | | |
| **% Lipids** | **1.67** | | % by Weight | 1 | 28-Feb-2011 | 28-Feb-2011 | - | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.00451** | 9.0E-6 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0067** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **2.89** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **0.176** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| Beryllium | ND | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | U |
| **Cadmium** | **0.140** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.193** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **3.67** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **3.37** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.145** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **3.00** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **0.369** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **0.717** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.100** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0297** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.0681** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **0.127** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **15.4** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## BLANK (Earthworm)

**1012001-16 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Endrin ketone | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.824 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *40.0 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *118 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 16.5 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

# Worm Food

**1012001-17 (Solid)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Metals by EPA 6000/7000 Series Methods** | | | | | | | | |
| **Mercury** | **0.00138** | 1.0E-5 | mg/kg | 1 | 28-Jan-2011 | 03-Feb-2011 | EPA 7471A | |
| **Antimony** | **0.0599** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Arsenic** | **0.128** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Barium** | **4.58** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Beryllium** | **0.0138** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cadmium** | **0.0605** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Chromium** | **0.731** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Cobalt** | **0.216** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Copper** | **3.70** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Lead** | **0.346** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Manganese** | **43.5** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Nickel** | **3.69** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Selenium** | **0.177** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Silver** | **0.0506** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Thallium** | **0.0151** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Tin** | **0.124** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Vanadium** | **1.81** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Zinc** | **25.6** | 0.0020 | mg/kg | 4 | 28-Jan-2011 | 16-Feb-2011 | SW 846/6020 | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Aldrin | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-BHC | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| alpha-Chlordane | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| beta-BHC | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| delta-BHC | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Dieldrin | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan I | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan II | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endosulfan sulfate | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin aldehyde | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Endrin ketone | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-BHC (Lindane) | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| gamma-Chlordane | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Worm Food

**1012001-17 (Solid)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| Heptachlor | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Heptachlor epoxide | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| Methoxychlor | ND | 0.797 | ug/kg | 1 | 21-Jan-2011 | 24-Feb-2011 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *43.3 %* | *40-125* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *140 %* | *55-130* | | *21-Jan-2011* | *24-Feb-2011* | *EPA 8081A* | |
| **Polychlorinated Biphenyls by EPA Method 8082** | | | | | | | | |
| PCB-1016 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1221 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1232 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1242 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1248 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1254 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |
| PCB-1260 | ND | 15.9 | ug/kg | 1 | 21-Jan-2011 | 25-Feb-2011 | 8082 | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101052 - EPA 3050B** | | | | | | | | | | |
| **Blank (B101052-BLK1)** | | | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | ND | 1.00 | mg/kg | | | | | | | U |
| Arsenic | ND | 1.00 | mg/kg | | | | | | | U |
| Barium | ND | 1.00 | mg/kg | | | | | | | U |
| Beryllium | ND | 1.00 | mg/kg | | | | | | | U |
| Cadmium | ND | 1.00 | mg/kg | | | | | | | U |
| Chromium | ND | 1.00 | mg/kg | | | | | | | U |
| Cobalt | ND | 1.00 | mg/kg | | | | | | | U |
| Copper | ND | 1.00 | mg/kg | | | | | | | U |
| Lead | ND | 1.00 | mg/kg | | | | | | | U |
| Manganese | ND | 1.00 | mg/kg | | | | | | | U |
| Nickel | ND | 1.00 | mg/kg | | | | | | | U |
| Selenium | ND | 1.00 | mg/kg | | | | | | | U |
| Silver | ND | 1.00 | mg/kg | | | | | | | U |
| Thallium | ND | 1.00 | mg/kg | | | | | | | U |
| Tin | ND | 1.00 | mg/kg | | | | | | | U |
| Vanadium | ND | 1.00 | mg/kg | | | | | | | U |
| Zinc | ND | 1.00 | mg/kg | | | | | | | U |
| **Blank (B101052-BLK2)** | | | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | ND | 1.00 | mg/kg | | | | | | | U |
| Arsenic | ND | 1.00 | mg/kg | | | | | | | U |
| Barium | ND | 1.00 | mg/kg | | | | | | | U |
| Beryllium | ND | 1.00 | mg/kg | | | | | | | U |
| Cadmium | ND | 1.00 | mg/kg | | | | | | | U |
| Chromium | ND | 1.00 | mg/kg | | | | | | | U |
| Cobalt | ND | 1.00 | mg/kg | | | | | | | U |
| Copper | ND | 1.00 | mg/kg | | | | | | | U |
| Lead | ND | 1.00 | mg/kg | | | | | | | U |
| Manganese | ND | 1.00 | mg/kg | | | | | | | U |
| Nickel | ND | 1.00 | mg/kg | | | | | | | U |
| Selenium | ND | 1.00 | mg/kg | | | | | | | U |
| Silver | ND | 1.00 | mg/kg | | | | | | | U |
| Thallium | ND | 1.00 | mg/kg | | | | | | | U |
| Tin | ND | 1.00 | mg/kg | | | | | | | U |
| Vanadium | ND | 1.00 | mg/kg | | | | | | | U |
| Zinc | ND | 1.00 | mg/kg | | | | | | | U |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101052 - EPA 3050B** | | | | | | | | | | |
| **LCS (B101052-BS1)** | | | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | 98.9 | 1.00 | mg/kg | 100.0 | | 98.9 | 80-120 | | | |
| Arsenic | 46.7 | 1.00 | mg/kg | 50.00 | | 93.5 | 80-120 | | | |
| Barium | 206 | 1.00 | mg/kg | 200.0 | | 103 | 80-120 | | | |
| Beryllium | 46.1 | 1.00 | mg/kg | 50.00 | | 92.2 | 80-120 | | | |
| Cadmium | 48.1 | 1.00 | mg/kg | 50.00 | | 96.3 | 80-120 | | | |
| Chromium | 98.1 | 1.00 | mg/kg | 100.0 | | 98.1 | 80-120 | | | |
| Cobalt | 100 | 1.00 | mg/kg | 100.0 | | 100 | 80-120 | | | |
| Copper | 95.6 | 1.00 | mg/kg | 100.0 | | 95.6 | 80-120 | | | |
| Lead | 104 | 1.00 | mg/kg | 100.0 | | 104 | 80-120 | | | |
| Manganese | 247 | 1.00 | mg/kg | 250.0 | | 98.6 | 80-120 | | | |
| Nickel | 96.7 | 1.00 | mg/kg | 100.0 | | 96.7 | 80-120 | | | |
| Selenium | 43.1 | 1.00 | mg/kg | 50.00 | | 86.2 | 80-120 | | | |
| Silver | 50.0 | 1.00 | mg/kg | 50.00 | | 100 | 80-120 | | | |
| Thallium | 52.9 | 1.00 | mg/kg | 50.00 | | 106 | 80-120 | | | |
| Tin | 51.1 | 1.00 | mg/kg | 50.00 | | 102 | 80-120 | | | |
| Vanadium | 102 | 1.00 | mg/kg | 100.0 | | 102 | 80-120 | | | |
| Zinc | 175 | 1.00 | mg/kg | 200.0 | | 87.5 | 80-120 | | | |
| **LCS (B101052-BS2)** | | | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | 98.3 | 1.00 | mg/kg | 100.0 | | 98.3 | 80-120 | | | |
| Arsenic | 46.9 | 1.00 | mg/kg | 50.00 | | 93.8 | 80-120 | | | |
| Barium | 207 | 1.00 | mg/kg | 200.0 | | 104 | 80-120 | | | |
| Beryllium | 45.3 | 1.00 | mg/kg | 50.00 | | 90.6 | 80-120 | | | |
| Cadmium | 46.7 | 1.00 | mg/kg | 50.00 | | 93.4 | 80-120 | | | |
| Chromium | 97.6 | 1.00 | mg/kg | 100.0 | | 97.6 | 80-120 | | | |
| Cobalt | 100 | 1.00 | mg/kg | 100.0 | | 100 | 80-120 | | | |
| Copper | 95.7 | 1.00 | mg/kg | 100.0 | | 95.7 | 80-120 | | | |
| Lead | 105 | 1.00 | mg/kg | 100.0 | | 105 | 80-120 | | | |
| Manganese | 250 | 1.00 | mg/kg | 250.0 | | 99.9 | 80-120 | | | |
| Nickel | 96.3 | 1.00 | mg/kg | 100.0 | | 96.3 | 80-120 | | | |
| Selenium | 43.9 | 1.00 | mg/kg | 50.00 | | 87.8 | 80-120 | | | |
| Silver | 48.3 | 1.00 | mg/kg | 50.00 | | 96.6 | 80-120 | | | |
| Thallium | 51.5 | 1.00 | mg/kg | 50.00 | | 103 | 80-120 | | | |
| Tin | 49.5 | 1.00 | mg/kg | 50.00 | | 99.1 | 80-120 | | | |
| Vanadium | 101 | 1.00 | mg/kg | 100.0 | | 101 | 80-120 | | | |
| Zinc | 179 | 1.00 | mg/kg | 200.0 | | 89.3 | 80-120 | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101052 - EPA 3050B** | | | | | | | | | | |
| **Duplicate (B101052-DUP1)** | | **Source: 1012001-01** | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Arsenic | 5.21 | 0.400 | mg/kg | | 5.18 | | | 0.597 | 20 | |
| Barium | 0.441 | 0.400 | mg/kg | | 0.445 | | | 1.02 | 20 | |
| Beryllium | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Cadmium | 0.293 | 0.400 | mg/kg | | 0.318 | | | 8.27 | 20 | J |
| Chromium | ND | 0.400 | mg/kg | | 0.223 | | | | 20 | U |
| Cobalt | 2.36 | 0.400 | mg/kg | | 2.46 | | | 4.03 | 20 | |
| Copper | 6.91 | 0.400 | mg/kg | | 7.02 | | | 1.57 | 20 | |
| Lead | 0.269 | 0.400 | mg/kg | | 0.285 | | | 5.77 | 20 | J |
| Manganese | 7.99 | 0.400 | mg/kg | | 7.92 | | | 0.793 | 20 | |
| Nickel | 0.711 | 0.400 | mg/kg | | 0.757 | | | 6.35 | 20 | |
| Selenium | 1.91 | 0.400 | mg/kg | | 1.94 | | | 1.51 | 20 | |
| Silver | 0.249 | 0.400 | mg/kg | | 0.309 | | | 21.5 | 20 | J |
| Thallium | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Tin | 0.246 | 0.400 | mg/kg | | 0.349 | | | 34.6 | 20 | J |
| Vanadium | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Zinc | 19.0 | 0.400 | mg/kg | | 20.1 | | | 5.60 | 20 | |
| **Duplicate (B101052-DUP2)** | | **Source: 1012505-01** | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Arsenic | 2.81 | 0.400 | mg/kg | | 2.65 | | | 5.80 | 20 | |
| Barium | 0.267 | 0.400 | mg/kg | | 0.306 | | | 13.8 | 20 | J |
| Beryllium | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Cadmium | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Chromium | 0.249 | 0.400 | mg/kg | | 0.253 | | | 1.72 | 20 | J |
| Cobalt | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Copper | 3.02 | 0.400 | mg/kg | | 5.79 | | | 63.0 | 20 | |
| Lead | 0.349 | 0.400 | mg/kg | | 0.480 | | | 31.6 | 20 | J |
| Manganese | 4.70 | 0.400 | mg/kg | | 4.51 | | | 4.23 | 20 | |
| Nickel | 0.332 | 0.400 | mg/kg | | 0.441 | | | 28.3 | 20 | J |
| Selenium | 0.215 | 0.400 | mg/kg | | 0.226 | | | 4.88 | 20 | J |
| Silver | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Thallium | ND | 0.400 | mg/kg | | ND | | | | 20 | U |
| Tin | 0.290 | 0.400 | mg/kg | | 0.270 | | | 7.21 | 20 | J |
| Vanadium | 0.235 | 0.400 | mg/kg | | 0.237 | | | 0.780 | 20 | J |
| Zinc | 14.4 | 0.400 | mg/kg | | 13.0 | | | 10.2 | 20 | |

USACE ERDC-EP-C
3909 Halls Ferry Road
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| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101052 - EPA 3050B** | | | | | | | | | | |
| **Matrix Spike (B101052-MS1)** | **Source: 1012001-01** | | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | 70.1 | 1.00 | mg/kg | 85.43 | ND | 82.1 | 80-120 | | | |
| Arsenic | 43.5 | 1.00 | mg/kg | 42.71 | 5.18 | 89.8 | 80-120 | | | |
| Barium | 162 | 1.00 | mg/kg | 170.9 | 0.445 | 94.8 | 80-120 | | | |
| Beryllium | 36.2 | 1.00 | mg/kg | 42.71 | ND | 84.7 | 80-120 | | | |
| Cadmium | 39.3 | 1.00 | mg/kg | 42.71 | 0.318 | 91.3 | 80-120 | | | |
| Chromium | 81.8 | 1.00 | mg/kg | 85.43 | 0.223 | 95.5 | 80-120 | | | |
| Cobalt | 84.9 | 1.00 | mg/kg | 85.43 | 2.46 | 96.5 | 80-120 | | | |
| Copper | 84.7 | 1.00 | mg/kg | 85.43 | 7.02 | 90.9 | 80-120 | | | |
| Lead | 82.3 | 1.00 | mg/kg | 85.43 | 0.285 | 96.0 | 80-120 | | | |
| Manganese | 213 | 1.00 | mg/kg | 213.6 | 7.92 | 96.1 | 80-120 | | | |
| Molybdenum | 40.0 | 1.00 | mg/kg | 42.71 | 0.174 | 93.3 | 80-120 | | | |
| Nickel | 79.3 | 1.00 | mg/kg | 85.43 | 0.757 | 91.9 | 80-120 | | | |
| Selenium | 38.4 | 1.00 | mg/kg | 42.71 | 1.94 | 85.4 | 80-120 | | | |
| Silver | 38.5 | 1.00 | mg/kg | 42.71 | 0.309 | 89.5 | 80-120 | | | |
| Thallium | 40.5 | 1.00 | mg/kg | 42.71 | ND | 94.7 | 80-120 | | | |
| Tin | 1.92 | 1.00 | mg/kg | 42.71 | 0.349 | 3.68 | 80-120 | | | |
| Vanadium | 82.9 | 1.00 | mg/kg | 85.43 | ND | 97.1 | 80-120 | | | |
| Zinc | 165 | 1.00 | mg/kg | 170.9 | 20.1 | 85.1 | 80-120 | | | |
| **Matrix Spike (B101052-MS2)** | **Source: 1012505-01** | | | Prepared: 28-Jan-2011 Analyzed: 16-Feb-2011 | | | | | | |
| Antimony | 76.9 | 1.00 | mg/kg | 94.02 | ND | 81.8 | 80-120 | | | |
| Arsenic | 47.8 | 1.00 | mg/kg | 47.01 | 2.65 | 96.1 | 80-120 | | | |
| Barium | 194 | 1.00 | mg/kg | 188.0 | 0.306 | 103 | 80-120 | | | |
| Beryllium | 41.6 | 1.00 | mg/kg | 47.01 | ND | 88.4 | 80-120 | | | |
| Cadmium | 46.6 | 1.00 | mg/kg | 47.01 | ND | 99.1 | 80-120 | | | |
| Chromium | 93.4 | 1.00 | mg/kg | 94.02 | 0.253 | 99.1 | 80-120 | | | |
| Cobalt | 94.9 | 1.00 | mg/kg | 94.02 | ND | 101 | 80-120 | | | |
| Copper | 91.4 | 1.00 | mg/kg | 94.02 | 5.79 | 91.1 | 80-120 | | | |
| Lead | 94.9 | 1.00 | mg/kg | 94.02 | 0.480 | 100 | 80-120 | | | |
| Manganese | 252 | 1.00 | mg/kg | 235.1 | 4.51 | 105 | 80-120 | | | |
| Nickel | 90.2 | 1.00 | mg/kg | 94.02 | 0.441 | 95.5 | 80-120 | | | |
| Selenium | 43.0 | 1.00 | mg/kg | 47.01 | 0.226 | 91.0 | 80-120 | | | |
| Silver | 38.2 | 1.00 | mg/kg | 47.01 | ND | 81.3 | 80-120 | | | |
| Thallium | 47.7 | 1.00 | mg/kg | 47.01 | ND | 102 | 80-120 | | | |
| Tin | 15.2 | 1.00 | mg/kg | 47.01 | 0.270 | 31.7 | 80-120 | | | |
| Vanadium | 96.4 | 1.00 | mg/kg | 94.02 | 0.237 | 102 | 80-120 | | | |
| Zinc | 186 | 1.00 | mg/kg | 188.0 | 13.0 | 91.8 | 80-120 | | | |

**USACE ERDC-EP-C**
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|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Metals by EPA 6000/7000 Series Methods - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101053 - EPA 3050B** | | | | | | | | | | |
| **Blank (B101053-BLK1)** | | | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | ND | 0.00001 | mg/kg | | | | | | | U |
| **Blank (B101053-BLK2)** | | | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | ND | 0.00001 | mg/kg | | | | | | | U |
| **LCS (B101053-BS1)** | | | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0670 | 0.00001 | mg/kg | 0.06000 | | 112 | 75-125 | | | |
| **LCS (B101053-BS2)** | | | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0657 | 0.00001 | mg/kg | 0.06000 | | 110 | 75-125 | | | |
| **Duplicate (B101053-DUP1)** | | **Source: 1012001-01** | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0117 | 9.0E-6 | mg/kg | | 0.0123 | | | 4.75 | 25 | |
| **Duplicate (B101053-DUP2)** | | **Source: 1012505-01** | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0179 | 9.0E-6 | mg/kg | | 0.0125 | | | 35.6 | 25 | |
| **Matrix Spike (B101053-MS1)** | | **Source: 1012001-01** | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0756 | 9.0E-6 | mg/kg | 0.05537 | 0.0123 | 114 | 75-125 | | | |
| **Matrix Spike (B101053-MS2)** | | **Source: 1012505-01** | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0702 | 9.0E-6 | mg/kg | 0.05472 | 0.0125 | 106 | 75-125 | | | |
| **Matrix Spike Dup (B101053-MSD1)** | | **Source: 1012001-01** | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0789 | 1.0E-5 | mg/kg | 0.05981 | 0.0123 | 111 | 75-125 | 2.66 | 25 | |
| **Matrix Spike Dup (B101053-MSD2)** | | **Source: 1012505-01** | | Prepared: 28-Jan-2011 Analyzed: 03-Feb-2011 | | | | | | |
| Mercury | 0.0669 | 9.0E-6 | mg/kg | 0.05403 | 0.0125 | 101 | 75-125 | 4.72 | 25 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101054 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B101054-BLK1)** | | | | Prepared: 21-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| 4,4´-DDD | ND | 2.50 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 2.50 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 2.50 | ug/kg | | | | | | | U |
| Aldrin | ND | 2.50 | ug/kg | | | | | | | U |
| alpha-BHC | ND | 2.50 | ug/kg | | | | | | | U |
| alpha-Chlordane | ND | 2.50 | ug/kg | | | | | | | U |
| beta-BHC | ND | 2.50 | ug/kg | | | | | | | U |
| delta-BHC | ND | 2.50 | ug/kg | | | | | | | U |
| Dieldrin | ND | 2.50 | ug/kg | | | | | | | U |
| Endosulfan I | ND | 2.50 | ug/kg | | | | | | | U |
| Endosulfan II | ND | 2.50 | ug/kg | | | | | | | U |
| Endosulfan sulfate | ND | 2.50 | ug/kg | | | | | | | U |
| Endrin | ND | 2.50 | ug/kg | | | | | | | U |
| Endrin aldehyde | ND | 2.50 | ug/kg | | | | | | | U |
| Endrin ketone | ND | 2.50 | ug/kg | | | | | | | U |
| gamma-BHC (Lindane) | ND | 2.50 | ug/kg | | | | | | | U |
| gamma-Chlordane | ND | 2.50 | ug/kg | | | | | | | U |
| Heptachlor | ND | 2.50 | ug/kg | | | | | | | U |
| Heptachlor epoxide | ND | 2.50 | ug/kg | | | | | | | U |
| Methoxychlor | ND | 2.50 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *77.6* | | *ug/kg* | *100.0* | | *77.6* | *40-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *124* | | *ug/kg* | *100.0* | | *124* | *55-130* | | | |
| **LCS (B101054-BS1)** | | | | Prepared: 21-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| 4,4'-DDD [2C] | 32.1 | 2.50 | ug/kg | 40.00 | | 80.2 | 30-135 | | | |
| 4,4'-DDE [2C] | 32.9 | 2.50 | ug/kg | 40.00 | | 82.4 | 70-125 | | | |
| 4,4'-DDT [2C] | 37.7 | 2.50 | ug/kg | 40.00 | | 94.3 | 45-140 | | | |
| Aldrin [2C] | 28.2 | 2.50 | ug/kg | 40.00 | | 70.5 | 45-140 | | | |
| alpha-BHC [2C] | 36.7 | 2.50 | ug/kg | 40.00 | | 91.8 | 60-125 | | | |
| alpha-Chlordane | 31.5 | 2.50 | ug/kg | 40.00 | | 78.6 | 65-120 | | | |
| beta-BHC [2C] | 32.2 | 2.50 | ug/kg | 40.00 | | 80.4 | 60-125 | | | |
| delta-BHC [2C] | 30.7 | 2.50 | ug/kg | 40.00 | | 76.6 | 55-130 | | | |
| Dieldrin | 24.1 | 2.50 | ug/kg | 40.00 | | 60.2 | 65-125 | | | |
| Endrin | 30.5 | 2.50 | ug/kg | 40.00 | | 76.2 | 60-135 | | | |
| Endrin aldehyde [2C] | 26.1 | 2.50 | ug/kg | 40.00 | | 65.1 | 35-145 | | | |
| Endrin ketone [2C] | 28.1 | 2.50 | ug/kg | 40.00 | | 70.3 | 65-135 | | | |
| gamma-BHC [Lindane] [2C] | 33.3 | 2.50 | ug/kg | 40.00 | | 83.2 | 60-125 | | | |
| gamma-Chlordane | 27.6 | 2.50 | ug/kg | 40.00 | | 69.1 | 65-125 | | | |
| Heptachlor | 29.4 | 2.50 | ug/kg | 40.00 | | 73.5 | 50-140 | | | |
| Heptachlor epoxide [2C] | 32.2 | 2.50 | ug/kg | 40.00 | | 80.4 | 65-130 | | | |
| Methoxychlor [2C] | 30.6 | 2.50 | ug/kg | 40.00 | | 76.6 | 55-145 | | | |

USACE ERDC-EP-C
3909 Halls Ferry Road
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| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101054 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS (B101054-BS1)** | | | | Prepared: 21-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *73.3* | | *ug/kg* | *100.0* | | *73.3* | *40-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *114* | | *ug/kg* | *100.0* | | *114* | *55-130* | | | |
| **Matrix Spike (B101054-MS1)** | **Source: 1012001-08** | | | Prepared: 21-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| 4,4'-DDD [2C] | 32.2 | 2.50 | ug/kg | 39.98 | ND | 80.5 | 30-135 | | | |
| 4,4´-DDE | 25.7 | 2.50 | ug/kg | 39.98 | 2.06 | 59.2 | 70-125 | | | |
| 4,4'-DDT [2C] | 31.8 | 2.50 | ug/kg | 39.98 | 5.31 | 66.2 | 45-140 | | | |
| Aldrin [2C] | 26.7 | 2.50 | ug/kg | 39.98 | ND | 66.7 | 45-140 | | | |
| alpha-BHC | 21.8 | 2.50 | ug/kg | 39.98 | ND | 54.7 | 60-125 | | | |
| alpha-Chlordane | 22.4 | 2.50 | ug/kg | 39.98 | ND | 55.9 | 65-120 | | | |
| beta-BHC | 19.4 | 2.50 | ug/kg | 39.98 | ND | 48.5 | 60-125 | | | |
| delta-BHC [2C] | 18.0 | 2.50 | ug/kg | 39.98 | ND | 45.0 | 55-130 | | | |
| Dieldrin [2C] | 40.0 | 2.50 | ug/kg | 39.98 | 3.06 | 92.3 | 65-125 | | | |
| Endrin [2C] | 29.0 | 2.50 | ug/kg | 39.98 | ND | 72.6 | 60-135 | | | |
| Endrin aldehyde [2C] | 27.8 | 2.50 | ug/kg | 39.98 | ND | 69.6 | 35-145 | | | |
| Endrin ketone [2C] | 30.3 | 2.50 | ug/kg | 39.98 | ND | 75.7 | 65-135 | | | |
| gamma-BHC [Lindane] [2C] | 21.7 | 2.50 | ug/kg | 39.98 | ND | 54.4 | 60-125 | | | |
| gamma-Chlorodane [2C] | 46.7 | 2.50 | ug/kg | 39.98 | 13.3 | 83.5 | 65-125 | | | |
| Heptachlor [2C] | 22.3 | 2.50 | ug/kg | 39.98 | ND | 55.7 | 50-140 | | | |
| Heptachlor epoxide | 23.9 | 2.50 | ug/kg | 39.98 | ND | 59.7 | 65-130 | | | |
| Methoxychlor | 26.4 | 2.50 | ug/kg | 39.98 | ND | 66.0 | 55-145 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *50.8* | | *ug/kg* | *99.95* | | *50.8* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *114* | | *ug/kg* | *99.95* | | *114* | *55-130* | | | |
| **Matrix Spike Dup (B101054-MSD1)** | **Source: 1012001-08** | | | Prepared: 21-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| 4,4´-DDD | 22.7 | 2.21 | ug/kg | 35.32 | ND | 64.2 | 30-135 | 13.7 | 30 | |
| 4,4´-DDE | 23.0 | 2.21 | ug/kg | 35.32 | 2.06 | 59.3 | 70-125 | 11.3 | 30 | |
| 4,4'-DDT [2C] | 28.9 | 2.21 | ug/kg | 35.32 | 5.31 | 66.6 | 45-140 | 9.72 | 30 | |
| Aldrin [2C] | 22.7 | 2.21 | ug/kg | 35.32 | ND | 64.3 | 45-140 | 16.0 | 30 | |
| alpha-BHC | 17.4 | 2.21 | ug/kg | 35.32 | ND | 49.2 | 60-125 | 22.9 | 30 | |
| alpha-Chlordane | 19.1 | 2.21 | ug/kg | 35.32 | ND | 54.1 | 65-120 | 15.7 | 30 | |
| beta-BHC | 16.3 | 2.21 | ug/kg | 35.32 | ND | 46.1 | 60-125 | 17.4 | 30 | |
| delta-BHC [2C] | 15.5 | 2.21 | ug/kg | 35.32 | ND | 44.0 | 55-130 | 14.7 | 30 | |
| Dieldrin [2C] | 35.7 | 2.21 | ug/kg | 35.32 | 3.06 | 92.3 | 65-125 | 11.3 | 30 | |
| Endrin [2C] | 21.6 | 2.21 | ug/kg | 35.32 | ND | 61.1 | 60-135 | 29.3 | 30 | |
| Endrin aldehyde [2C] | 25.0 | 2.21 | ug/kg | 35.32 | ND | 70.8 | 35-145 | 10.7 | 30 | |
| Endrin ketone [2C] | 27.2 | 2.21 | ug/kg | 35.32 | ND | 77.1 | 65-135 | 10.5 | 30 | |
| gamma-BHC [Lindane] [2C] | 18.3 | 2.21 | ug/kg | 35.32 | ND | 51.7 | 60-125 | 17.5 | 30 | |
| gamma-Chlorodane [2C] | 46.1 | 2.21 | ug/kg | 35.32 | 13.3 | 92.8 | 65-125 | 1.34 | 30 | |
| Heptachlor [2C] | 19.0 | 2.21 | ug/kg | 35.32 | ND | 53.7 | 50-140 | 15.9 | 30 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101054 - Sonication (probe or bath)** | | | | | | | | | | |
| **Matrix Spike Dup (B101054-MSD1)** | **Source: 1012001-08** | | | Prepared: 21-Jan-2011 Analyzed: 24-Feb-2011 | | | | | | |
| Heptachlor epoxide | 20.3 | 2.21 | ug/kg | 35.32 | ND | 57.5 | 65-130 | 16.3 | 30 | |
| Methoxychlor | 22.5 | 2.21 | ug/kg | 35.32 | ND | 63.6 | 55-145 | 16.0 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *43.8* | | *ug/kg* | *88.30* | | *49.6* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *100* | | *ug/kg* | *88.30* | | *114* | *55-130* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B101054 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B101054-BLK1)** | | | | Prepared: 21-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB-1016 | ND | 50.0 | ug/kg | | | | | | | U |
| PCB-1221 | ND | 50.0 | ug/kg | | | | | | | U |
| PCB-1232 | ND | 50.0 | ug/kg | | | | | | | U |
| PCB-1242 | ND | 50.0 | ug/kg | | | | | | | U |
| PCB-1248 | ND | 50.0 | ug/kg | | | | | | | U |
| PCB-1254 | ND | 50.0 | ug/kg | | | | | | | U |
| PCB-1260 | ND | 50.0 | ug/kg | | | | | | | U |
| **LCS (B101054-BS2)** | | | | Prepared: 21-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB-1016 | 362 | 50.0 | ug/kg | 496.0 | | 73.0 | 75-125 | | | |
| PCB 1260 [2C] | 372 | 50.0 | ug/kg | 496.0 | | 75.0 | 75-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *65.4* | | *ug/kg* | *100.0* | | *65.4* | *45-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *109* | | *ug/kg* | *100.0* | | *109* | *45-125* | | | |
| **Matrix Spike (B101054-MS2)** | **Source: 1012001-16** | | | Prepared: 21-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB 1016 [2C] | 332 | 43.5 | ug/kg | 431.5 | ND | 77.0 | 75-125 | | | |
| PCB-1260 | 365 | 43.5 | ug/kg | 431.5 | ND | 84.7 | 75-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *38.1* | | *ug/kg* | *86.99* | | *43.8* | *45-125* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *116* | | *ug/kg* | *86.99* | | *133* | *45-125* | | | |
| **Matrix Spike Dup (B101054-MSD2)** | **Source: 1012001-16** | | | Prepared: 21-Jan-2011 Analyzed: 25-Feb-2011 | | | | | | |
| PCB 1016 [2C] | 376 | 48.0 | ug/kg | 476.4 | ND | 79.0 | 75-125 | 12.5 | 30 | |
| PCB-1260 | 407 | 48.0 | ug/kg | 476.4 | ND | 85.5 | 75-125 | 10.8 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *44.8* | | *ug/kg* | *96.04* | | *46.6* | *45-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *125* | | *ug/kg* | *96.04* | | *130* | *45-125* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Buffalo District | Project: Cleveland Harbor BU | |
| - | | **Reported:** |
| - -, - | Project Manager: James Miller | 04-Mar-2011 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

# Appendix C1 Earthworm Survival Data Analysis

Class Level Information

| Class | Levels | Values |
|---|---|---|
| ID | 3 | DMMU1 DMMU2 REF |

Dependent Variable: Arcsurv

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.00367452 | 0.00183726 | 0.15 | 0.8595 |
| Error | 12 | 0.14378306 | 0.01198192 | | |
| Corrected Total | 14 | 0.14745758 | | | |

| R-Square | Coeff Var | Root MSE | Arcsurv Mean |
|---|---|---|---|
| 0.024919 | 7.516924 | 0.109462 | 1.456207 |

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ID | 2 | 0.00367452 | 0.00183726 | 0.15 | 0.8595 |

Levene's Test for Homogeneity of Arcsurv Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| ID | 2 | 0.000154 | 0.000077 | 1.80 | 0.2068 |
| Error | 12 | 0.000511 | 0.000043 | | |

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.894896 | Pr < W | 0.0796 |

The TTEST Procedure

Variable: Arcsurv

| ID | N | Mean | Std Dev | Std Err | Minimum | Maximum |
|---|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| DMMU1 | 5 | 1.4380 | 0.0839 | 0.0375 | 1.3453 | 1.5708 |
| REF | 5 | 1.4762 | 0.1298 | 0.0580 | 1.3233 | 1.5708 |
| Diff (1-2) | | -0.0382 | 0.1093 | 0.0691 | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -0.55 | 0.5954 |
| Satterthwaite | Unequal | 6.848 | -0.55 | 0.5979 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 2.39 | 0.4193 |

The TTEST Procedure

Variable: Arcsurv

| ID | N | Mean | Std Dev | Std Err | Minimum | Maximum |
|---|---|---|---|---|---|---|
| DMMU2 | 5 | 1.4544 | 0.1098 | 0.0491 | 1.3453 | 1.5708 |
| REF | 5 | 1.4762 | 0.1298 | 0.0580 | 1.3233 | 1.5708 |
| Diff (1-2) | | -0.0218 | 0.1202 | 0.0760 | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -0.29 | 0.7819 |
| Satterthwaite | Unequal | 7.7875 | -0.29 | 0.7821 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.40 | 0.7545 |

# Appendix C2 Earthworm Tissue Data Analysis

Dependent Variable: 4,4'-DDT

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 2.92144000 | 1.46072000 | 17.64 | 0.0003 |
| Error | 12 | 0.99372000 | 0.08281000 | | |
| Corrected Total | 14 | 3.91516000 | | | |

Levene's Test for Homogeneity of 4,4'-DDT Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.0288 | 0.0144 | 1.07 | 0.3746 |
| Error | 12 | 0.1622 | 0.0135 | | |

Dependent Variable: 4,4´-DDE

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 414.6177408 | 207.3088704 | 648.27 | <.0001 |
| Error | 12 | 3.8374420 | 0.3197868 | | |
| Corrected Total | 14 | 418.4551828 | | | |

Levene's Test for Homogeneity of 4,4´-DDE Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.3582 | 0.1791 | 1.49 | 0.2646 |
| Error | 12 | 1.4440 | 0.1203 | | |

Dependent Variable: Antimony

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.00194257 | 0.00097128 | 2.76 | 0.1031 |
| Error | 12 | 0.00421993 | 0.00035166 | | |
| Corrected Total | 14 | 0.00616250 | | | |

Levene's Test for Homogeneity of Antimony Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 4.856E-7 | 2.428E-7 | 1.27 | 0.3163 |
| Error | 12 | 2.296E-6 | 1.913E-7 | | |

Dependent Variable: Arsenic

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 18.91077333 | 9.45538667 | 34.07 | <.0001 |
| Error | 12 | 3.33036000 | 0.27753000 | | |
| Corrected Total | 14 | 22.24113333 | | | |

Levene's Test for Homogeneity of Arsenic Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.2689 | 0.1345 | 2.70 | 0.1075 |
| Error | 12 | 0.5972 | 0.0498 | | |

Dependent Variable: Barium

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 4.39913973 | 2.19956987 | 18.33 | 0.0002 |
| Error | 12 | 1.43959000 | 0.11996583 | | |
| Corrected Total | 14 | 5.83872973 | | | |

Levene's Test for Homogeneity of Barium Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.0724 | 0.0362 | 1.70 | 0.2233 |
| Error | 12 | 0.2551 | 0.0213 | | |

Dependent Variable: Beryllium

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.00097295 | 0.00048647 | 0.73 | 0.5014 |
| Error | 12 | 0.00797804 | 0.00066484 | | |
| Corrected Total | 14 | 0.00895099 | | | |

Levene's Test for Homogeneity of Beryllium Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 8.367E-6 | 4.184E-6 | 1.77 | 0.2121 |
| Error | 12 | 0.000028 | 2.364E-6 | | |

Dependent Variable: Chromium

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 1.71140920 | 0.85570460 | 8.50 | 0.0050 |
| Error | 12 | 1.20826840 | 0.10068903 | | |
| Corrected Total | 14 | 2.91967760 | | | |

Levene's Test for Homogeneity of Chromium Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.1030 | 0.0515 | 2.58 | 0.1166 |
| Error | 12 | 0.2391 | 0.0199 | | |

Dependent Variable: Copper

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 60.1099200 | 30.0549600 | 2.27 | 0.1455 |
| Error | 12 | 158.6343200 | 13.2195267 | | |
| Corrected Total | 14 | 218.7442400 | | | |

Levene's Test for Homogeneity of Copper Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 2690.4 | 1345.2 | 4.82 | 0.0291 |
| Error | 12 | 3350.6 | 279.2 | | |

Dependent Variable: Dieldrin

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 7.63321333 | 3.81660667 | 3.83 | 0.0517 |
| Error | 12 | 11.95748000 | 0.99645667 | | |
| Corrected Total | 14 | 19.59069333 | | | |

Levene's Test for Homogeneity of Dieldrin Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 16.9563 | 8.4781 | 1.94 | 0.1865 |
| Error | 12 | 52.4905 | 4.3742 | | |

Dependent Variable: Nickel

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.38937053 | 0.19468527 | 14.51 | 0.0006 |
| Error | 12 | 0.16103120 | 0.01341927 | | |
| Corrected Total | 14 | 0.55040173 | | | |

Levene's Test for Homogeneity of Nickel Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.000561 | 0.000281 | 2.33 | 0.1396 |
| Error | 12 | 0.00145 | 0.000120 | | |

Dependent Variable: Selenium

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.86649333 | 0.43324667 | 52.26 | <.0001 |
| Error | 12 | 0.09948000 | 0.00829000 | | |
| Corrected Total | 14 | 0.96597333 | | | |

Levene's Test for Homogeneity of Selenium Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| trt | 2 | 0.000133 | 0.000066 | 0.58 | 0.5745 |
| Error | 12 | 0.00137 | 0.000114 | | |

Dependent Variable: Tin

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.00595371 | 0.00297685 | 0.38 | 0.6914 |
| Error | 12 | 0.09384159 | 0.00782013 | | |
| Corrected Total | 14 | 0.09979530 | | | |

Levene's Test for Homogeneity of Tin Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.000183 | 0.000091 | 1.70 | 0.2237 |
| Error | 12 | 0.000645 | 0.000054 | | |

Dependent Variable: Vanadium

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.45523893 | 0.22761947 | 16.99 | 0.0003 |
| Error | 12 | 0.16075840 | 0.01339653 | | |
| Corrected Total | 14 | 0.61599733 | | | |

Levene's Test for Homogeneity of Vanadium Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.00149 | 0.000745 | 2.45 | 0.1279 |
| Error | 12 | 0.00365 | 0.000304 | | |

Dependent Variable: gamma-Chlorodane

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 333.0057331 | 166.5028665 | 12.78 | 0.0011 |
| Error | 12 | 156.3948385 | 13.0329032 | | |
| Corrected Total | 14 | 489.4005716 | | | |

Levene's Test for Homogeneity of gamma-Chlordane Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 2299.0 | 1149.5 | 1.81 | 0.2057 |
| Error | 12 | 7624.6 | 635.4 | | |

---------- cont=4,4'-DDT ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.921572 | Pr < W | 0.2036 |

---------- cont=4,4´-DDE ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.901863 | Pr < W | 0.1016 |

---------- cont=Antimony ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.942123 | Pr < W | 0.4098 |

---------- cont=Arsenic ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.924521 | Pr < W | 0.2257 |

---------- cont=Barium ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

```
                    Test                 --Statistic---    -----p Value------

                    Shapiro-Wilk          W       0.9278    Pr < W      0.2529
```

```
---------------------------------------- cont=Beryllium ----------------------------------------

                                  The UNIVARIATE Procedure
                                      Variable:  resid

                                    Tests for Normality

                    Test                 --Statistic---    -----p Value------

                    Shapiro-Wilk          W     0.603362    Pr < W     <0.0001
```

```
---------------------------------------- cont=Chromium ----------------------------------------

                                  The UNIVARIATE Procedure
                                      Variable:  resid

                                    Tests for Normality

                    Test                 --Statistic---    -----p Value------

                    Shapiro-Wilk          W     0.922648    Pr < W      0.2114
```

```
---------------------------------------- cont=Copper ----------------------------------------

                                  The UNIVARIATE Procedure
                                      Variable:  resid

                                    Tests for Normality

                    Test                 --Statistic---    -----p Value------

                    Shapiro-Wilk          W     0.919893    Pr < W      0.1919
```

```
---------------------------------------- cont=Dieldrin ----------------------------------------

                                  The UNIVARIATE Procedure
                                      Variable:  resid

                                    Tests for Normality

                    Test                 --Statistic---    -----p Value------

                    Shapiro-Wilk          W     0.725719    Pr < W      0.0005
```

```
---------------------------------------- cont=Nickel ----------------------------------------

                                  The UNIVARIATE Procedure
                                      Variable:  resid

                                    Tests for Normality
```

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.911627 | Pr < W | 0.1434 |

---------- cont=Selenium ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.969899 | Pr < W | 0.8566 |

---------- cont=Tin ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.932572 | Pr < W | 0.2980 |

---------- cont=Vanadium ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.896383 | Pr < W | 0.0838 |

---------- cont=gamma-Chlorodane ----------

The UNIVARIATE Procedure
Variable: resid

Tests for Normality

| Test | --Statistic--- | | -----p Value------ | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.778673 | Pr < W | 0.0020 |

The TTEST Procedure

Variable: 4,4'-DDT

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 4.2540 | 3.9792 | 4.5288 | 0.2213 | 0.1326 | 0.6360 |
| REF | | 4.4660 | 3.9691 | 4.9629 | 0.4002 | 0.2398 | 1.1499 |
| Diff (1-2) | Pooled | -0.2120 | -0.6836 | 0.2596 | 0.3233 | 0.2184 | 0.6195 |
| Diff (1-2) | Satterthwaite | -0.2120 | -0.7078 | 0.2838 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -1.04 | 0.3302 |
| Satterthwaite | Unequal | 6.2377 | -1.04 | 0.3384 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.27 | 0.2778 |

The TTEST Procedure

Variable: 4,4´-DDE

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.5125 | -0.2896 | 1.3146 | 0.6460 | 0.3870 | 1.8563 |
| REF | | 12.3200 | 11.4491 | 13.1909 | 0.7014 | 0.4202 | 2.0156 |
| Diff (1-2) | Pooled | -11.8075 | -12.7909 | -10.8241 | 0.6743 | 0.4555 | 1.2918 |
| Diff (1-2) | Satterthwaite | -11.8075 | -12.7921 | -10.8229 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -27.69 | <.0001 |
| Satterthwaite | Unequal | 7.9464 | -27.69 | <.0001 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.18 | 0.8771 |

The TTEST Procedure

Variable: Antimony

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.0595 | 0.0284 | 0.0907 | 0.0251 | 0.0150 | 0.0721 |
| REF | | 0.0797 | 0.0686 | 0.0907 | 0.00890 | 0.00533 | 0.0256 |
| Diff (1-2) | Pooled | -0.0201 | -0.0476 | 0.00733 | 0.0188 | 0.0127 | 0.0361 |
| Diff (1-2) | Satterthwaite | -0.0201 | -0.0508 | 0.0105 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -1.69 | 0.1293 |
| Satterthwaite | Unequal | 4.9908 | -1.69 | 0.1518 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 7.95 | 0.0694 |

The TTEST Procedure

Variable: Arsenic

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 4.6100 | 4.1817 | 5.0383 | 0.3450 | 0.2067 | 0.9913 |
| REF | | 3.8220 | 3.2604 | 4.3836 | 0.4523 | 0.2710 | 1.2997 |
| Diff (1-2) | Pooled | 0.7880 | 0.2014 | 1.3746 | 0.4022 | 0.2717 | 0.7706 |
| Diff (1-2) | Satterthwaite | 0.7880 | 0.1942 | 1.3818 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 3.10 | 0.0147 |
| Satterthwaite | Unequal | 7.4771 | 3.10 | 0.0160 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.72 | 0.6126 |

The TTEST Procedure

Variable: Barium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.6392 | 0.4124 | 0.8660 | 0.1827 | 0.1094 | 0.5249 |
| REF | | 1.8300 | 1.2234 | 2.4366 | 0.4886 | 0.2927 | 1.4039 |
| Diff (1-2) | Pooled | -1.1908 | -1.7287 | -0.6529 | 0.3688 | 0.2491 | 0.7066 |
| Diff (1-2) | Satterthwaite | -1.1908 | -1.7870 | -0.5946 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -5.10 | 0.0009 |
| Satterthwaite | Unequal | 5.0969 | -5.10 | 0.0036 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 7.15 | 0.0829 |

The TTEST Procedure

Variable: Beryllium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.0203 | -0.0350 | 0.0756 | 0.0446 | 0.0267 | 0.1280 |
| REF | | 0.00726 | 0.00375 | 0.0108 | 0.00283 | 0.00169 | 0.00812 |
| Diff (1-2) | Pooled | 0.0130 | -0.0330 | 0.0591 | 0.0316 | 0.0213 | 0.0605 |
| Diff (1-2) | Satterthwaite | 0.0130 | -0.0422 | 0.0683 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 0.65 | 0.5320 |
| Satterthwaite | Unequal | 4.0322 | 0.65 | 0.5490 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 248.51 | <.0001 |

The TTEST Procedure

Variable: Chromium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.2498 | 0.1924 | 0.3072 | 0.0462 | 0.0277 | 0.1328 |
| REF | | 1.0692 | 0.4561 | 1.6823 | 0.4938 | 0.2958 | 1.4189 |
| Diff (1-2) | Pooled | -0.8194 | -1.3309 | -0.3079 | 0.3507 | 0.2369 | 0.6718 |
| Diff (1-2) | Satterthwaite | -0.8194 | -1.4310 | -0.2078 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -3.69 | 0.0061 |
| Satterthwaite | Unequal | 4.0701 | -3.69 | 0.0203 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 114.19 | 0.0004 |

The TTEST Procedure

Variable: Dieldrin

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 2.9800 | 0.8745 | 5.0855 | 1.6957 | 1.0160 | 4.8727 |
| REF | | 1.5900 | 1.4281 | 1.7519 | 0.1304 | 0.0781 | 0.3747 |
| Diff (1-2) | Pooled | 1.3900 | -0.3639 | 3.1439 | 1.2026 | 0.8123 | 2.3039 |
| Diff (1-2) | Satterthwaite | 1.3900 | -0.7120 | 3.4920 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 1.83 | 0.1050 |
| Satterthwaite | Unequal | 4.0473 | 1.83 | 0.1408 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 169.14 | 0.0002 |

The TTEST Procedure

Variable: Nickel

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.8954 | 0.7021 | 1.0887 | 0.1557 | 0.0933 | 0.4473 |
| REF | | 0.5014 | 0.3911 | 0.6117 | 0.0888 | 0.0532 | 0.2552 |
| Diff (1-2) | Pooled | 0.3940 | 0.2092 | 0.5788 | 0.1267 | 0.0856 | 0.2428 |
| Diff (1-2) | Satterthwaite | 0.3940 | 0.2005 | 0.5875 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 4.92 | 0.0012 |

| | | | | | |
|---|---|---|---|---|---|
| | Satterthwaite | Unequal | 6.3546 | 4.92 | 0.0023 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.07 | 0.3026 |

The TTEST Procedure

Variable: Selenium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 1.8820 | 1.8132 | 1.9508 | 0.0554 | 0.0332 | 0.1592 |
| REF | | 1.3560 | 1.2298 | 1.4822 | 0.1016 | 0.0609 | 0.2921 |
| Diff (1-2) | Pooled | 0.5260 | 0.4066 | 0.6454 | 0.0819 | 0.0553 | 0.1568 |
| Diff (1-2) | Satterthwaite | 0.5260 | 0.4002 | 0.6518 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 10.16 | <.0001 |
| Satterthwaite | Unequal | 6.1846 | 10.16 | <.0001 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.36 | 0.2668 |

The TTEST Procedure

Variable: Tin

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.2534 | 0.1629 | 0.3439 | 0.0729 | 0.0437 | 0.2094 |
| REF | | 0.2089 | 0.0622 | 0.3556 | 0.1181 | 0.0708 | 0.3395 |
| Diff (1-2) | Pooled | 0.0445 | -0.0986 | 0.1877 | 0.0982 | 0.0663 | 0.1880 |
| Diff (1-2) | Satterthwaite | 0.0445 | -0.1038 | 0.1929 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 0.72 | 0.4935 |
| Satterthwaite | Unequal | 6.6579 | 0.72 | 0.4975 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 2.63 | 0.3718 |

The TTEST Procedure

Variable: Vanadium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.1256 | 0.1058 | 0.1454 | 0.0159 | 0.00955 | 0.0458 |
| REF | | 0.5240 | 0.3085 | 0.7395 | 0.1736 | 0.1040 | 0.4988 |
| Diff (1-2) | Pooled | -0.3984 | -0.5782 | -0.2186 | 0.1233 | 0.0833 | 0.2361 |

| | | | | | |
|---|---|---|---|---|---|
| Diff (1-2) | Satterthwaite | -0.3984 | -0.6134 | -0.1834 | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -5.11 | 0.0009 |
| Satterthwaite | Unequal | 4.0675 | -5.11 | 0.0066 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 118.50 | 0.0004 |

The TTEST Procedure

Variable: gamma-Chlorodane

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 10.2283 | 2.9061 | 17.5505 | 5.8971 | 3.5331 | 16.9455 |
| REF | | 0.0419 | 0.0414 | 0.0424 | 0.000418 | 0.000251 | 0.00120 |
| Diff (1-2) | Pooled | 10.1864 | 4.1049 | 16.2679 | 4.1698 | 2.8166 | 7.9885 |
| Diff (1-2) | Satterthwaite | 10.1864 | 2.8642 | 17.5086 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 3.86 | 0.0048 |
| Satterthwaite | Unequal | 4 | 3.86 | 0.0181 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.987E8 | <.0001 |

The TTEST Procedure

Variable: 4,4'-DDT

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 5.2780 | 5.0318 | 5.5242 | 0.1983 | 0.1188 | 0.5698 |
| REF | | 4.4660 | 3.9691 | 4.9629 | 0.4002 | 0.2398 | 1.1499 |
| Diff (1-2) | Pooled | 0.8120 | 0.3514 | 1.2726 | 0.3158 | 0.2133 | 0.6050 |
| Diff (1-2) | Satterthwaite | 0.8120 | 0.3203 | 1.3037 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 4.07 | 0.0036 |
| Satterthwaite | Unequal | 5.8527 | 4.07 | 0.0070 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 4.07 | 0.2025 |

The TTEST Procedure

Variable: 4,4´-DDE

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 1.9640 | 1.6863 | 2.2417 | 0.2237 | 0.1340 | 0.6427 |
| REF | | 12.3200 | 11.4491 | 13.1909 | 0.7014 | 0.4202 | 2.0156 |
| Diff (1-2) | Pooled | -10.3560 | -11.1153 | -9.5967 | 0.5206 | 0.3516 | 0.9973 |
| Diff (1-2) | Satterthwaite | -10.3560 | -11.2128 | -9.4992 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -31.45 | <.0001 |
| Satterthwaite | Unequal | 4.8052 | -31.45 | <.0001 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 9.83 | 0.0480 |

The TTEST Procedure

Variable: Antimony

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.0529 | 0.0298 | 0.0760 | 0.0186 | 0.0111 | 0.0534 |
| REF | | 0.0797 | 0.0686 | 0.0907 | 0.00890 | 0.00533 | 0.0256 |
| Diff (1-2) | Pooled | -0.0268 | -0.0480 | -0.00550 | 0.0146 | 0.00985 | 0.0279 |
| Diff (1-2) | Satterthwaite | -0.0268 | -0.0496 | -0.00396 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -2.90 | 0.0198 |
| Satterthwaite | Unequal | 5.7431 | -2.90 | 0.0286 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 4.36 | 0.1829 |

The TTEST Procedure

Variable: Arsenic

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 6.4980 | 5.6121 | 7.3839 | 0.7135 | 0.4275 | 2.0502 |
| REF | | 3.8220 | 3.2604 | 4.3836 | 0.4523 | 0.2710 | 1.2997 |
| Diff (1-2) | Pooled | 2.6760 | 1.8048 | 3.5472 | 0.5973 | 0.4035 | 1.1443 |
| Diff (1-2) | Satterthwaite | 2.6760 | 1.7764 | 3.5756 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 7.08 | 0.0001 |
| Satterthwaite | Unequal | 6.768 | 7.08 | 0.0002 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 2.49 | 0.3989 |

The TTEST Procedure

Variable: Barium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.7284 | 0.3604 | 1.0964 | 0.2964 | 0.1776 | 0.8516 |
| REF | | 1.8300 | 1.2234 | 2.4366 | 0.4886 | 0.2927 | 1.4039 |
| Diff (1-2) | Pooled | -1.1016 | -1.6909 | -0.5123 | 0.4041 | 0.2729 | 0.7741 |
| Diff (1-2) | Satterthwaite | -1.1016 | -1.7135 | -0.4897 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -4.31 | 0.0026 |
| Satterthwaite | Unequal | 6.5926 | -4.31 | 0.0040 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 2.72 | 0.3563 |

The TTEST Procedure

Variable: Beryllium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.000960 | -0.00051 | 0.00243 | 0.00118 | 0.000710 | 0.00340 |
| REF | | 0.00726 | 0.00375 | 0.0108 | 0.00283 | 0.00169 | 0.00812 |
| Diff (1-2) | Pooled | -0.00630 | -0.00946 | -0.00314 | 0.00217 | 0.00146 | 0.00415 |
| Diff (1-2) | Satterthwaite | -0.00630 | -0.00975 | -0.00285 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -4.60 | 0.0018 |
| Satterthwaite | Unequal | 5.3631 | -4.60 | 0.0049 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 5.69 | 0.1206 |

The TTEST Procedure

Variable: Chromium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.5602 | 0.2661 | 0.8543 | 0.2369 | 0.1419 | 0.6807 |
| REF | | 1.0692 | 0.4561 | 1.6823 | 0.4938 | 0.2958 | 1.4189 |
| Diff (1-2) | Pooled | -0.5090 | -1.0738 | 0.0558 | 0.3873 | 0.2616 | 0.7419 |
| Diff (1-2) | Satterthwaite | -0.5090 | -1.1147 | 0.0967 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| | Pooled | Equal | 8 | -2.08 | 0.0713 |
| | Satterthwaite | Unequal | 5.7484 | -2.08 | 0.0850 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 4.35 | 0.1838 |

The TTEST Procedure

Variable: Copper

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 11.8200 | 10.3656 | 13.2744 | 1.1713 | 0.7018 | 3.3659 |
| REF | | 12.8160 | 5.2740 | 20.3580 | 6.0741 | 3.6392 | 17.4542 |
| Diff (1-2) | Pooled | -0.9960 | -7.3755 | 5.3835 | 4.3742 | 2.9546 | 8.3799 |
| Diff (1-2) | Satterthwaite | -0.9960 | -8.4720 | 6.4800 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Method | Variances | DF | t Value | Pr > \|t\| |
| | Pooled | Equal | 8 | -0.36 | 0.7281 |
| | Satterthwaite | Unequal | 4.2971 | -0.36 | 0.7358 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 26.89 | 0.0075 |

The TTEST Procedure

Variable: Dieldrin

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 3.2020 | 2.8153 | 3.5887 | 0.3114 | 0.1866 | 0.8948 |
| REF | | 1.5900 | 1.4281 | 1.7519 | 0.1304 | 0.0781 | 0.3747 |
| Diff (1-2) | Pooled | 1.6120 | 1.2638 | 1.9602 | 0.2387 | 0.1612 | 0.4573 |
| Diff (1-2) | Satterthwaite | 1.6120 | 1.2316 | 1.9924 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Method | Variances | DF | t Value | Pr > \|t\| |
| | Pooled | Equal | 8 | 10.68 | <.0001 |
| | Satterthwaite | Unequal | 5.3607 | 10.68 | <.0001 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 5.70 | 0.1202 |

The TTEST Procedure

Variable: Nickel

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.6788 | 0.5668 | 0.7908 | 0.0902 | 0.0540 | 0.2592 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| REF | | 0.5014 | 0.3911 | 0.6117 | 0.0888 | 0.0532 | 0.2552 |
| Diff (1-2) | Pooled | 0.1774 | 0.0469 | 0.3079 | 0.0895 | 0.0605 | 0.1715 |
| Diff (1-2) | Satterthwaite | 0.1774 | 0.0468 | 0.3080 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 3.13 | 0.0139 |
| Satterthwaite | Unequal | 7.9981 | 3.13 | 0.0139 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.03 | 0.9768 |

The TTEST Procedure

Variable: Selenium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 1.8480 | 1.7150 | 1.9810 | 0.1071 | 0.0642 | 0.3078 |
| REF | | 1.3560 | 1.2298 | 1.4822 | 0.1016 | 0.0609 | 0.2921 |
| Diff (1-2) | Pooled | 0.4920 | 0.3397 | 0.6443 | 0.1044 | 0.0705 | 0.2000 |
| Diff (1-2) | Satterthwaite | 0.4920 | 0.3397 | 0.6443 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 7.45 | <.0001 |
| Satterthwaite | Unequal | 7.9782 | 7.45 | <.0001 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.11 | 0.9216 |

The TTEST Procedure

Variable: Tin

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.2484 | 0.1680 | 0.3288 | 0.0648 | 0.0388 | 0.1861 |
| REF | | 0.2089 | 0.0622 | 0.3556 | 0.1181 | 0.0708 | 0.3395 |
| Diff (1-2) | Pooled | 0.0395 | -0.0994 | 0.1785 | 0.0953 | 0.0643 | 0.1825 |
| Diff (1-2) | Satterthwaite | 0.0395 | -0.1067 | 0.1858 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 0.66 | 0.5301 |
| Satterthwaite | Unequal | 6.2043 | 0.66 | 0.5352 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.33 | 0.2709 |

The TTEST Procedure

Variable: Vanadium

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.1924 | 0.0695 | 0.3153 | 0.0990 | 0.0593 | 0.2845 |
| REF | | 0.5240 | 0.3085 | 0.7395 | 0.1736 | 0.1040 | 0.4988 |
| Diff (1-2) | Pooled | -0.3316 | -0.5377 | -0.1255 | 0.1413 | 0.0954 | 0.2707 |
| Diff (1-2) | Satterthwaite | -0.3316 | -0.5474 | -0.1158 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -3.71 | 0.0060 |
| Satterthwaite | Unequal | 6.3531 | -3.71 | 0.0090 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.07 | 0.3023 |

The TTEST Procedure

Variable: gamma-Chlorodane

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 9.8340 | 7.2522 | 12.4158 | 2.0793 | 1.2458 | 5.9749 |
| REF | | 0.0419 | 0.0414 | 0.0424 | 0.000418 | 0.000251 | 0.00120 |
| Diff (1-2) | Pooled | 9.7921 | 7.6478 | 11.9364 | 1.4703 | 0.9931 | 2.8167 |
| Diff (1-2) | Satterthwaite | 9.7921 | 7.2103 | 12.3739 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 10.53 | <.0001 |
| Satterthwaite | Unequal | 4 | 10.53 | 0.0005 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 2.471E7 | <.0001 |

---------- cont=4,4´-DDD ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 0.71476268 | 0.35738134 | 0.40 | 0.6791 |
| Error | 12 | 10.72675696 | 0.89389641 | | |
| Corrected Total | 14 | 11.44151964 | | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 3.7093 | 1.8546 | 1.60 | 0.2428 |
| Error | 12 | 13.9422 | 1.1618 | | |

---------- cont=Cadmium ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 8.69654949 | 4.34827474 | 12.82 | 0.0011 |
| Error | 12 | 4.07165464 | 0.33930455 | | |
| Corrected Total | 14 | 12.76820413 | | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.0581 | 0.0291 | 0.23 | 0.7984 |
| Error | 12 | 1.5198 | 0.1266 | | |

---------- cont=Cobalt ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 8.62980568 | 4.31490284 | 12.65 | 0.0011 |
| Error | 12 | 4.09361743 | 0.34113479 | | |
| Corrected Total | 14 | 12.72342312 | | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.0614 | 0.0307 | 0.40 | 0.6770 |
| Error | 12 | 0.9134 | 0.0761 | | |

---------- cont=Lead ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 8.88372066 | 4.44186033 | 13.82 | 0.0008 |
| Error | 12 | 3.85755466 | 0.32146289 | | |
| Corrected Total | 14 | 12.74127532 | | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.0438 | 0.0219 | 0.18 | 0.8365 |
| Error | 12 | 1.4506 | 0.1209 | | |

---------- cont=Manganese ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 5.29073107 | 2.64536554 | 4.25 | 0.0403 |
| Error | 12 | 7.47747306 | 0.62312275 | | |
| Corrected Total | 14 | 12.76820413 | | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 1.3236 | 0.6618 | 1.18 | 0.3397 |
| Error | 12 | 6.7137 | 0.5595 | | |

---------- cont=Mercury ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 10.28705159 | 5.14352579 | 24.88 | <.0001 |

| | | | | |
|---|---|---|---|---|
| Error | 12 | 2.48115254 | 0.20676271 | |
| Corrected Total | 14 | 12.76820413 | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.0529 | 0.0264 | 0.70 | 0.5143 |
| Error | 12 | 0.4513 | 0.0376 | | |

---------- cont=Silver ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 7.19926965 | 3.59963483 | 7.78 | 0.0068 |
| Error | 12 | 5.55271654 | 0.46272638 | | |
| Corrected Total | 14 | 12.75198620 | | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 0.0642 | 0.0321 | 0.19 | 0.8326 |
| Error | 12 | 2.0711 | 0.1726 | | |

---------- cont=Thallium ----------

The GLM Procedure

Dependent Variable: rankit Rank for Variable conc

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 2 | 4.24422633 | 2.12211316 | 2.99 | 0.0885 |
| Error | 12 | 8.52397780 | 0.71033148 | | |
| Corrected Total | 14 | 12.76820413 | | | |

Levene's Test for Homogeneity of rankit Variance
ANOVA of Squared Deviations from Group Means

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| trt | 2 | 2.7486 | 1.3743 | 1.09 | 0.3671 |

```
                Error         12     15.1217      1.2601


---------------------------------------- cont=Zinc ----------------------------------------

                                  The GLM Procedure

Dependent Variable: rankit   Rank for Variable conc

                                          Sum of
       Source                     DF         Squares     Mean Square    F Value    Pr > F

       Model                       2      8.20632234      4.10316117      11.17    0.0018

       Error                      12      4.40906660      0.36742222

       Corrected Total            14     12.61538894


                      Levene's Test for Homogeneity of rankit Variance
                        ANOVA of Squared Deviations from Group Means

                                       Sum of        Mean
                Source        DF     Squares      Square    F Value    Pr > F

                trt            2      0.4108      0.2054       2.55    0.1195
                Error         12      0.9670      0.0806

---------------------------------------- cont=4,4´-DDD ----------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                   Tests for Normality

                 Test                  --Statistic---    -----p Value------

                 Shapiro-Wilk          W     0.957249    Pr < W      0.6447

---------------------------------------- cont=Cadmium ----------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                 Test                  --Statistic---    -----p Value------

                 Shapiro-Wilk          W     0.953608    Pr < W      0.5829
---------------------------------------- cont=Cobalt ----------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                 Test                  --Statistic---    -----p Value------

                 Shapiro-Wilk          W     0.930194    Pr < W      0.2747

---------------------------------------- cont=Lead ----------------------------------------
```

```
                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                Test                  --Statistic---    -----p Value------

                Shapiro-Wilk          W     0.941561    Pr < W      0.4024

---------------------------------------- cont=Manganese ----------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                Test                  --Statistic---    -----p Value------

                Shapiro-Wilk          W     0.963835    Pr < W      0.7586

----------------------------------------- cont=Mercury -----------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                Test                  --Statistic---    -----p Value------

                Shapiro-Wilk          W     0.979682    Pr < W      0.9673

----------------------------------------- cont=Silver ------------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                Test                  --Statistic---    -----p Value------

                Shapiro-Wilk          W     0.957251    Pr < W      0.6448

---------------------------------------- cont=Thallium ----------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                Test                  --Statistic---    -----p Value------

                Shapiro-Wilk          W     0.925529    Pr < W      0.2337

------------------------------------------ cont=Zinc ------------------------------------------

                                The UNIVARIATE Procedure
                                    Variable:  resid

                                  Tests for Normality

                Test                  --Statistic---    -----p Value------
```

| | | | | |
|---|---|---|---|---|
| Shapiro-Wilk | W | 0.95937 | Pr < W | 0.6815 |

---------- cont=4,4´-DDD ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | -0.2548 | -1.8905 | 1.3810 | 1.3174 | 0.7893 | 3.7856 |
| REF | | 0.2784 | -0.3466 | 0.9033 | 0.5033 | 0.3016 | 1.4464 |
| Diff (1-2) | Pooled | -0.5331 | -1.9875 | 0.9213 | 0.9972 | 0.6736 | 1.9104 |
| Diff (1-2) | Satterthwaite | -0.5331 | -2.1409 | 1.0746 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -0.85 | 0.4225 |
| Satterthwaite | Unequal | 5.1434 | -0.85 | 0.4355 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 6.85 | 0.0891 |

---------- cont=Cadmium ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | -0.2490 | -1.0142 | 0.5161 | 0.6162 | 0.3692 | 1.7708 |
| REF | | 1.0318 | 0.4357 | 1.6279 | 0.4801 | 0.2876 | 1.3795 |
| Diff (1-2) | Pooled | -1.2808 | -2.0864 | -0.4752 | 0.5524 | 0.3731 | 1.0582 |
| Diff (1-2) | Satterthwaite | -1.2808 | -2.0948 | -0.4667 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -3.67 | 0.0063 |
| Satterthwaite | Unequal | 7.5482 | -3.67 | 0.0070 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.65 | 0.6404 |

---------- cont=Cobalt ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | -1.0318 | -1.6279 | -0.4357 | 0.4801 | 0.2876 | 1.3795 |

| | | | | | | |
|---|---|---|---|---|---|---|
| REF | | 0.7700 | -0.0313 | 1.5712 | 0.6453 | 0.3866 1.8544 |
| Diff (1-2) | Pooled | -1.8017 | -2.6312 | -0.9723 | 0.5687 | 0.3842 1.0896 |
| Diff (1-2) | Satterthwaite | -1.8017 | -2.6433 | -0.9602 | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -5.01 | 0.0010 |
| Satterthwaite | Unequal | 7.3891 | -5.01 | 0.0013 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.81 | 0.5806 |

---------- cont=Lead ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev |
|---|---|---|---|---|---|---|
| DMMU1 | | -0.8158 | -1.5417 | -0.0899 | 0.5847 | 0.3503 1.6800 |
| REF | | 1.0318 | 0.4357 | 1.6279 | 0.4801 | 0.2876 1.3795 |
| Diff (1-2) | Pooled | -1.8476 | -2.6277 | -1.0674 | 0.5349 | 0.3613 1.0248 |
| Diff (1-2) | Satterthwaite | -1.8476 | -2.6329 | -1.0623 | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -5.46 | 0.0006 |
| Satterthwaite | Unequal | 7.7081 | -5.46 | 0.0007 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.48 | 0.7118 |

---------- cont=Manganese ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev |
|---|---|---|---|---|---|---|
| DMMU1 | | -0.5809 | -1.3390 | 0.1772 | 0.6105 | 0.3658 1.7544 |
| REF | | -0.2349 | -1.5653 | 1.0955 | 1.0715 | 0.6420 3.0789 |
| Diff (1-2) | Pooled | -0.3460 | -1.6178 | 0.9258 | 0.8720 | 0.5890 1.6706 |
| Diff (1-2) | Satterthwaite | -0.3460 | -1.6777 | 0.9857 | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -0.63 | 0.5479 |
| Satterthwaite | Unequal | 6.3498 | -0.63 | 0.5523 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.08 | 0.3016 |

---------- cont=Mercury ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | -0.0360 | -0.4409 | 0.3689 | 0.3261 | 0.1954 | 0.9371 |
| REF | | 1.0318 | 0.4357 | 1.6279 | 0.4801 | 0.2876 | 1.3795 |
| Diff (1-2) | Pooled | -1.0678 | -1.6663 | -0.4693 | 0.4104 | 0.2772 | 0.7862 |
| Diff (1-2) | Satterthwaite | -1.0678 | -1.6807 | -0.4549 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -4.11 | 0.0034 |
| Satterthwaite | Unequal | 7.0437 | -4.11 | 0.0044 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 2.17 | 0.4723 |

---------- cont=Silver ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.8958 | 0.0189 | 1.7726 | 0.7062 | 0.4231 | 2.0293 |
| REF | | -0.7916 | -1.7040 | 0.1208 | 0.7348 | 0.4402 | 2.1115 |
| Diff (1-2) | Pooled | 1.6874 | 0.6363 | 2.7384 | 0.7206 | 0.4868 | 1.3806 |
| Diff (1-2) | Satterthwaite | 1.6874 | 0.6361 | 2.7386 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 3.70 | 0.0060 |
| Satterthwaite | Unequal | 7.9874 | 3.70 | 0.0060 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.08 | 0.9405 |

---------- cont=Thallium ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | -0.3360 | -1.8157 | 1.1436 | 1.1916 | 0.7140 | 3.4243 |
| REF | | 0.7509 | 0.3065 | 1.1952 | 0.3579 | 0.2144 | 1.0283 |
| Diff (1-2) | Pooled | -1.0869 | -2.3700 | 0.1962 | 0.8798 | 0.5943 | 1.6855 |
| Diff (1-2) | Satterthwaite | -1.0869 | -2.5436 | 0.3698 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -1.95 | 0.0865 |
| Satterthwaite | Unequal | 4.7156 | -1.95 | 0.1117 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 11.09 | 0.0388 |

---------- cont=Zinc ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU1 | | 0.6649 | -0.3430 | 1.6728 | 0.8117 | 0.4863 | 2.3325 |
| REF | | -1.0318 | -1.5869 | -0.4766 | 0.4471 | 0.2679 | 1.2848 |
| Diff (1-2) | Pooled | 1.6967 | 0.7410 | 2.6524 | 0.6553 | 0.4426 | 1.2554 |
| Diff (1-2) | Satterthwaite | 1.6967 | 0.6913 | 2.7020 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 4.09 | 0.0035 |
| Satterthwaite | Unequal | 6.2227 | 4.09 | 0.0059 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.30 | 0.2747 |

---------- cont=4,4´-DDD ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | -0.0236 | -1.0571 | 1.0099 | 0.8323 | 0.4987 | 2.3918 |
| REF | | 0.2784 | -0.3466 | 0.9033 | 0.5033 | 0.3016 | 1.4464 |
| Diff (1-2) | Pooled | -0.3020 | -1.3051 | 0.7011 | 0.6878 | 0.4646 | 1.3177 |
| Diff (1-2) | Satterthwaite | -0.3020 | -1.3440 | 0.7401 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -0.69 | 0.5072 |
| Satterthwaite | Unequal | 6.5804 | -0.69 | 0.5113 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 2.73 | 0.3534 |

---------- cont=Cadmium ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | -0.7828 | -1.5756 | 0.0101 | 0.6385 | 0.3826 | 1.8349 |
| REF | | 1.0318 | 0.4357 | 1.6279 | 0.4801 | 0.2876 | 1.3795 |
| Diff (1-2) | Pooled | -1.8146 | -2.6384 | -0.9907 | 0.5649 | 0.3816 | 1.0822 |
| Diff (1-2) | Satterthwaite | -1.8146 | -2.6496 | -0.9795 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -5.08 | 0.0010 |
| Satterthwaite | Unequal | 7.427 | -5.08 | 0.0012 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.77 | 0.5941 |

---------- cont=Cobalt ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.2618 | -0.5001 | 1.0237 | 0.6136 | 0.3676 | 1.7632 |
| REF | | 0.7700 | -0.0313 | 1.5712 | 0.6453 | 0.3866 | 1.8544 |
| Diff (1-2) | Pooled | -0.5081 | -1.4265 | 0.4102 | 0.6297 | 0.4253 | 1.2063 |
| Diff (1-2) | Satterthwaite | -0.5081 | -1.4269 | 0.4106 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -1.28 | 0.2378 |
| Satterthwaite | Unequal | 7.9797 | -1.28 | 0.2378 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.11 | 0.9245 |

---------- cont=Lead ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | -0.2160 | -0.9935 | 0.5615 | 0.6262 | 0.3752 | 1.7994 |
| REF | | 1.0318 | 0.4357 | 1.6279 | 0.4801 | 0.2876 | 1.3795 |
| Diff (1-2) | Pooled | -1.2478 | -2.0615 | -0.4341 | 0.5579 | 0.3769 | 1.0689 |
| Diff (1-2) | Satterthwaite | -1.2478 | -2.0711 | -0.4244 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| | Pooled | Equal | 8 | -3.54 | 0.0077 |
| | Satterthwaite | Unequal | 7.4947 | -3.54 | 0.0085 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.70 | 0.6193 |

---------- cont=Manganese ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.8158 | 0.0827 | 1.5489 | 0.5904 | 0.3537 | 1.6965 |
| REF | | -0.2349 | -1.5653 | 1.0955 | 1.0715 | 0.6420 | 3.0789 |
| Diff (1-2) | Pooled | 1.0507 | -0.2109 | 2.3123 | 0.8650 | 0.5843 | 1.6572 |
| Diff (1-2) | Satterthwaite | 1.0507 | -0.2764 | 2.3778 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 1.92 | 0.0911 |
| Satterthwaite | Unequal | 6.2238 | 1.92 | 0.1015 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 3.29 | 0.2749 |

---------- cont=Mercury ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | -0.9958 | -1.6569 | -0.3347 | 0.5324 | 0.3190 | 1.5300 |
| REF | | 1.0318 | 0.4357 | 1.6279 | 0.4801 | 0.2876 | 1.3795 |
| Diff (1-2) | Pooled | -2.0275 | -2.7669 | -1.2882 | 0.5069 | 0.3424 | 0.9711 |
| Diff (1-2) | Satterthwaite | -2.0275 | -2.7682 | -1.2869 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -6.32 | 0.0002 |
| Satterthwaite | Unequal | 7.9157 | -6.32 | 0.0002 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.23 | 0.8458 |

---------- cont=Silver ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | -0.1042 | -0.8383 | 0.6299 | 0.5912 | 0.3542 | 1.6989 |
| REF | | -0.7916 | -1.7040 | 0.1208 | 0.7348 | 0.4402 | 2.1115 |
| Diff (1-2) | Pooled | 0.6874 | -0.2852 | 1.6600 | 0.6669 | 0.4505 | 1.2776 |
| Diff (1-2) | Satterthwaite | 0.6874 | -0.2930 | 1.6679 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 1.63 | 0.1418 |
| Satterthwaite | Unequal | 7.6496 | 1.63 | 0.1435 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.54 | 0.6838 |

---------- cont=Thallium ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | -0.4149 | -1.3628 | 0.5331 | 0.7635 | 0.4574 | 2.1939 |
| REF | | 0.7509 | 0.3065 | 1.1952 | 0.3579 | 0.2144 | 1.0283 |
| Diff (1-2) | Pooled | -1.1657 | -2.0353 | -0.2962 | 0.5962 | 0.4027 | 1.1422 |
| Diff (1-2) | Satterthwaite | -1.1657 | -2.1013 | -0.2302 | | | |

| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | -3.09 | 0.0149 |
| Satterthwaite | Unequal | 5.6767 | -3.09 | 0.0229 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 4.55 | 0.1713 |

---------- cont=Zinc ----------

The TTEST Procedure

Variable: rankit (Rank for Variable conc)

| trt | Method | Mean | 95% CL Mean | | Std Dev | 95% CL Std Dev | |
|---|---|---|---|---|---|---|---|
| DMMU2 | | 0.3669 | -0.2458 | 0.9796 | 0.4934 | 0.2956 | 1.4179 |
| REF | | -1.0318 | -1.5869 | -0.4766 | 0.4471 | 0.2679 | 1.2848 |
| Diff (1-2) | Pooled | 1.3987 | 0.7120 | 2.0854 | 0.4708 | 0.3180 | 0.9020 |
| Diff (1-2) | Satterthwaite | 1.3987 | 0.7108 | 2.0865 | | | |

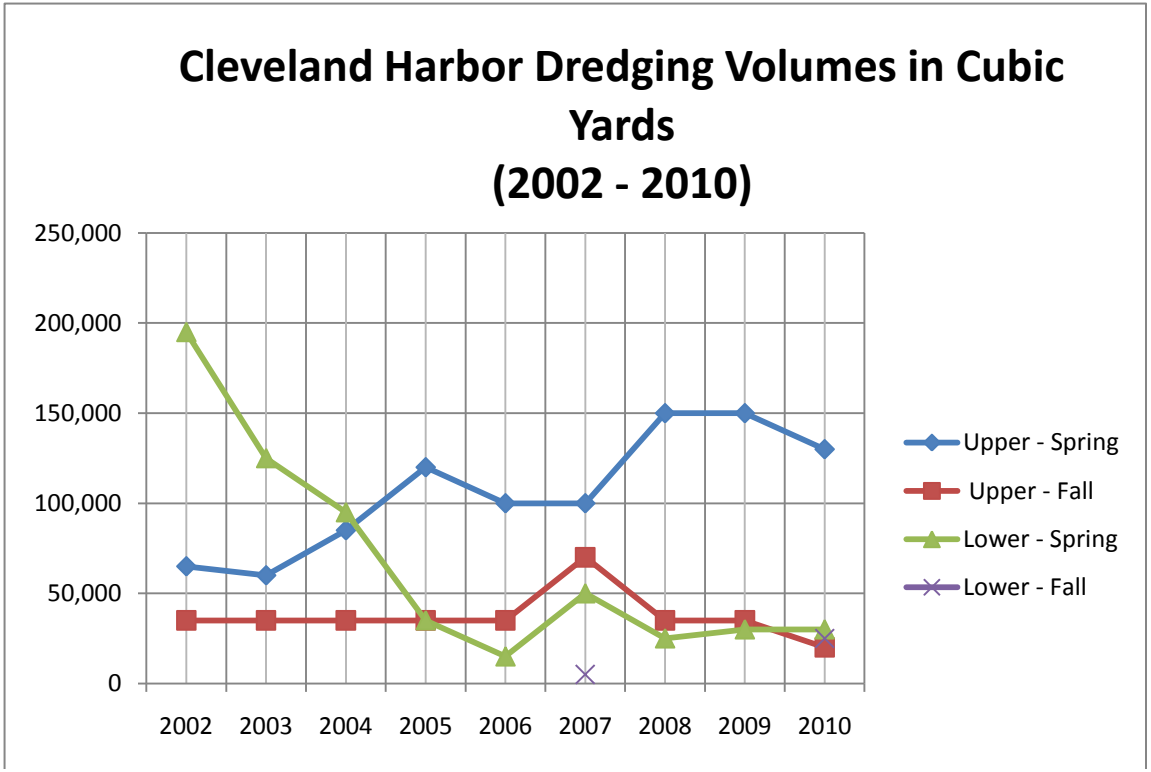
| Method | Variances | DF | t Value | Pr > \|t\| |
|---|---|---|---|---|
| Pooled | Equal | 8 | 4.70 | 0.0015 |
| Satterthwaite | Unequal | 7.9235 | 4.70 | 0.0016 |

Equality of Variances

| Method | Num DF | Den DF | F Value | Pr > F |
|---|---|---|---|---|
| Folded F | 4 | 4 | 1.22 | 0.8531 |

# Appendix E1: Dredging Volumes 2002-2010

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|
| Upper - Spring | 65,000 | 60,000 | 85,000 | 120,000 | 100,000 | 100,000 | 150,000 | 150,000 | 130,000 |
| Upper - Fall | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 70,000 | 35,000 | 35,000 | 20,000 |
| Lower - Spring | 195,000 | 125,000 | 95,000 | 35,000 | 15,000 | 50,000 | 25,000 | 30,000 | 30,000 |
| Lower - Fall | | | | | | 5,000 | | | 25,000 |
| Total Upper | 100,000 | 95,000 | 120,000 | 155,000 | 135,000 | 170,000 | 185,000 | 185,000 | 150,000 |
| Total Lower | 195,000 | 125,000 | 95,000 | 35,000 | 15,000 | 55,000 | 25,000 | 30,000 | 55,000 |
| Grand Total | 295,000 | 220,000 | 215,000 | 190,000 | 150,000 | 225,000 | 210,000 | 215,000 | 205,000 |
| | | | | 0.815789 | 0.9 | 0.755556 | 0.880952 | 0.860465 | 0.731707 |



# Appendix E2: Dredging Volumes by Station 2007

# CUYAHOGA 2007

| Station Ranges | | Volume of Material CY Removed | |
|---|---|---|---|
| | 799+92 to 799+00 | -5607 | |
| | 799+00 to 798+00 | -10406 | |
| | 798+00 to 797+00 | -1845 | |
| | 797+00 to 796+00 | -1418 | |
| | 796+00 to 795+00 | -4666 | |
| | 795+00 to 794+00 | -3432 | |
| | 794+00 to 793+00 | -2797 | |
| | 793+00 to 792+00 | -812 | |
| | 792+00 to 791+00 | -3071 | |
| | 791+00 to 790+00 | -32 | |
| | 790+00 to 780+00 | -61537 | |
| | 780+00 to 770+00 | -26700 | |
| | 770+00 to 760+00 | N/A | |
| | 760+00 to 753+00 | -11425 | |
| | 750+00 to 740+00 | N/A | |
| | 740+00 to 730+00 | N/A | |
| | 730+00 to 720+00 | N/A | |
| | 720+00 to 710+00 | N/A | |
| | 710+00 to 700+00 | N/A | |
| | 700+00 to 690+00 | N/A | |
| | 690+00 to 680+00 | N/A | |
| | 680+00 to 670+00 | N/A | |
| | 670+00 to 660+00 | N/A | |
| | 660+00 to 650+00 | N/A | |
| | 325+50 to 343+00 | -12565 | Dredging in Old River |
| | 300+50 to 304+50 | -2109 | Dredging in Old River |
| | Total Removed | -148422 | |

# Appendix E3: Lenhardt 2011: Suitability of Cleveland Cuyahoga River Dredged Sediments as Stabilized Road Fill

## Kreitinger, Joseph P ERDC-EL-MS

**From:** Lenhardt, Eugene N LRB
**Sent:** Wednesday, March 02, 2011 1:42 PM
**To:** O'Connor, Frank A LRB; Kreitinger, Joseph P ERDC-EL-MS
**Subject:** Suitability of Cleveland Cuayhago River Dredge Sediments As Stabilzed Road Fill (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Frank & Joe;

I have reviewed available data on the material characteristics of Cuyahoga River sediments for suitability as stabilized fill. Material suitability as stabilized fill was based upon the Ohio DOT specifications for road embankment fill. Ohio DOT defines suitable fine grained embankment embankment soils classified as Department Group Classification A-4-a, A-4-b, A-6-a, Aa-6-B, and A-7-6 which appears to be based on the AASHTO soils classification system. In addition Ohio DOT does not allow soils with a liquid limit in excess of 65 or soils classified as A-5 or A-7-5. Essentially this specification eliminates high plastic fined grained soils classified in the Unified Soils Classification System as CH, MH or OH. A report prepared by Hull & Associates, Inc. characterized the samples obtained from test pits dug in Dike 10B in June 2009. Results of this characterization show that the sediments in Dike 10 grade from sands (USCS SP, AASHTO A-1-b and A-3) at the western end to Silty Sand (USCS SM, AASHTO A-2-4) and Silt (USCS ML, AASHTO A-4 and A-7-5) to the middle. Recent test pits dug by Buffalo District COE at the eastern end of Dike 10B in January 2011 and tested in February/March 2011 shows that there is sand (USCS SP) in the upper 2 feet followed by fine grained organic silt and clay (USCS CH, MH, OH). Thus based upon available data I estimate that approximately 50% to 60% of the material in Dike 10B would meet the Ohio DOT suitability requirements for stabilized embankment fill. It should be mentioned that characteristics of the dredge sediments from the Cuyahoga River could vary from year to year depending upon river flow characteristics.

Eugene Lenhardt, M.S., P.E.
Civil/Geotechnical Engineer,
Buffalo District Corps of Engineers
(716)879-4167

Classification: UNCLASSIFIED
Caveats: FOUO

# Appendix F1: Cleveland Interim Capacity (Revision 2 Feb 11) 2015

Assume:
***250,000***

| *Actions/Year* | **FMP @ Dike 10B** | **Assumed** | **Capacity** | ***10B*** | *Actions/Year* | **FMP @ Dike 9** | **Assumed** | **Capacity** | ***Dike 9*** | | **FMP @ Dike 12** | **Assumed** | **Capacity** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *FMP* | Created Space | 400,000 | | *raise to +12.5/fill to +10.5 (actual +9)* | *FMP* | Created Space | 0 | | | | | | | |
| | Capacity already available to +6 | 278,000 | | *survey 2006* | | | 0 | | | | Capacity already available to +10 | 248,000 | | |
| *2006* | **In Situ** | **175,000** | **226,000** | | *2006* | **In Situ** | **0** | | | *2006* | **In Situ** | **0** | | |
| | Residual physical space | 503,000 | | | | Residual physical space | 0 | | | | Existing physical space | 248,000 | | |
| *FMP* | Physical space created | 135,000 | | *raise to +14/fill to +12* | *FMP* | Physical space created | 0 | | | | | | | |
| 2007 | **In Situ** | **212,667** | **212,667** | | 2007 | **In Situ** | **0** | **0** | | *2007* | **In Situ** | **31,000** | **82,667** | |
| | Residual physical space | 260,000 | | *From Survey Feb 2008* | | Residual physical space | 0 | | | | Residual physical space | 0 | | |
| | Physical space created | | | | | Physical space created | | | | *Berm 1* | Physical space created | 810,000 | | *Capacity from +2.5 to +14 (after berms raised to +18)* |
| 2008 | **In Situ** | **15,000** | **86,667** | *1 to 2 ratio* | 2008 | **In Situ** | **0** | **0** | | 2008 | **In Situ** | **235,000** | **270,000** | *(residual + new space combined)* |
| | Residual physical space* | 245,000 | | | | Residual physical space | 0 | | | | Residual physical space | 585,000 | | **From TAB post construction survey, Fill to +16 after* |
| | Physical space created | | | | | Physical space created | | | | | Physical space created | | | *placing dredge material from FY08* |
| 2009 | **In Situ** | **25,000** | **81,667** | *Water removed almost immediately* | 2009 | **In Situ** | **0** | **0** | | 2009 | **In Situ** | **238,600** | **195,000** | *Water removed almost immediately* |
| | Residual physical space | 220,000 | | *1 to 2 ratio* | | Residual physical space | 0 | | | | Residual physical space | 346,400 | | *1 to 2 ratio* |
| | Physical space created | 350,000 | | | | Physical space created | 196,900 | | *Fill +8 to +13.5* | | Physical space created | | | |
| 2010 | **In Situ** | **0** | **190,000** | *Water removed almost immediately* | 2010 | **In Situ** | **45,000** | **65,633** | | 2010 | **In Situ** | **180,383** | **115,467** | *Water removed almost immediately* |
| | Residual physical space | 835,200 | | *1 to 2 ratio* | | Residual physical space | 159,900 | | | | Residual physical space | 202,100 | | *1 to 2 ratio* |
| | Physical space created | | | | | Physical space created | | | | | Physical space created | 400,000 | | *Capacity from +14 to +22 (after berms raised to +24)* |
| 2011 | **In Situ** | **250,000** | **278,400** | *Water removed almost immediately* | 2011 | **In Situ** | **0** | **53,300** | *Water removed almost immediately* | 2011 | **In Situ** | **0** | **200,700** | *Water removed almost immediately* |
| | Residual physical space | 585,200 | | *1 to 2 ratio* | | Residual physical space | 159,900 | | *1 to 2 ratio* | | Residual physical space | 602,100 | | *1 to 2 ratio* |
| | Physical space created | | | | | Physical space created | | | | | Physical space created | 0 | | *Fill to +22* |
| 2012 | **In Situ** | **195,067** | **195,067** | *Water removed almost immediately* | 2012 | **In Situ** | **53,300** | **53,300** | *Water removed almost immediately* | 2012 | **In Situ** | **1,633** | **200,700** | *Water removed almost immediately* |
| | Residual physical space | 390,133 | | *1 to 2 ratio* | | Residual physical space | 106,600 | | *1 to 2 ratio* | | Residual physical space | 600,467 | | *1 to 2 ratio* |
| | Physical space created | | | | | Physical space created | 0 | | | | Physical space created | | | |
| 2013 | **In Situ** | **130,044** | **130,044** | *Water removed almost immediately* | 2013 | **In Situ** | **35,533** | **35,533** | *Water removed almost immediately* | 2013 | **In Situ** | **84,422** | **200,156** | *Water removed almost immediately* |
| | Residual physical space | 260,089 | | *1 to 2 ratio* | | Residual physical space | 71,067 | | *1 to 2 ratio* | | Residual physical space | 516,044 | | *1 to 2 ratio* |
| | Physical space created | | | | | Physical space created | 0 | | Fill +18 to +22 | | Physical space created | | | |
| 2014 | **In Situ** | **86,696** | **86,696** | *Water removed almost immediately* | 2014 | **In Situ** | **23,689** | **23,689** | *Water removed almost immediately* | 2014 | **In Situ** | **139,615** | **172,015** | *Water removed almost immediately* |
| | Residual physical space | 173,393 | | *1 to 2 ratio* | | Residual physical space | 47,378 | | *1 to 2 ratio* | | Residual physical space | 376,430 | | *1 to 2 ratio* |
| | Physical space created | | | | | Physical space created | | | | | Physical space created | | | |
| 2015 | **In Situ** | **57,798** | **57,798** | *Water removed almost immediately* | 2015 | **In Situ** | **15,793** | **15,793** | *Water removed almost immediately* | 2015 | **In Situ** | **125,477** | **125,477** | *Water removed almost immediately* |
| | Residual physical space | 115,595 | | *1 to 2 ratio* | | Residual physical space | 31,585 | | *1 to 2 ratio* | | Residual physical space | 250,953 | | *1 to 2 ratio* |
| | Physical space createc | | | | | Physical space createc | | | | | Physical space createc | | | |
| | | 260,089 | | | | | | | | | | | | |

**NOTES:**
**- Will need to make sure that water management practices allow for adequate settling time & area in both CDFs, may want to consider clamshell if necessary in later years.**

**Federal Dredging = 300000**
**Backlog Quantity = 0**

*FOR GRAPH*

| **Calendar Years** | **ed Dredging** | **Capacity** | **Backlog** |
|---|---|---|---|
| 2006 | 175,000 | 175,000 | 0 |
| 2007 | 243,667 | 295,333 | 0 |
| 2008 | 250,000 | 356,667 | 475,000 |
| 2009 | 263,600 | 276,667 | 550,000 |
| 2010 | 225,383 | 371,100 | 625,000 |
| 2011 | 250,000 | 532,400 | 700,000 |
| 2012 | 250,000 | 449,067 | 775,000 |
| 2013 | 250,000 | 365,733 | 850,000 |
| 2014 | 250,000 | 282,400 | 925,000 |
| 2015 | 199,067 | 199,067 | 1,025,933 |
| | 2,157,650 | 3,104,367 | 4,900,000 |

**Assumed Dredging**

| **Calendar Years** | **Dike 10B** | **Dike 9** | **Dike 12** | **Sum** |
|---|---|---|---|---|
| 2006 | 175,000 | 0 | 0 | 175,000 |
| 2007 | 212,667 | 0 | 31,000 | 243,667 |
| 2008 | 15,000 | 0 | 235,000 | 250,000 |
| 2009 | 25,000 | 0 | 238,600 | 263,600 |
| 2010 | 0 | 45,000 | 180,383 | 225,383 |
| 2011 | 250,000 | 0 | 0 | 250,000 |
| 2012 | 195,067 | 53,300 | 1,633 | 250,000 |
| 2013 | 130,044 | 35,533 | 84,422 | 250,000 |
| 2014 | 86,696 | 23,689 | 139,615 | 250,000 |
| 2015 | 57,798 | 15,793 | 125,477 | 199,067 |

**Capacity**

| **Remaining /Residual*** | **New Space*** | **Sum** |
|---|---|---|
| 92,667 | 133333 | 226,000 |
| 250,333 | 45,000 | 295,333 |
| 86,667 | 270,000 | 356,667 |
| 276,667 | 0 | 276,667 |
| 188,800 | 182,300 | 371,100 |
| 399,067 | 133,333 | 532,400 |
| 449,067 | 0 | 449,067 |
| 365,733 | 0 | 365,733 |
| 282,400 | 0 | 282,400 |
| 199,067 | 0 | 199,067 |

*divided remaining physical space by 3
to get remaining sediment space

# Appendix F2: Pershing Road Ave. Cost MFR – 12 January 2011

**DEPARTMENT OF THE ARMY**
**BUFFALO DISTRICT, CORPS OF ENGINEERS**
**1776 NIAGARA STREET**
**BUFFALO NY 14207-3199**

CELRB-TD-PM

6 January 2010
O'Connor/4131

MEMORANDUM FOR RECORD

SUBJECT: Cleveland Harbor - Assessment of Alternatives to Use the Pershing Ave. Brownfield Site (a.k.a. Cuyahoga Valley Industrial Center) in the Management of Sediments from Dredging.

1. Background:

a. Conference call held 20 December 2010, 1500-1600.

b. Participants on the conference call were: John Hull, P.E. (Hull & Associates), Joe Kreitinger (ERDC), Mike Asquith (LRB-PM), Frank O'Connor, P.E. (LRB-PM), Paul Farrell (LRB-DE).

c. Cost estimates prepared by Hull & Associates, Inc. for the USACE were discussed in the context of inclusion in the ongoing beneficial use evaluation by ERDC. John Hull is an authorized representative of the Pershing Ave. site currently operated by the Greater Cleveland Community Improvement Corporation (GCCIC).

2. This memorandum serves to document the estimated costs for two options: 1) Using 2011 dredged sediment taken directly from the Cuyahoga River for use as fill needed in the short-term at the Pershing Ave. site, and; 2) Operating a portion of the brownfield site for long-term (i.e. after 2012) dewatering/handling of sediment derived from dredging.

a. Approximately 70-80% of sediment dredged each year comes from the upper river within a mile or so of the Pershing Ave. site. The short – and long-term concepts for handling sediment at this site are being evaluated as alternatives to the current practice of transporting approximately 5 miles to the existing lakefront confined disposal facilities (CDFs).

b. The southern portion of the Pershing Ave. site is occupied by a valley approximately 100-200 feet across and 2,600 feet long. A concrete box culvert lies beneath the 20-30 foot deep valley and it conveys the former Morgana Run stream westward to an outfall on the east bank of the Cuyahoga River. The current estimated capacity of the valley that could be available for handling sediments is between 150,000 and 250,000 CY, depending on final site configuration and assessment of the box culvert bearing capacity.

c. The Pershing Ave. property was the contractor-furnished site for 300,000 CY of sediment harvested in 2010 from CDF 10B using Recovery Act funding. The majority of the 58-acre site is being filled for a commercial/industrial redevelopment. The site redevelopment project must be completed by the GCCIC before the end of December 2011 according to the terms of the $5M State of Ohio Jobs Ready Grant. Depending on the final Morgana Run fill height, the site could accommodate up to 400,000-500,000 CY to reach final grade.

d. The long and narrow Morgana Run Valley is not slated for any significant structures, roads, etc. Therefore, the representatives of the Pershing Ave. site have expressed interest in exploring the potential for long-term sediment handling operations on this portion of the site, with operations starting as early as 2012-2013, if they can be compatible with final use of the balance of the undeveloped site.

e. Costs were provided by John Hull for the two, separate options – direct placement during dredging in 2011, and long-term operation of the Morgana Run Valley in a dewatering/re-handling operation. The costs for 2011 direct placement in conjunction with dredging are assumed to represent the costs that would be charged next year. Costs are in 2011 dollars, escalation for 2012 and beyond should be expected.

- The estimated unit cost breakdown for direct placement during dredging (spring and fall) in 2011 is:

| Activity | Unit Cost (Per Cubic Yard) |
|---|---|
| Dredging the river | $7.00 |
| Offload at Upper River and Truck to Site[2] | $10.60 |
| Place and Grade in Morgana Run area[2] | $2.25 |
| Airspace Charge[1] | $6.10 |
| **Total** | $25.95 |

[1] This charge is an airspace charge sought by the GCCIC site to cover initial project costs, including legal fees, permitting, insurance, and environmental compliance. John Hull reports this unit cost was discounted from $9/CY to reflect a local cost share even though I requested he provide only total costs and defer any consideration of cost sharing.

[2] This unit rate reflects bank cubic yard volumes as measured in the river, with actual costs adjusted to reflect actual lower consolidated volumes.

- The estimated cost for operation of the Morgana Run Valley for handling sediments for beneficial reuse at other sites after 2012 (including costs for loading from the site staging area for shipment off-site) was estimated by John Hull to be slightly lower – **$24/CY**. He also reported that loading trucks at the upper Cuyahoga River and transporting directly (bypassing any intermediate re-handling at the Pershing Ave. site), for use at landfills brownfields and other receiving sites would cost approximately **$19/CY** (FOB at the upper Cuyahoga River Site includes dredging, dewatering and loading trucks – transport not included).

3. The POC in this matter is the Cleveland Harbor Program Manager, Mr. Frank A. O'Connor, P.E., who may be reached at extension 4131.

Prepared by:

Frank A. O'Connor, P.E.
Program Manager

CF:
ERDC
CELRB-TD-EA

CELRB-PM-PL
CELRB-PM-PM

# Appendix F3: MFR Ditchman Proposal

February 2011
Kreitinger/CEERD-EP-R

MEMORANDUM FOR RECORD

SUBJECT: Cleveland Harbor - Assessment of Alternatives to Use Zaclon Property for Material Handling with Beneficial Use at Two Separate Brownfield Sites

1. Background:

a. Conference call held 2 February 2011, 13:30 – 14:30 and with preliminary discussions held in July 2010
b. Participants on the conference call were: Joe Ditchman (Joseph P. Ditchman, Jr. of Ditchman Holdings, LLLP), Joe Kreitinger (CEERD-EP-R), Frank O'Connor, P.E. (LRB-PM).
c. The total unit cost prepared by Joe Ditchman for the USACE was discussed in the context of inclusion in the ongoing beneficial use evaluation being conducted by ERDC. Mr. Ditchman, who represents Ditchman Holdings, provided an unsolicited proposal for consideration within the assessment of beneficial use options for dredged sediment.

2. This memorandum serves to document the estimated costs for the combined material handling at the Zaclon property (located adjacent to the navigation channel Turning Basin), transportation and beneficial use of dredged sediment as fill at a site located at 3201 Independence Ave. and/or the General Chemical brownfield site located on Warner Road straddling the townships of Garfield Heights and Cuyahoga Heights. All three properties are owned by third parties and execution of the proposal by Mr. Ditchman will require completion of real estate transfer and/or use agreements. Mr Ditchman has secured options to buy/use these properties.

a. Approximately 70-80% of sediment dredged each year comes from the upper river located directly upstream of the Zaclon brownfield site located at 2981 Independence Road. The short – and long-term concepts for handling sediment at this site are being evaluated as alternatives to the current practice of transporting approximately 5 miles to the existing lakefront confined disposal facilities (CDFs).

b. The 3201 Independence Ave. site covers approximately 11 acres and approximately 1.3 miles from the Zaclon site. The General Chemical brownfield site, located at 5000 Warner Road, is a 54-acre parcel located approximately 5.2 miles from the Zaclon Site property. The concept provided by Mr Ditchman includes placement of 225,000 to 300,000 cy yards of dredged sediment per year for 10 years at the General Chemical site providing a potential estimated total capacity greater than 3 million cy. The end use of these brownfield sites will be commercial/industrial.

c. A conceptual plan has been prepared by Mr. Ditchman that includes design of a mechanical dewatering system and construction of a material handling facility for receipt of dredged sediment that is hydraulically delivered to the Zaclon site by others. The Zaclon site redevelopment will require coordination with on-going RCRA regulatory actions by the responsible parties and demolition of several buildings prior to construction. The timeframe necessary for construction of the material handling facility is reported by Mr. Ditchman to be 1.5 years following creation of a public/private partnership and project capitalization.

d. Development of the Zaclon property by Mr. Ditchman will require a public/private partnership that is able to provide the capital for redevelopment of the site. To execute the project, Mr. Ditchman has identified the following requirements:

    i. Port of Cleveland or other entity will need to provide financing for the project. Mr. Ditchman has estimated that the capital requirements are approximately $38 to $40 million.
    ii. U.S. Army Corps of Engineers/Port of Cleveland will need to provide a minimum volume of 225,000 cy of sediment per year for 10 years, requiring negotiation of terms in a formal agreement.
    iii. City of Cleveland will need to secure State funding for environmental restoration of the Zaclon property
    iv. Ohio EPA will need to permit remediation of the Zaclon site under the Ohio EPA VAP.

e. Mr. Ditchman originally had made the condition of at least 300,000 CY dredged each year. It was explained to him during the call that this is considerably more than the presently funded, reduced rate of 225,000 CY/yr and such a condition could be problematic. He agreed to lower the minimum dredging rate but he was forced to raise the corresponding unit cost in order to compensate in his business model.
f. The unit cost based on 225,000 CY/yr is estimated by Mr. Ditchman to be $42 cy. This estimate included receipt of the dredged sediment in a hydraulic slurry at the Zaclon site, and all activities and requirements related to dredged material dewatering, water management, material handling, transportation, and final placement of the dredged material at the Independence Ave. and/or Garfield Heights General Chemical sites. These costs are based on the management of a minimum of 225,000 cy per year for 10 years.
g. Mr. Ditchman has not provided a breakdown of his total unit cost and no verification of the technical feasibility nor reasonableness of the unit costs has been conducted.

3. The POC in this matter is the Cleveland Harbor Program Manager, Mr. Frank A. O'Connor, P.E., who may be reached at extension 4131.

4. Contact information for Joe Ditchman

Joseph P. Ditchman, Jr.
Ditchman Holdings LLLP
1100 Superior Ave. Suite 800
Cleveland, Ohio, 44114
(216) 861-5405 (direct)
(216) 861-4672 (fax)
(216) 440-3838 (cell)

Prepared by:
Joe Kreitinger, PhD.
Project Scientist

CF:
ERDC
CELRB-PM-PM

# Appendix F4: CDF Material Management Memo: Borrowman to O'Connor

**Memorandum**

**To: Frank O'Connor, USACE-LRB**

**From: Thomas Borrowman, USACE-ERD**

**CC: Joseph Kreitinger, Trudy Estes, Paul Schroeder, USACE-ERD**

**Subject: Increasing Dredged Material Capacities at Existing Cleveland Harbor CDFs Through Material Management.**

Frank,

Per your request, I'm emailing a copy of the spreadsheet I used to calculate the volume of dredged material that can be gained by stacking material on a slope at Cleveland Harbor CDFs 10B, 9, and 12. This memo will itemize key assumptions and calculations in that spreadsheet. The spreadsheet was built upon a copy of one provided to me by Adam Hamm (USACE-LRB) on 2/11/11 (attached for reference).

The initial airspace volume highlighted in light blue in cell C45 is a sum of the available volumes calculated by Mr. Hamm in his analysis including estimated 2010 dredged material volumes, essentially giving us a blank slate for Spring 2011 dredging and beyond. Note that Mr. Hamm's analysis assumes that the currently planned increase in CDF 12 dike heights to 24 ft (22 ft capacity plus 2 ft freeboard) will be completed; I have assumed this in my analysis as well.

Mr. Hamm's analysis concludes that there will be insufficient capacity for hydraulic placement in the CDFs after the 2013 dredging year, however capacity for nearly 2 years of mechanically placed material would remain while still maintaining two feet of freeboard for each CDF, extending capacity to the end of the 2015 dredging year. Mechanical offloading is necessarily part of the following analysis.

To extend the life of the CDFs, I've conducted an exercise to calculate the additional volume of material that the CDFs could hold by stacking mechanically offloaded material to a final grade of 1 on 10 slopes from the edge of the dikes toward the center of the CDFs (Figure 1). I've made calculations to verify that the final material heights would not violate the clearance regulations for the adjacent airport.

To illustrate the analysis and assumptions made, we'll look at CDF 12. Using the blueprints provided to me by LRB (attached for reference) I measured the distance from the runway centerline to the centerline of CDF 12 (~900 ft). I then used the formula of a 200 ft offset from the runway centerline followed by a 1 on 7 slope to calculate an allowable stacking dredged material stacking height of 100 ft (well above what would likely ever be done). I then used the width of the CDF (~1000 ft, cell M63) and an assumed 1 on 10 stacking slope to calculate a centerline material stacking height of about 51 ft (cell M64). Using the CDF length of about 1,760 ft, I calculated an additional volume of 1,360,000 CY of dredged material. Note that stacking material in this manner, beginning at the existing dikes, leaves the two feet of freeboard that currently exists for erosion and runoff control.

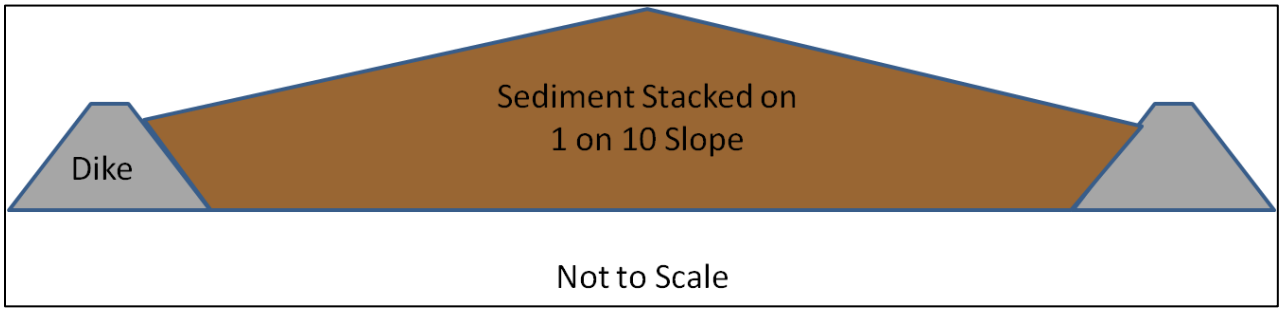
The same analysis was performed for the other CDFs, with two sets of calculations for CDF 10B for the two distinct shapes it possesses (a large trapezoid and a small rectangle). As shown in the summary cells,

C45 to C52, there is a significant increase in capacity by using this material management strategy without any allowance for transport of material away from the CDFs. Any such activities would only further increase the life of the facilities. The attached spreadsheet allows for modification of the 1 on 10 stacking slope (cell C62) to evaluate a more level stacking scheme if so desired. Table 1 summarizes different stacking scenarios; Figure 1 illustrates the material management scheme I've proposed.

Table 1. Increased CDF Capacity at Various Stacking Slopes

| CDF | 1 on 10 slope | | | 1 on 15 slope | | | 1 on 20 slope | | |
|---|---|---|---|---|---|---|---|---|---|
| | Capacity in CY | Capacity in Years @ 250,000 CY/yr | Centerline Height Above Existing Berms in ft | Capacity in CY | Capacity in Years @ 250,000 CY/yr | Centerline Height Above Existing Berms in ft | Capacity in CY | Capacity in Years @ 250,000 CY/yr | Centerline Height Above Existing Berms in ft |
| 10B | 1,372,376 | 5.5 | 30 | 914,917 | 3.7 | 19 | 686,188 | 2.7 | 14 |
| 9 | 192,517 | 0.8 | 16 | 128,344 | 0.5 | 10 | 96,258 | 0.4 | 7 |
| 12 | 1,360,783 | 5.4 | 49 | 907,189 | 3.6 | 32 | 680,391 | 2.7 | 23 |
| Capacity Through Year | 2028 | | | 2024 | | | 2022 | | |

Figure 1. Conceptual Illustration of Material Management by Sloped Stacking.



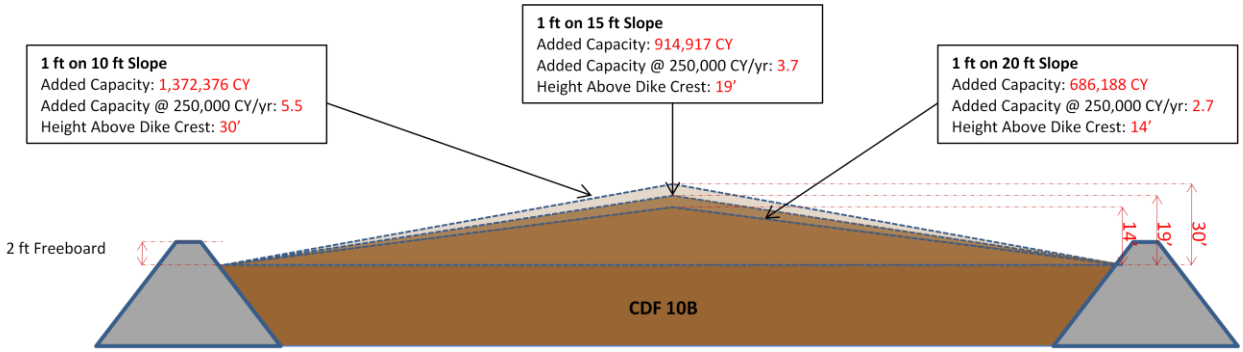

Please contact me if you have any questions or if I can make any further clarifications.

v/r

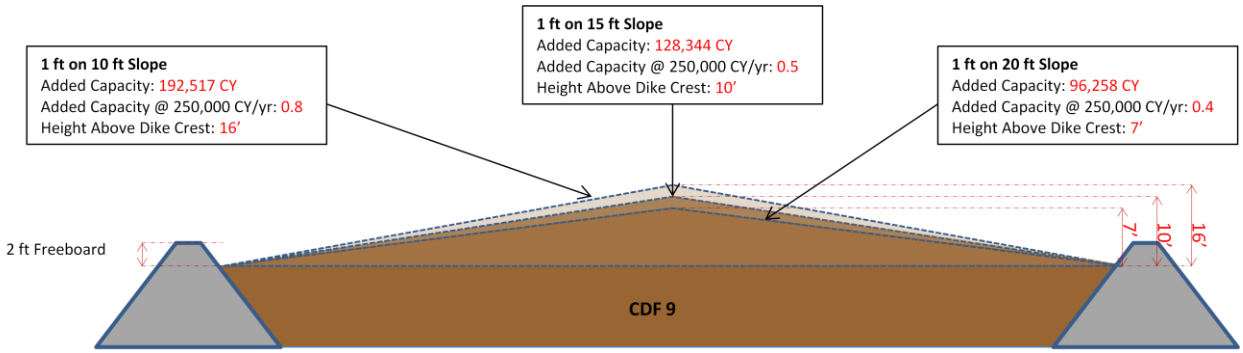
Thomas D. Borrowman

Research Civil Engineer

USACE ERDC, Environmental Laboratory.




**Not to Scale**




**Not to Scale**

# Appendix F5: Stockpiling Analysis

Borrowman Stacking Analysis

| | | |
|---|---|---|
| **2011 Airspace from Hamm (2011)** | 1,597,200 | **cy** |
| Years of Capacity @ 250,000 CY/yr with 2011 Airspace and Mechanical Placement after 2013 | **6.4** | **yrs** |
| Total extra yards capacity by stacking 1 on 10 ft slopes, leaving 2 ft of freeboard/runoff berms | **2,925,675** | |
| Years of Capacity @ 250,000 CY/yr with 2011 Airspace | **11.7** | **yrs** |
| Total Years Capacity @ 250,000 CY/yr | **18.1** | **yrs** |
| Year of Capacity End @ 250000 CY/yr | **2028** | |
| year of Capacity End @ 300,000 CY/yr | **2025** | |

## CDF 10B

| | | | |
|---|---|---|---|
| west end 1 | 317 | ft | These are distances relative to the runway to ensure that the clearance envelope isn't violated for the trapezoidal section of CDF 10B |
| west end 2 | 813 | ft | |
| east end 1 | 261 | ft | |
| east end 2 | 1,052 | ft | |
| average CDF Main Dist from Runway Centerline | 611 | ft | |
| average allowable stacking height | 58.7 | ft | |
| length CDF 10B main | 3,600.0 | ft | |
| **Stack slope, 1 on** | **10** | **ft** | Input estimated stack slope here |
| Ave CDF Width | 644 | ft | |
| Center Height | 32 | ft | |
| End Length offset | 322 | ft | |
| stack volume | 1,299,979 | CY | |
| **Extra Years @ 250k CY/yr** | **5.2** | **yrs** | |

| | | | |
|---|---|---|---|
| "box 1" | 738 | | |
| "box 2" | 1,106 | | |
| average CDF Box Dist from Runway Centerline | 922 | ft | These are distances relative to the runway to ensure that the clearance envelope isn't violated for the rectangular section of CDF 10B |
| average allowable stacking height | 103 | ft | |
| length CDF 10B box | 700 | ft | |
| Stack slope | 10 | ft on 1 ft | |
| Ave CDF Width | 368 | ft | |
| Center Height | 18 | ft | |
| Length offset | 184 | | |
| stack volume | 72,397 | CY | |
| Extra Years @ 250k CY/yr | 0.3 | yrs | |

## CDF 9

| | | | |
|---|---|---|---|
| Average CDF Main Dist from Runway Centerline | 787 | ft | |
| average allowable stacking height | 83.9 | ft | |
| length CDF 9 | 1,650.0 | ft | |
| Stack slope | 10 | ft on 1 ft | |
| Ave CDF Width | 369 | ft | |
| Center Height | 18.5 | ft | |
| End Length offset | 185 | ft | |
| stack volume | 192,517 | CY | |
| **Extra Years @ 250k CY/yr** | **0.8** | **yrs** | |

## CDF 12

| | | | |
|---|---|---|---|
| Average CDF Main Dist from Runway Centerline | 900 | ft | |
| average allowable stacking height | 100.0 | ft | |
| length CDF 9 | 1,762.3 | ft | |
| Stack slope | 10 | ft on 1 ft | |
| Ave CDF Width | 1,016 | ft | |
| Center Height | 50.8 | ft | |
| End Length offset | 508 | ft | |
| stack volume | 1,360,783 | CY | |
| **Extra Years @ 250k CY/yr** | **5.4** | **yrs** | |

# Appendix F6: CDFs 9, 10B, and 12 Site Plan

*** SUPPORT VALUE ENGINEERING - IT PAYS ***

*** SAFETY PAYS ***

EAST BREAKWATER

FEDERAL CHANNEL

8063'

4418'

1905'

1741'

1500'

1100'

Proposed New Berm
Top El. +12 LWD
Top Width 10'
Side slopes 3H:1V
Bottom El. +0 LWD

411'

600'

CDF 10B
55 ACRES

EXISTING
CROSS BERM

795'

430'

CDF 9
11 ACRES

882'

1736'

471'

CDF 12
39 ACRES

1135'

EAST 38TH ST. SEWER

ACCESS ROADS

ACCESS
ROAD

A
C-001

2028'

SHORELINE

BURKE LAKEFRONT AIRPORT

24 R

EAST 20TH ST. SEWER

EAST 22ND ST. SEWER

BURKE AIRPORT SEWER

EAST 26TH ST. SEWER

EAST 30TH ST. SEWER

EAST 33RD ST. SEWER

300' 150' 0 300'

SCALE: 1" = 300'-0"

CDF 10B

CDF 9

CDF 12

RUBBLEMOUND
PERIMETER BERM

EXISTING CROSS BERM

PERIMETER
EARTHEN BERM

20
10
0
-10

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00 63+00 64+00 65+00 66+00 67+00 68+00 69+00 70+00 71+00 72+00 73+00 74+00 75+00 76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00

A
C-001
PROFILE

NOTES:
1. PROFILE IS SCALED 10X VERTICALLY.
2. SURFACE SHOWN IS AS OF 1/14/2011.

THIS PROJECT WAS DESIGNED BY THE BUFFALO DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.

US Army Corps of Engineers®
Buffalo District

| MARK | DESCRIPTION | DATE | APPR. |
|---|---|---|---|
| | | | |

| MARK | DESCRIPTION | DATE | APPR. |
|---|---|---|---|
| | | | |

DESIGNED BY:
DWN BY: CKD BY:
SUBMITTED BY:
PLOT SCALE: AS SHOWN
PLOT DATE: 2/8/2011
SIZE: ANSI D
DATE: mm/dd/yyyy
SOLICITATION NO.: W912P4-FY-C-00##
CONTRACT NO.: W912P4-FY-C-00##
FILE NUMBER: P2#######
SHEET FILE NAME: P2#######_LRB-???-FY-?-###XXX.dgn

U.S. ARMY CORPS OF ENGINEERS
BUFFALO DISTRICT
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207

CLEVELAND HARBOR
CLEVELAND, OHIO
CDF 9, 10B, & 12 INTERIM MEASURES

Sheet ID
C-001

# Appendix F7: FAA Safety Requirements for CDF Dikes

FAA Requirements for Aviation Safety.

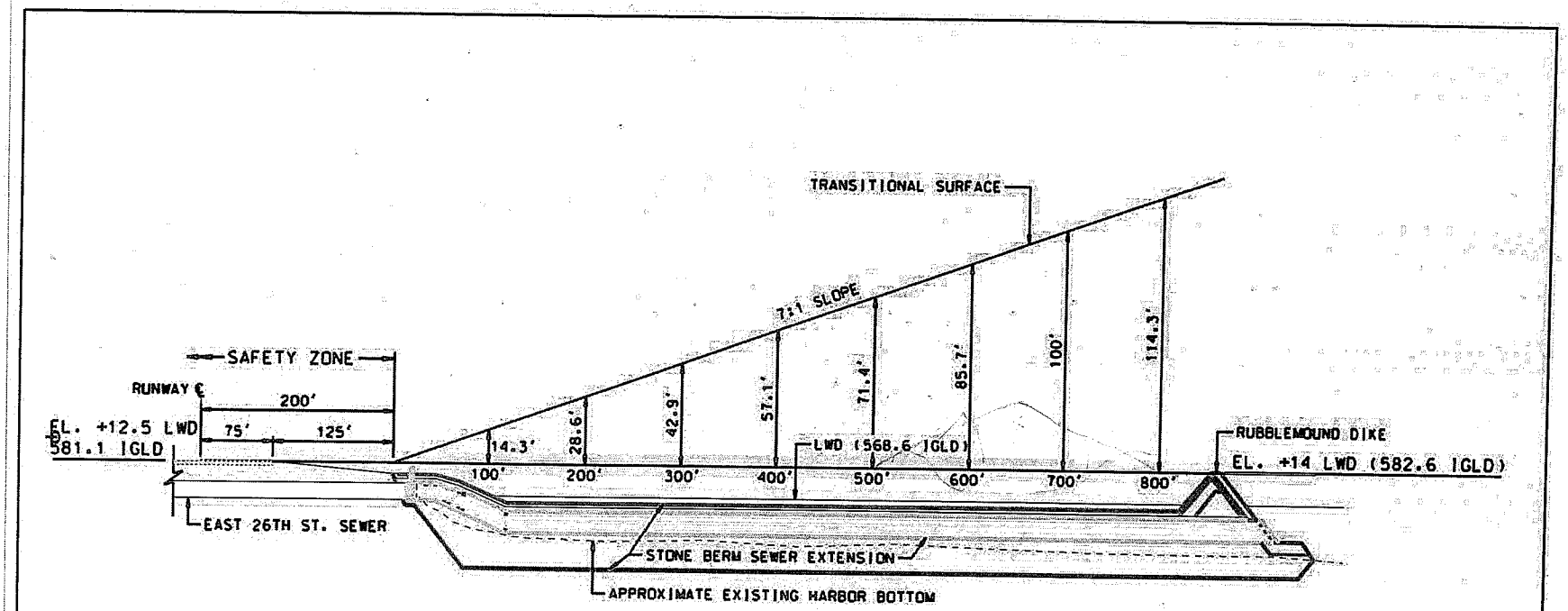
To insure aviation safety during aircraft takeoff or landing the FAA establishes a number of criteria that must be met with respect to any obstructions adjacent to the runway. Since the south perimeter berm is located adjacent to the runway, the FAA criteria have an impact on where and to what elevation the berm can be built. The original 1994-berm design was coordinated with the FAA to be in conformance with the criteria shown in Figure 4. The present FAA safety criteria are different than the 1994 design criteria and are as follows:

(1.)Provide for a Runway Safety Area (RSA), which is a 500-foot wide zone as measured from the runway centerline that is essentially flat from the elevation of the centerline of the runway (+12.5 LWD at Burke Lakefront Airport). This requirement thus allows for a safety zone on either side of the runway centerline of 250 feet or 175 feet from the edge of the runway at Burke Lakefront Airport (runway is 150 feet wide).

(2.)Provide for an Obstacle Free Area (OFA) that is 800 feet wide as measured from the centerline of the runway. No objects are permitted in this area above the elevation of the centerline of the runway (+12.5 feet LWD) except for equipment needed for aircraft safety. This requirement thus allows for a 400-foot zone on either side of the centerline of the runway or 325 feet from the edge of the runway at Burke Lakefront Airport.

(3.)Provide for a Primary and Transitional Surfaces zone, which has a primary surface of 1,000 feet as measured from the centerline of the runway and a transition surface that begins at the edge of the primary surface (200 feet from the centerline) and extends up at a slope of 1Vertical on 7 Horizontal. This requirement thus allows for a 500-foot wide primary surface zone on either side of the runway centerline. The primary surface shall not extend above the elevation of the centerline of the runway (+12.5 ft LWD).

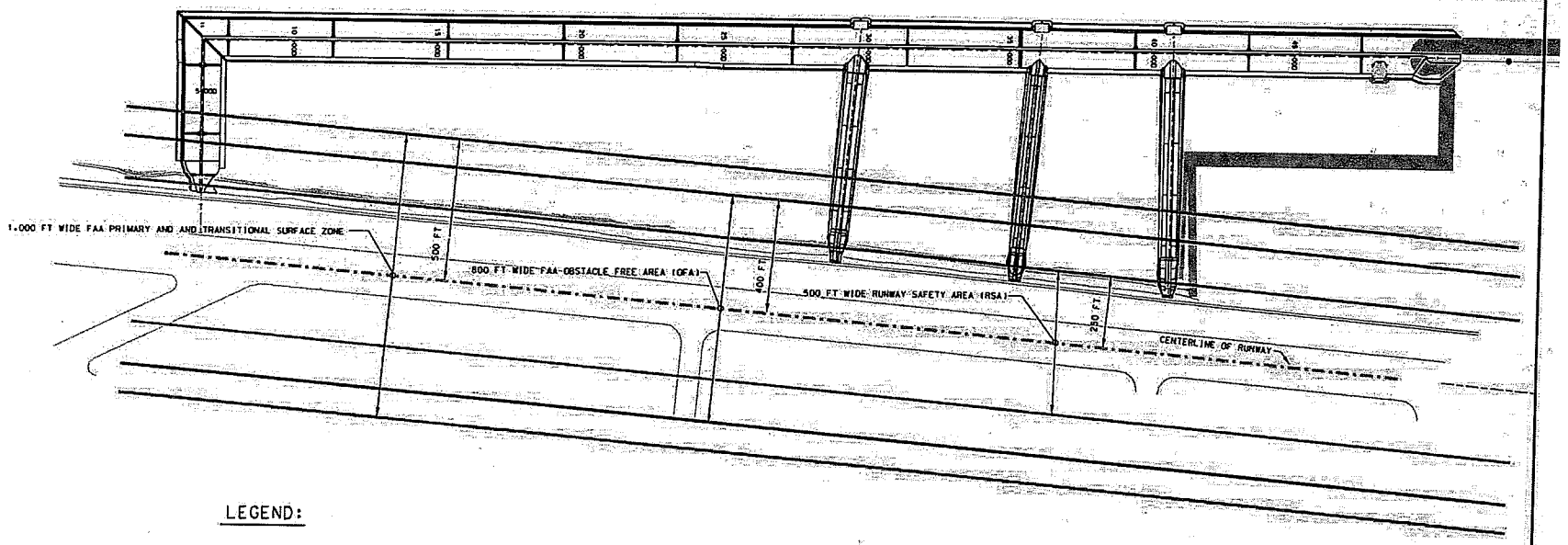
The relationships of FAA criteria to Dike 10B are shown in Plan View Figure 5. Comparing the original south perimeter berm to the FAA criteria it is evident that this berm design violates each of the FAA criteria. Thus, different berm designs were developed that are more compatible with the FAA criteria. The berm designs are discussed in the next section.




CLEVELAND DIKE 10B
CLEVELAND, OHIO

1994 DIKE 10B DESIGN
FAA AVIATION SAFETY CRITERIA

FIGURE 4




LEGEND:

——— FAA PART 77 PRIMARY AND TRANSITIONAL SURFACE LIMIT.
THIS ZONE HAS A TOTAL WIDTH OF 1,000 FT WIDE AS MEASURED FROM THE RUNWAY CENTERLINE OR 500 FT NORTH AND SOUTH OF THE RUNWAY CENTERLINE. STARTING AT THE EDGE OF THE OF THE PRIMARY LIMIT (RED LINE) NO STRUCTURES SHALL HAVE AN ELEVATION THAT EXCEEDS A SLOPE OF 1 VERTICAL ON 7 HORIZONTAL.

——— FAA OBSTACLE FREE AREA (OFA) LIMIT.
THIS ZONE HAS A TOTAL WIDTH OF 800 FT AS MEASURED FROM THE RUNWAY CENTERLINE OR 400 FEET NORTH AND SOUTH OF THE RUNWAY CENTERLINE.

——— FAA RUNWAY SAFETY AREA (RSA) LIMIT.
THIS ZONE HAS A TOTAL WIDTH OF 500 FEET AS MEASURED FROM THE RUNWAY CENTERLINE OR 250 FEET NORTH OR SOUTH OF THE RUNWAY CENTERLINE.

CLEVELAND DIKE 10B
CLEVELAND, OHIO

FAA SAFETY ZONES

FIGURE 5

# Appendix G: Implementation Guidance for Section 2037 of the Water Resources Development Act of 2007

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON, D.C. 20314-1000

CECW-P

APR 8 2008

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Implementation Guidance for Regional Sediment Management – Section 2037 of the Water Resources Development Act of 2007 (WRDA 2007)

1. Applicability. Section 2037 amends Section 204 of the Water Resources Development Act of 1992, as amended, (33 U.S.C 2326) and repeals Section 145 of the Water Resources Development Act of 1976, as amended, (33 U.S.C. 426j) except that the Secretary of the Army may complete projects being carried out under Section 145 on the day before enactment of WRDA 2007. "Section 204" as used in this implementing guidance is Section 204 as amended by Section 2037 of WRDA 2007. The guidance in this memorandum changes guidance contained in Appendices E and F of ER 1105-2-100. The specific guidance changes are: (1) Regional sediment management plans to identify and evaluate opportunities for beneficial uses of sediment from the construction, operation or maintenance of authorized Civil Works projects are accomplished at Federal cost; (2) The purposes for the beneficial use of sediments eligible for Federal participation are structural and non-structural flood control, hurricane and storm damage reduction, and environmental protection and restoration and the cost sharing for the incremental costs to achieve these purposes is established by Section 103 of the Water Resources Development Act of 1986, as amended; (3) The 75 percent Federal and 25 percent non-Federal cost sharing for beneficial use of sediments for the protection, restoration and creation of aquatic habitats and "Section 207" projects is replaced by 65 percent Federal and 35 percent non-Federal cost sharing; (4) Except for "Section 207" projects (see paragraph 6), beneficial use projects implemented under the authority of Section 204 are limited to $5 million total Federal cost; (5) The U. S. Army Corps of Engineers can, at Federal cost, cooperate with any State in the preparation of a comprehensive State or regional sediment management plans and measures and projects identified in State and regional plans may be recommended to Congress for authorization; and (6) Projects for the purposes of protection, restoration, or creation of aquatic and ecologically related habitat the costs of which do not exceed $750,000 and which are located in a disadvantaged community may be carried out at Federal expense.

2. General. Except for the participation by the Corps in cooperation with States in the preparation of Statewide or regional sediment management plans as discussed in paragraph 4, Section 2037 presents regional sediment management in the context of using sediment obtained through construction, operation, or maintenance of an authorized

Federal water resources project for the construction, repair, modification, or rehabilitation of Federal water resources projects for the reduction of storm damages to property and to protect, restore, and create aquatic and ecologically related habitats, including wetlands. Regional sediment management planning is presented as planning for this beneficial use of sediments. The transportation and placement of sediment for beneficial purposes is only one aspect of planning and strategies for regional sediment management in the execution of the Civil Works program of the Corps. Regional sediment management in the broader Civil Works water resources management program context involves a systems –based approach to managing sediment resources through regional strategies that address integrated sediment needs and opportunities. This broader systems based approach will be presented in guidance that is under development. This implementation guidance addresses only the provisions of Section 2037 and should be viewed as addressing one aspect of regional sediment management to be leveraged with other authorities and funding to accomplish more comprehensive and integrated regional sediment management goals.

3. Regional Sediment Management Plans.

a. General. Section 204 provides that the Secretary of the Army shall develop at Federal expense, regional sediment management plans, in cooperation with appropriate Federal, State, regional and local agencies, for sediment obtained through construction, operation, or maintenance of an authorized Federal water resources project. The regional sediment management plans will identify projects for transportation and placement of sediment to reduce storm damages to property and protect, restore, and create aquatic and biologically related habitat including wetlands. Regional sediment management plans, as defined and funded under the authority of Section 204, follow the requirements for a continuing authorities decision document as outlined in Appendix F of ER 1105-2-100.

b. Funding. Section 204 authorizes an appropriation of $30,000,000 per fiscal year to carry out the provisions of Section 204 of which not more than $5,000,000 per fiscal year may be used for cooperation with States in the preparation of a comprehensive State or regional sediment management plan as defined in paragraph 4. The total Federal costs for individual projects authorized under Section 204 is limited to $5,000,000. Section 204 will continue to be administered as a continuing authority program under the guidance of Appendix F of ER 1105-2-100 except for the provisions of Section 204 (d) (see paragraph 6). Priority will be given to studies that leverage the regional sediment management funds under the Section 204 authority with other Federal and non-Federal funds to identify measures to accomplish broad systemic regional sediment management goals. Priority will also be given to regional sediment management studies supporting

the implementation of the priority projects identified in subsection (f) of Section 204. (See paragraph 7). Budgeting for these programs is subject to the Administration policies, priorities, and criteria in force at the time the budget is proposed.

c. Plan Formulation and Policy. Plan formulation and policy considerations for beneficial use projects will be the same as other continuing authorities projects or specifically authorized projects for the same purposes except that identification of alternatives and identification of the National Economic Development (NED) plan, National Ecosystem Restoration (NER) plan or combined NED/NER plan will necessarily be constrained by the fact that these projects are limited by the sediment available from the construction, operation, or maintenance of an authorized Federal water resources project. Beneficial use projects may involve more than a single year's sediment from an authorized Civil Work's project, for example multiple operation and maintenance dredging cycles from an authorized navigation project as long as the $5 million Federal cost limit is not exceeded. For projects for placement of sediment on beaches for storm damage reduction, policy requirements for unrestricted public use and adequate public access apply.

4. State and Regional Plans. Subsection (e) of Section 204 provides that the Secretary of the Army may cooperate with any State in the preparation of a comprehensive State or regional sediment management plan within the boundaries of the State, encourage State participation in the implementation of the plan, and submit to Congress reports and recommendations with respect to appropriate Federal participation in carrying out the plan. These are State initiated studies and the Corps role is to participate in the studies in a coordination and collaboration role. Funds for Corps participation in the development of State plans may be requested under the guidance in paragraph 3.b but the aggregate of such funding is limited to $5 million per fiscal year. Projects for using sediment obtained through construction, operation, or maintenance of an authorized Federal water resources project for the reduction of storm damages to property and to protect, restore, and create aquatic and ecologically related habitats, including wetlands, may be identified under State and regional plans and may be recommended for construction under the procedures described in paragraph 5 to the extent that the projects are consistent with the criteria established for the Section 204 program. Other measures and projects for the budgetary priority purposes of commercial navigation, flood and coastal storm damage reduction, and aquatic ecosystem restoration identified in State and regional plans may be recommended for authorization for Federal participation in reports submitted to the Congress. Any measure and project recommended for authorization for Corps participation must be consistent with Corps policy. State and regional feasibility reports

should be produced in close coordination with the Corps and generally follow the requirements for preparation and processing Corps led feasibility studies in ER 1105-2-100 to facilitate expedited consideration of recommended projects, operational changes or other implementation actions that may be undertaken through the Civil Works program. These plans may also identify recommendations regarding related sediment management to be undertaken by others.

5. Beneficial Use of Sediment Projects.

a. General. Section 204 authorizes the beneficial utilization of sediments obtained through the construction, operation, or maintenance of an authorized Federal water resources project to construct, repair, modify, or rehabilitate projects for reduction of storm damages to property and protection, restoration and creation of aquatic and biologically related habitat including wetlands. Beneficial use projects will be recommended for implementation in accordance with the studies and reports described in paragraph 3 and 4. Except for the projects developed under the authority of Section 204(d) (see paragraph 6), beneficial use of sediment projects will be designed, approved and implemented under the continuing authorities program in accordance with the guidance in Appendix F of ER 1105-2-100 including signing of a Project Partnership Agreement, except that the study would be funded as described.

b. Costs. Costs of beneficial use of sediment projects shall be limited solely to construction costs that are in excess of the Base Plan or Federal Standard. The Base Plan is the cost necessary to carry out the dredging and disposal for the construction, operation, or maintenance of an authorized Federal water resources project that is the source of the sediments in the most cost-effective way, consistent with economic, engineering, and environmental criteria. The cost of the project up to the limit of the cost of the Base Plan established under the above guidance will be funded and cost shared as a construction or operation and maintenance cost, as applicable, of the water resources project that is the source of the sediment. The total Federal costs associated with a beneficial use of sediments project shall not exceed $5 million. This cost limit refers to the incremental cost over the Base Plan.

c. Cost Sharing of the Beneficial Use Increment. The non-Federal share of the costs of beneficial use of sediments projects for the increment of costs above the base Plan shall be determined as provided in subsections (a) through (d) of Section 103 of the

Water Resources Development Act of 1986, as amended (33 U.S.C. 2213). Where a project serves more than one purpose the costs should be allocated to the appropriate purpose using established cost allocation procedures and shared accordingly. There are four potential non –Federal shares applicable to beneficial use of sediments projects as follows:

(1) Flood Control (Structural) – (For example, raising or construction of flood control levees with placement of dredged and dewatered sediment.) Non-Federal responsibilities are: (a) pay 5 percent cash during construction; (b) provide all lands, easements, rights-of-way, relocations and dredged material disposal areas (LERRD); (c) pay any cash contribution during construction necessary so that the total contribution of the non-Federal interest including 5 percent cash, value of LERRD, and additional cash contribution will be 35 percent of the cost of the project; (d) pay 100 percent of the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) cost of the beneficial use project; and (e) hold and save the United States free from damages due to the construction or operation and maintenance of the project, except for damages due to the fault or negligence of the United States or its contractors. The non-Federal sponsor shall receive credit for the value of in-kind contributions against the requirement for additional cash to bring the non-Federal share of the project to at least 35 percent but not against the 5 percent cash requirement in accordance with the provisions of SEC. 2003 of WRDA 2007 and the implementing guidance that will be issued for that provision.

(2) Non-Structural Flood Control Projects. (For example, using dredged and dewatered sediment for raising structures to reduce flood damages.) Non-Federal responsibilities are: (a) provide all LERRD; (b) pay any cash contribution during construction necessary so that the total contribution of the non-Federal interest including value of LERRD will be 35 percent of the cost of the project; (c) pay 100 percent of the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) cost of the beneficial use project; and (e) hold and save the United States free from damages due to the construction or operation and maintenance of the project, except for damages due to the fault or negligence of the United States or its contractors. Where the value of LERRD and the non-Federal cash contribution will exceed 35 percent, any additional cost of the project shall be a Federal responsibility not to exceed 65 percent of the project costs. The non-Federal sponsor shall receive credit for the value of in-kind contributions against the requirement for additional cash to bring the non-Federal share of the project to 35 percent in accordance with the provisions of SEC. 2003 of WRDA 2007 and the implementing guidance that will be issued for that provision.

(3) Hurricane and Storm Damage Reduction. (For example placing dredged sand on a beach or shoreline to provide for hurricane and storm damage reduction.) Non-Federal responsibilities are: (a) provide all LERRD; (b) pay any cash contribution during construction necessary so that the total contribution of the non-Federal interest including value of LERRD will be 35 percent of the cost of the project; (c) pay 100 percent of the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) cost of the beneficial use project; and (e) hold and save the United States free from damages due to the construction or operation and maintenance of the project, except for damages due to the fault or negligence of the United States or its contractors. The non-Federal sponsor shall receive credit for the value of in-kind contributions against the requirement for additional cash to bring the non-Federal share of the project to 35 percent in accordance with the provisions of SEC. 2003 of WRDA 2007 and the implementing guidance that will be issued for that provision. The authority of Section 204 will not be used to renourish authorized Federal shore protection projects.

(4) Environmental Protection and Restoration. (For example, creation of a wetland with dredged material.) Non-Federal responsibilities are: (a) provide all LERRD; (b) pay any cash contribution during construction necessary so that the total contribution of the non-Federal interest including value of LERRD will be 35 percent of the cost of the project; (c) pay 100 percent of the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) cost of the beneficial use project; and (e) hold and save the United States free from damages due to the construction or operation and maintenance of the project, except for damages due to the fault or negligence of the United States or its contractors. It is anticipated that projects to beneficially use sediments for protection, restoration and creation of aquatic and biologically related habitat including wetlands will not require extensive land acquisition. The non-Federal sponsor shall receive credit for the value of in-kind contributions against the requirement for additional cash to bring the non-Federal share of the project to 35 percent in accordance with the provisions of SEC. 2003 of WRDA 2007 and the implementing guidance that will be issued for that provision. Note that the 75 Federal and 25 non-Federal cost sharing for protection, restoration and creation of aquatic and biologically related habitat including wetlands originally contained in section 204 has been eliminated by the modification of Section 204 in Section 2037 of WRDA 2007. The new cost sharing applies to any Section 204 project where a project partnership agreement has not been signed as of the date of enactment of WRDA 2007 (November 8, 2007).

d. Funding and Special Cost Sharing Rule. Projects for the purposes of protection, restoration, or creation of aquatic and ecologically related habitat the costs of which do not exceed $750,000 and which are located in a disadvantaged community may be carried out at Federal expense. Not more than $3 million of any annual appropriation for Section 204 may be used for these projects. Projects recommended for disadvantaged communities under this special cost sharing rule shall be identified in regional sediment management plans. The plans must justify the designation of the project as being located in a disadvantaged community by presentation of information on per capita income, employment, and other relevant factors and the approval of the project for special cost sharing will be accomplished in conjunction with the Alternative Formulation Briefing for the study.

6. Selection of Dredged Material Disposal Method for Environmental Purposes. Section 204 (d) of amended Section 204 authorizes that in developing and carrying out a Federal water resource project involving the disposal of dredged material the Secretary of the Army may select, with the consent of the non-Federal interest, a disposal method that is not the least cost option, if the Secretary determines that the incremental costs of the disposal method are reasonable in relation to the environmental benefits, including the benefits to the aquatic environment to be derived from the creation of wetlands and control of shoreline erosion. This provision generally parallels the language of Section 204 (e) of the provision before its WRDA 07 modification. The provision was added to Section 204 by Section 207 of the Water Resources Development Act of 1996. The guidance on implementation of "Section 207" was originally issued in Policy Guidance Letter 56 dated 5 November 1999 and later incorporated in Paragraph E-14 g of Appendix E of ER 1105-2-100. As indicated in that guidance the authorities established by "Section 207" are separate and distinct from the authority established by Section 204 and are most applicable for adding environmental beneficial use in connection with new navigation projects or in conjunction with maintenance dredging when the incremental cost is large. Projects under the Section 207 authority are separately budgeted and do not count toward the Section 204 programmatic limit. This previous guidance remains applicable to Section 204(d) except that Section 204(d) provides that cost sharing will be accordance with Section 103 of the Water Resources Development Act of 1986 (33 U.S.C. 2213). That means that the environmental protection and restoration cost sharing of 65 percent Federal and 35 percent non-Federal will apply as presented in paragraph 4C (4). Existing guidance provides for 75 percent Federal and 25 percent non-Federal cost sharing as authorized by the previous Section 204 before its amendment in WRDA 2007 and is no longer applicable.

7. Priority Areas. Section 2037 provides that a regional management project will be given priority in vicinity of the following locations. These areas will be considered in establishing priorities for Section 204 programmatic funding.

a. Little Rock Slackwater Harbor, Arkansas
b. Fletcher Cove, California
c. Egmont Key, Florida
d. Calcasieu Ship Channel, Louisiana
e. Delaware River Estuary, New York and Pennsylvania
f. Fire Island Inlet, Suffolk County, New York
g. Smith Point Park Pavilion and the TWA Flight 800 Memorial, Brookhaven, New York
h. Morehead City, North Carolina
i. Toledo Harbor, Lucas County, Ohio
j. Galveston Bay, Texas
k. Benson Beach, Washington

8. Applicability. The amendments to Section 204 are applicable upon the date of enactment of WRDA 2007 (8 November 2007) except that the Secretary may complete any project being carried out under Section 145 of the Water Resources Development Act of 1976 on the day before the date of enactment of this Act. The execution of a Project Cooperation Agreement (Project Partnership Agreement) will constitute a project being "carried out" under Section 145. Section 204 and Section 145 studies being cost shared under the terms of Feasibility Cost Sharing Agreements (FCSA's) executed before the enactment of the amendments to Section 204 (prior to 8 November 2007) will continue to be cost shared in accordance with the terms of the executed FCSA's. Section 204 projects being constructed under the terms of Project Cooperation Agreements executed prior to 8 November 2007 will be completed under the terms of the Project Cooperation Agreements.

9. Permanent Guidance. The guidance in this memorandum will be incorporated into the permanent guidance of ER 1105-2-100 as the ER is updated.

FOR THE COMMANDER:

STEVEN L. STOCKTON, P.E.
Director of Civil Works

CECW-P
SUBJECT: Implementation Guidance for Regional Sediment Management – Section 2037 of the Water Resources Development Act of 2007 (WRDA 2007)

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# Appendix H1: Comparison of Alternative Costs (650,000 CY)

**Cleveland Harbor – Interim Dredged Material Management Cost Considerations (650,000 CY Total Over 3 Years)** **DRAFT**

| Cost Categories | Cost Item | Pershing Ave. Site (CVIC) (costs from John Hull) Unit Cost per CY | Zaclon Property | Upper River Parcel (LRB Cost Estimate) Unit Cost per CY Option 1 12 Acre Site | Upper River Parcel (LRB Cost Estimate) Unit Cost per CY Option 2 25 Acre Site | Waterfront CDF (LRB Cost Estimate) Unit Cost per CY Option 3 Hydraulic Placement | Waterfront CDF (LRB Cost Estimate) Unit Cost per CY Option 4 Mechanical Placement |
|---|---|---|---|---|---|---|---|
| | | **Brook Park & Silver Oaks** | | **Brook Park & Silver Oaks** | **Brook Park & Silver Oaks** | **Brook Park & Silver Oaks** | **Brook Park & Silver Oaks** |
| Material Handling | LERRDs (includes RE Acquisition) | $3.50 | | $0.71 | $1.49 | $0.00 | $0.00 |
| Material Handling | Site Preparation | $4.30 | | $1.33 | $1.64 | $0.73 | $2.27 |
| Material Handling | Transport to Site | $7.10 | | $4.03 | $4.03 | $0.00 | $4.03 |
| Material Handling | Material Handling, Drying | $2.25 | | $4.02 | $4.02 | $5.78 | $4.02 |
| Material Handling | Transport to End Use (Silver Oaks or Brook Park)* | $9.16 | | $9.16 | $9.16 | $10.20 | $10.20 |
| Material Handling | Permitting & Regulatory | $1.80 | | $0.35 | $0.38 | $0.38 | $0.38 |
| | **TOTAL MH** | **$28.11** | **$42.00** | **$19.60** | **$20.72** | **$17.09** | **$20.90** |
| Dredging | Dredging | $7.00 | $11.17 | $7.00 | $7.00 | $11.17 | $7.65 |
| | **TOTAL MH & DREDGING** | **$35.11** | **$53.17** | **$26.60** | **$27.72** | **$28.26** | **$28.55** |
| | **Project Management, Engineering & Design, Supervision & Administration** | N/A | N/A | $1.38 | $1.38 | $1.38 | $1.38 |
| | **Contingency** | $0.00 | N/A ( No Costs Provided by Joe Ditchman) | $3.42 | $3.50 | $3.32 | $4.83 |
| | **TOTAL CY COST** | **$35.11** | **$53.17** | **$31.41** | **$32.60** | **$32.96** | **$34.76** |
| | **Notes** | Cost estimates for LERRDs (Airspace), Transport, and Material Handling provided by John Hull (Hull & Associates). | Unverified cost supplied by site representative, Joe Ditchman,, includes receipt of hydraulically dredged material, dewatering/processing, and truck transport to end state use. Implementing this concept as early as 2012 is highly suspect due to ownership and remediation issues. As dredging costs were not originally included with overall cost, unit costs for dredging with hydraulic pumpout were added to be consistent with other alternatives evaluated. | Costs for 12-acre site option. | Costs for 25-acre site option. | Material Handling at CDF. Wick Drains included to accelerate dewatering of the Dredged material. | Material Handling at CDF. |
| | | Transportation costs to End Use added by LRB to be consistent with costs estimated for other alternatives. | | Due to Site Size, implement ability of this option may be limited due to volumetric restrictions. | Due to Site Size, implement ability of this option may be limited due to volumetric restrictions. | Costs for Hydraulic Placement and Material Handling. Implementability of hydraulic placement option in 2012 is unlikely due to dewatering time requirements. | Costs for Mechanical Placement and Material Handling. |
| | | | | | | | |
| | | *Weighted costs developed for transportation to end use site. A total of 450,00 CY to Brook Park and 250,000 CY to Silver Oaks was assumed. The following formula was used in determining the transportation costs: (( 450,000 CY * Transportation cost for Brooke Park) + ( 200,000 CY * Transportation cost for Silver Oaks))/ 650,000 CY | | | | | |

# Appendix H2 Option 1: Detailed Cost Estimate for 12-acre Upper River Material Handling Site

Estimated by Paul H Farrell, USACE

Designed by Tom Borrowman, ERDC

Prepared by Paul H Farrell, USACE

Preparation Date 12/13/2010

Effective Date of Pricing 12/13/2010

Estimated Construction Time 180 Days

*Right click here and select "Update Field" to build the Table of Contents for this report.*

| Date | Author | Note |
|---|---|---|
| 12/28/2010 | PHF | All Unit Costs were developed as per ERDC's request. |
| 12/28/2010 | PHF | No design documents were provided in determining Quantities. Reference materials were provided, Estimators judgement and assumptions noted where necessary. |
| 1/7/2011 | PHF | All quantities of materials were provided by ERDC on the Cover Speadsheet hightlight the major cost items.<br>This cost estimate covers the components of each cost element and develops a unit cost to mulitply against the quantities developed by ERDC. |
| 2/14/2011 | PHF | Project Contingency used is 12.4%. This percentage was determined using the Abbreviated Cost Risk Analysis Spreadsheet for projects less than 40 million. The detailed spreadsheet can be found under the Cost Contingency analysis Option 1 Tab. |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| **Project Cost** | | | **18,189,969.49** | **0.00** | **2,255,556.22** | **0.00** | **20,445,525.70** |
| | | | *38,720.00* | | | | *43,521.28* |
| **Item 1 Land Acquisition** | **12.0** | **ACR** | **464,640.00** | **0.00** | **57,615.36** | **0.00** | **522,255.36** |
| | | | *38,720.00* | | | | *43,521.28* |
| **1.a Land** | **12.0** | **ACR** | **464,640.00** | **0.00** | **57,615.36** | **0.00** | **522,255.36** |
| | | | *862,872.29* | | | | *969,868.45* |
| **Item 2 Site Preparation and Construction** | **1.0** | **EA** | **862,872.29** | **0.00** | **106,996.16** | **0.00** | **969,868.45** |
| **2.a Mob/Demob** | **3.0** | **LS** | **308,528.36** | **0.00** | **38,257.52** | **0.00** | **346,785.87** |
| | | | *3,774.10* | | | | *4,242.08* |
| **2.b Clearing & Grubbing** | **8.7** | **ACR** | **32,834.64** | **0.00** | **4,071.50** | **0.00** | **36,906.13** |
| **2.c Equipment & Scrap removal** | **1.0** | **LS** | **121,000.00** | **0.00** | **15,004.00** | **0.00** | **136,004.00** |
| | | | *0.99* | | | | *1.11* |
| **2.d Site Grading** | **475.0** | **BCY** | **469.18** | **0.00** | **58.18** | **0.00** | **527.36** |
| | | | *3.55* | | | | *3.99* |
| **2.e Construct Retention Pond & Outfall** | **1,608.0** | **BCY** | **5,701.57** | **0.00** | **706.99** | **0.00** | **6,408.56** |
| | | | *51.68* | | | | *58.09* |
| **2.f Construct Facility Runoff Berms** | **3,558.0** | **LF** | **183,871.95** | **0.00** | **22,800.12** | **0.00** | **206,672.07** |
| | | | *34.39* | | | | *38.66* |
| **2.g Construct/Upgrade Haul Road** | **3,842.0** | **LF** | **132,145.24** | **0.00** | **16,386.01** | **0.00** | **148,531.25** |
| | | | *19,808.81* | | | | *22,265.10* |
| **2.h Site Erosion Control** | **0.7** | **ACR** | **14,658.52** | **0.00** | **1,817.66** | **0.00** | **16,476.17** |
| **2.i Construct Wharf Staging Area/Offloading Site** | **1.0** | **LS** | **63,662.84** | **0.00** | **7,894.19** | **0.00** | **71,557.03** |
| | | | *7.01* | | | | *7.88* |
| **Item 3 Dredging Operations** | **650,000.0** | **CY** | **4,555,161.00** | **0.00** | **564,839.96** | **0.00** | **5,120,000.96** |
| | | | *231,387.00* | | | | *260,078.99* |
| **3.a Mob/Demob of Dredging Equipment** | **3.0** | **EA** | **694,161.00** | **0.00** | **86,075.96** | **0.00** | **780,236.96** |
| | | | *5.94* | | | | *6.68* |
| **3.b Dredging Operations** | **650,000.0** | **CY** | **3,861,000.00** | **0.00** | **478,764.00** | **0.00** | **4,339,764.00** |
| | | | *4.03* | | | | *4.53* |
| **Item 4 Transportation to Material Handling Site** | **650,000.0** | **CY** | **2,619,067.28** | **0.00** | **324,764.34** | **0.00** | **2,943,831.62** |
| | | | *2.30* | | | | *2.59* |
| **4.a Offloading Scows into Haul Trucks** | **650,000.0** | **CY** | **1,495,127.61** | **0.00** | **185,395.82** | **0.00** | **1,680,523.44** |
| | | | *1.73* | | | | *1.94* |
| **4.b Truck Transport Hauling Costs** | **650,000.0** | **CY** | **1,123,939.67** | **0.00** | **139,368.52** | **0.00** | **1,263,308.18** |
| | | | *4.01* | | | | *4.51* |
| **Item 5 Operations and Maintenance - Material Handling** | **650,000.0** | **CY** | **2,609,423.92** | **0.00** | **323,568.57** | **0.00** | **2,932,992.48** |
| | | | *1.38* | | | | *1.56* |
| **5.a Material Handling/Material Turn Over** | **650,000.0** | **CY** | **899,627.17** | **0.00** | **111,553.77** | **0.00** | **1,011,180.93** |
| | | | *1.38* | | | | *1.56* |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| **5.b Stockpiling** | **650,000.0** | **CY** | **899,627.17** | **0.00** | **111,553.77** | **0.00** | **1,011,180.93** |
| | | | *1.07* | | | | *1.20* |
| **5.c Load Out** | **650,000.0** | **CY** | **694,214.77** | **0.00** | **86,082.63** | **0.00** | **780,297.41** |
| | | | *0.06* | | | | *0.07* |
| **5.d Dust Control** | **650,000.0** | **CY** | **40,954.81** | **0.00** | **5,078.40** | **0.00** | **46,033.21** |
| **5.e Annual Site Maintenance** | **3.0** | **LS** | **75,000.00** | **0.00** | **9,300.00** | **0.00** | **84,300.00** |
| | | | *9.16* | | | | *10.30* |
| **Item 6 Transport to Silver Oaks Landfill** | **650,000.0** | **CY** | **5,953,805.00** | **0.00** | **738,271.82** | **0.00** | **6,692,076.82** |
| | | | *9.16* | | | | *10.30* |
| **6.a Arcelor Mittal to Silver Oaks Trucking** | **650,000.0** | **CY** | **5,953,805.00** | **0.00** | **738,271.82** | **0.00** | **6,692,076.82** |
| | | | *75,000.00* | | | | *84,300.00* |
| **Item 7 Permitting and Regulatory** | **3.0** | **EA** | **225,000.00** | **0.00** | **27,900.00** | **0.00** | **252,900.00** |
| **Item 8 Project Management, E & D, S & A** | **3.0** | **LS** | **900,000.00** | **0.00** | **111,600.00** | **0.00** | **1,011,600.00** |
| | | | *150,000.00* | | | | *168,600.00* |
| **8.a Overhead and Management** | **3.0** | **EA** | **450,000.00** | **0.00** | **55,800.00** | **0.00** | **505,800.00** |
| | | | *75,000.00* | | | | *84,300.00* |
| **8.b Engineering & Design** | **3.0** | **EA** | **225,000.00** | **0.00** | **27,900.00** | **0.00** | **252,900.00** |
| | | | *75,000.00* | | | | *84,300.00* |
| **8.c Supervision & Administration** | **3.0** | **EA** | **225,000.00** | **0.00** | **27,900.00** | **0.00** | **252,900.00** |

| Description | Quantity | UOM | Contractor | DirectLabor | DirectEQ | DirectMatl | DirectCost | DirectSubBid | DirectUserCost | DirectCost |
|---|---|---|---|---|---|---|---|---|---|---|
| **Project Direct Summary** | | | | 1,540,839.33 | 3,091,357.63 | 624,004.27 | 16,031,862.23 | 10,775,661.00 | 0.00 | 16,031,862.23 |
| **Item 1 Land Acquisition** | 12.0 | ACR | Contractor Zulu | 0.00 | 0.00 | 384,000.00 | 384,000.00 | 0.00 | 0.00 | 384,000.00 |
| **1.a Land** | 12.0 | ACR | Contractor Zulu | 0.00 | 0.00 | 384,000.00 | 384,000.00 | 0.00 | 0.00 | 384,000.00 |
| **Item 2 Site Preparation and Construction** | 1.0 | EA | Contractor Zulu | 159,902.02 | 213,211.31 | 240,004.27 | 713,117.60 | 100,000.00 | 0.00 | 713,117.60 |
| **2.a Mob/Demob** | 3.0 | LS | Contractor Zulu | 85,322.55 | 169,659.56 | 0.00 | 254,982.11 | 0.00 | 0.00 | 254,982.11 |
| **2.b Clearing & Grubbing** | 8.7 | ACR | Contractor Zulu | 20,507.77 | 6,628.30 | 0.00 | 27,136.06 | 0.00 | 0.00 | 27,136.06 |
| **2.c Equipment & Scrap removal** | 1.0 | LS | Contractor Zulu | 0.00 | 0.00 | 0.00 | 100,000.00 | 100,000.00 | 0.00 | 100,000.00 |
| **2.d Site Grading** | 475.0 | BCY | Contractor Zulu | 129.25 | 258.51 | 0.00 | 387.75 | 0.00 | 0.00 | 387.75 |
| **2.e Construct Retention Pond & Outfall** | 1,608.0 | BCY | Contractor Zulu | 1,402.08 | 3,309.96 | 0.00 | 4,712.04 | 0.00 | 0.00 | 4,712.04 |
| **2.f Construct Facility Runoff Berms** | 3,558.0 | LF | Contractor Zulu | 24,094.10 | 25,251.39 | 102,614.80 | 151,960.29 | 0.00 | 0.00 | 151,960.29 |
| **2.g Construct/Upgrade Haul Road** | 3,842.0 | LF | Contractor Zulu | 7,007.59 | 5,394.11 | 96,809.25 | 109,210.94 | 0.00 | 0.00 | 109,210.94 |
| **2.h Site Erosion Control** | 0.7 | ACR | Contractor Zulu | 9,710.31 | 542.95 | 1,861.22 | 12,114.48 | 0.00 | 0.00 | 12,114.48 |
| **2.i Construct Wharf Staging Area/Offloading Site** | 1.0 | LS | Contractor Zulu | 11,728.38 | 2,166.54 | 38,719.00 | 52,613.92 | 0.00 | 0.00 | 52,613.92 |
| **Item 3 Dredging Operations** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 4,555,161.00 | 4,555,161.00 | 0.00 | 4,555,161.00 |
| **3.a Mob/Demob of Dredging Equipment** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 694,161.00 | 694,161.00 | 0.00 | 694,161.00 |
| **3.b Dredging Operations** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 3,861,000.00 | 3,861,000.00 | 0.00 | 3,861,000.00 |
| **Item 4 Transportation to Material Handling Site** | 650,000.0 | CY | Contractor Zulu | 526,374.03 | 1,638,144.38 | 0.00 | 2,164,518.41 | 0.00 | 0.00 | 2,164,518.41 |
| **4.a Offloading Scows into Haul Trucks** | 650,000.0 | CY | Contractor Zulu | 300,704.02 | 934,938.63 | 0.00 | 1,235,642.65 | 0.00 | 0.00 | 1,235,642.65 |
| **4.b Truck Transport Hauling Costs** | 650,000.0 | CY | Contractor Zulu | 225,670.01 | 703,205.75 | 0.00 | 928,875.76 | 0.00 | 0.00 | 928,875.76 |
| **Item 5 Operations and Maintenance - Material Handling** | 650,000.0 | CY | Contractor Zulu | 854,563.27 | 1,240,001.95 | 0.00 | 2,169,565.22 | 75,000.00 | 0.00 | 2,169,565.22 |
| **5.a Material Handling/Material Turn Over** | 650,000.0 | CY | Contractor Zulu | 320,355.90 | 423,137.62 | 0.00 | 743,493.52 | 0.00 | 0.00 | 743,493.52 |
| **5.b Stockpiling** | 650,000.0 | CY | Contractor Zulu | 320,355.90 | 423,137.62 | 0.00 | 743,493.52 | 0.00 | 0.00 | 743,493.52 |
| **5.c Load Out** | 650,000.0 | CY | Contractor Zulu | 213,851.47 | 359,879.75 | 0.00 | 573,731.22 | 0.00 | 0.00 | 573,731.22 |
| **5.d Dust Control** | 650,000.0 | CY | Contractor Zulu | 0.00 | 33,846.95 | 0.00 | 33,846.95 | 0.00 | 0.00 | 33,846.95 |
| **5.e Annual Site Maintenance** | 3.0 | LS | Contractor Zulu | 0.00 | 0.00 | 0.00 | 75,000.00 | 75,000.00 | 0.00 | 75,000.00 |
| **Item 6 Transport to Silver Oaks Landfill** | 650,000.0 | CY | Contractor Zulu | 0.00 | 0.00 | 0.00 | 4,920,500.00 | 4,920,500.00 | 0.00 | 4,920,500.00 |
| **6.a Arcelor Mittal to Silver Oaks Trucking** | 650,000.0 | CY | Contractor Zulu | 0.00 | 0.00 | 0.00 | 4,920,500.00 | 4,920,500.00 | 0.00 | 4,920,500.00 |
| **Item 7 Permitting and Regulatory** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |
| **Item 8 Project Management, E & D, S & A** | 3.0 | LS | Contractor Zulu | 0.00 | 0.00 | 0.00 | 900,000.00 | 900,000.00 | 0.00 | 900,000.00 |
| **8.a Overhead and Management** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 450,000.00 | 450,000.00 | 0.00 | 450,000.00 |
| **8.b Engineering & Design** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |
| **8.c Supervision & Administration** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **Alt. View** | | | | | | | | |
| **1 Item 1 Land Acquisition** | | | | | | | | |
| **1.1 1.a Land** | | | | | | | | |
| *1.1.1 Land Acre Cost* | *12* | *ACR* | *1 Contractor Zulu* | *384,000* | *0* | *384,000* | *80,640* | *464,640* |
| **2 Item 2 Site Preparation and Construction** | | | | | | | | |
| **2.1 2.a Mob/Demob** | | | | | | | | |
| **2.1.1 Equipment** | | | | | | | | |
| *2.1.1.1 LOADER, FRONT END, CRAWLER, 3.20 CY BUCKET* | *48* | *HR* | *1 Contractor Zulu* | *3,451* | *0* | *3,451* | *725* | *4,175* |
| *2.1.1.2 BRUSH CHIPPER, 13" CAPACITY, DRUM TYPE, TRAILER MTD* | *48* | *HR* | *1 Contractor Zulu* | *828* | *0* | *828* | *174* | *1,002* |
| *2.1.1.3 LOADER / BACKHOE, WHEEL, 0.80 CY FRONT END BUCKET, 24" DIP, 4.3 CF, 12' DIGGING DEPTH, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *911* | *0* | *911* | *191* | *1,102* |
| *2.1.1.4 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.5 TRACTOR, CRAWLER (DOZER), 341-440 HP (254-328 KW), POWERSHIFT, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *7,837* | *0* | *7,837* | *1,646* | *9,483* |
| *2.1.1.6 TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.7 ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6.6 TON, 56" WIDE, 2X1, ASPHALT COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,069* | *0* | *2,069* | *435* | *2,504* |
| *2.1.1.8 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,499* | *0* | *2,499* | *525* | *3,024* |
| *2.1.1.9 CRANES, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 5.0 CY, 130' BOOM (ADD BUCKET)* | *192* | *HR* | *1 Contractor Zulu* | *31,251* | *0* | *31,251* | *6,563* | *37,814* |
| *2.1.1.10 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *192* | *HR* | *1 Contractor Zulu* | *24,151* | *0* | *24,151* | *5,072* | *29,223* |
| *2.1.1.11 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 29 CY, 40 TON, 6X6, REAR DUMP* | *48* | *HR* | *1 Contractor Zulu* | *5,243* | *0* | *5,243* | *1,101* | *6,344* |
| *2.1.1.12 LOADER, FRONT END, WHEEL, SKID-STEER, 13.0 CF, 60" BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *516* | *0* | *516* | *108* | *624* |
| *2.1.1.13 LOADER, FRONT END, WHEEL, ARTICULATED, 7.00 CY (5.4 M3) BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *6,644* | *0* | *6,644* | *1,395* | *8,039* |
| *2.1.1.14 HYDRAULIC EXCAVATOR, CRAWLER, 140,000 LB (63,503 KG), 3.50 CY (2.7 M3) BUCKET, 31.4' (9.6 M) MAX DIGGING DEPTH* | *48* | *HR* | *1 Contractor Zulu* | *7,233* | *0* | *7,233* | *1,519* | *8,752* |
| *2.1.1.15 ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 3 TON (2.7 MT), 47" (1.2 M) WIDE, SOIL COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *1,049* | *0* | *1,049* | *220* | *1,269* |
| **2.1.2 Truck Transportation of Equipment** | | | | | | | | |
| *2.1.2.1 TRUCK TRAILER, LOWBOY, 75 TON, 3 AXLE (ADD TOWING TRUCK)* | *1,104* | *HR* | *1 Contractor Zulu* | *11,238* | *0* | *11,238* | *2,360* | *13,598* |
| *2.1.2.2 TRUCK, HIGHWAY, 75,000 LBS GVW, 2 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)* | *1,104* | *HR* | *1 Contractor Zulu* | *54,388* | *0* | *54,388* | *11,422* | *65,810* |
| **2.1.3 Labor to Mob.Demob Equipment** | | | | | | | | |
| *2.1.3.1 Outside Equip. Operators, Medium* | *1,104* | *HR* | *1 Contractor Zulu* | *47,765* | *0* | *47,765* | *10,031* | *57,795* |
| *2.1.3.2 Outside Truck Drivers, Heavy* | *1,104* | *HR* | *1 Contractor Zulu* | *37,558* | *0* | *37,558* | *7,887* | *45,445* |
| **2.2 2.b Clearing & Grubbing** | | | | | | | | |
| *2.2.1 Clearing & grubbing, cut & chip light trees, to 6" diameter* | *9* | *ACR* | *1 Contractor Zulu* | *27,136* | *0* | *27,136* | *5,699* | *32,835* |
| **2.3 2.c Equipment & Scrap removal** | | | | | | | | |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| 2.3.1 2.c Equipment & Scrap Removal | 1 | LS | 1 Contractor Zulu | 100,000 | 0 | 100,000 | 21,000 | 121,000 |
| **2.4 2.d Site Grading** | | | | | | | | |
| 2.4.1 Rough grading, open site, large area, 300 H.P., dozer | 475 | BCY | 1 Contractor Zulu | 388 | 0 | 388 | 81 | 469 |
| **2.5 2.e Construct Retention Pond & Outfall** | | | | | | | | |
| 2.5.1 Excavate and load, bank measure, medium material, 5 C.Y. bucket, hydraulic excavator | 1,608 | BCY | 1 Contractor Zulu | 1,580 | 0 | 1,580 | 332 | 1,911 |
| 2.5.2 Shape enbankment, slope greater than 1 in 4, by machine | 1,608 | BCY | 1 Contractor Zulu | 1,875 | 0 | 1,875 | 394 | 2,268 |
| 2.5.3 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP | 10 | HR | 1 Contractor Zulu | 1,258 | 0 | 1,258 | 264 | 1,522 |
| **2.6 2.f Construct Facility Runoff Berms** | | | | | | | | |
| 2.6.1 Shape enbankment, slope greater than 1 in 4, by machine | 12,809 | SY | 1 Contractor Zulu | 14,933 | 0 | 14,933 | 3,136 | 18,069 |
| 2.6.2 Fill by borrow and utility bedding, borrow, for embankments, 1 mile haul, spread, by dozer | 11,528 | LCY | 1 Contractor Zulu | 111,392 | 0 | 111,392 | 23,392 | 134,784 |
| 2.6.3 Geotextile soil stabilization, geotextile fabric, woven, heavy duty, 600 lb. tensile strength | 11,848 | SY | 1 Contractor Zulu | 25,636 | 0 | 25,636 | 5,383 | 31,019 |
| **2.7 2.g Construct/Upgrade Haul Road** | | | | | | | | |
| 2.7.1 Aggregate for earthwork, crushed stone, 1.40 tons per C.Y., 1-1/2", spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction | 1,845 | CY | 1 Contractor Zulu | 95,618 | 0 | 95,618 | 20,080 | 115,698 |
| 2.7.2 Compaction, riding, vibrating roller, 4 passes, 12" lifts | 1,845 | ECY | 1 Contractor Zulu | 708 | 0 | 708 | 149 | 857 |
| 2.7.3 Geotextile soil stabilization, geotextile fabric, woven, heavy duty, 600 lb. tensile strength | 5,955 | SY | 1 Contractor Zulu | 12,885 | 0 | 12,885 | 2,706 | 15,591 |
| **2.8 2.h Site Erosion Control** | | | | | | | | |
| 2.8.1 Topsoil placement and grading, loam or topsoil, fine grading and seeding, with equipment | 1 | ACR | 1 Contractor Zulu | 10,461 | 0 | 10,461 | 2,197 | 12,658 |
| 2.8.2 Erosion control, silt fence, polypropylene, fence only, 3' high | 619 | LF | 1 Contractor Zulu | 1,654 | 0 | 1,654 | 347 | 2,001 |
| **2.9 2.i Construct Wharf Staging Area/Offloading Site** | | | | | | | | |
| 2.9.1 Erosion control, silt fence, polypropylene, fence only, 3' high | 900 | LF | 1 Contractor Zulu | 2,404 | 0 | 2,404 | 505 | 2,909 |
| 2.9.2 Security vehicle barriers, concrete barrier, jersey, 20' L x 2' by 0.5' W x 32" H | 45 | EA | 1 Contractor Zulu | 46,152 | 0 | 46,152 | 9,692 | 55,844 |
| **2.9.1 Water Control** | | | | | | | | |
| 2.9.1.1 Public Storm Utility Drainage Piping, corrugated metal pipe, galvanized and bituminous coated/w paved invert, 20' lengths, 16 ga., 8" diameter, excludes excavation and backfill | 20 | LF | 1 Contractor Zulu | 363 | 0 | 363 | 76 | 439 |
| 2.9.1.2 Rough grading, open site, small area, 75 H.P., dozer | 1,115 | BCY | 1 Contractor Zulu | 1,024 | 0 | 1,024 | 215 | 1,239 |
| 2.9.1.3 Public Storm Utility Drainage Piping, concrete, box culvert, cast in place, 6' x 6', excludes excavation or backfill | 6 | LF | 1 Contractor Zulu | 2,537 | 0 | 2,537 | 533 | 3,069 |
| 2.9.1.4 Excavating, trench or continuous footing, common earth, 1-1/2 C.Y. excavator, 4' to 6' deep, excludes sheeting or dewatering | 50 | BCY | 1 Contractor Zulu | 134 | 0 | 134 | 28 | 162 |
| **3 Item 3 Dredging Operations** | | | | | | | | |
| **3.1 3.a Mob/Demob of Dredging Equipment** | | | | | | | | |
| 3.1.1 Mob/Demob of Dredging Equipment | 3 | LS | | 694,161 | 0 | 0 | 0 | 694,161 |
| **3.2 3.b Dredging Operations** | | | | | | | | |
| 3.2.1 Dredging | 650,000 | EA | | 3,861,000 | 0 | 0 | 0 | 3,861,000 |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **4 Item 4 Transportation to Material Handling Site** | | | | | | | | |
| **4.1 4.a Offloading Scows into Haul Trucks** | | | | | | | | |
| **4.1.1 Equipment** | | | | | | | | |
| *4.1.1.1 CRANES, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 5.0 CY, 130' BOOM (ADD BUCKET)* | *3,698* | *HR* | *1 Contractor Zulu* | *601,914* | *0* | *601,914* | *126,402* | *728,316* |
| *4.1.1.2 LOADER, FRONT END, WHEEL, SKID-STEER, 13.0 CF, 60" BUCKET, 4X4* | *650* | *HR* | *1 Contractor Zulu* | *6,983* | *0* | *6,983* | *1,466* | *8,450* |
| *4.1.1.3 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *650* | *HR* | *1 Contractor Zulu* | *33,847* | *0* | *33,847* | *7,108* | *40,955* |
| *4.1.1.4 LOADER, FRONT END, WHEEL, 9.00 CY BUCKET, ARTICULATED, 4X4* | *2,111* | *HR* | *1 Contractor Zulu* | *292,195* | *0* | *292,195* | *61,361* | *353,556* |
| **4.1.2 Labor** | | | | | | | | |
| *4.1.2.1 Outside Equip. Operators, Heavy* | *5,809* | *HR* | *1 Contractor Zulu* | *251,326* | *0* | *251,326* | *52,778* | *304,105* |
| *4.1.2.2 Outside Equip. Operators, Light* | *650* | *HR* | *1 Contractor Zulu* | *27,265* | *0* | *27,265* | *5,726* | *32,991* |
| *4.1.2.3 Outside Truck Drivers, Heavy* | *650* | *HR* | *1 Contractor Zulu* | *22,113* | *0* | *22,113* | *4,644* | *26,757* |
| **4.2 4.b Truck Transport Hauling Costs** | | | | | | | | |
| *4.2.1 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *5,216* | *HR* | *1 Contractor Zulu* | *656,116* | *0* | *656,116* | *137,784* | *793,900* |
| *4.2.2 Outside Equip. Operators, Heavy* | *5,216* | *HR* | *1 Contractor Zulu* | *225,670* | *0* | *225,670* | *47,391* | *273,061* |
| *4.2.3 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *1,738* | *HR* | *1 Contractor Zulu* | *47,090* | *0* | *47,090* | *9,889* | *56,979* |
| **5 Item 5 Operations and Maintenance - Material Handling** | | | | | | | | |
| **5.1 5.a Material Handling/Material Turn Over** | | | | | | | | |
| *5.1.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.2 5.b Stockpiling** | | | | | | | | |
| *5.2.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.3 5.c Load Out** | | | | | | | | |
| *5.3.1 Excavate and load, bank measure, medium material, 7 C.Y. bucket, wheeled loader* | *650,000* | *BCY* | *1 Contractor Zulu* | *573,731* | *0* | *573,731* | *120,484* | *694,215* |
| **5.4 5.d Dust Control** | | | | | | | | |
| *5.4.1 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *650* | *HR* | *1 Contractor Zulu* | *33,847* | *0* | *33,847* | *7,108* | *40,955* |
| **5.5 5.e Annual Site Maintenance** | | | | | | | | |
| *5.5.1 Annual Site Maintenance* | *3* | *LS* | | *75,000* | *0* | *0* | *0* | *75,000* |
| **6 Item 6 Transport to Silver Oaks Landfill** | | | | | | | | |
| **6.1 6.a Arcelor Mittal to Silver Oaks Trucking** | | | | | | | | |
| *6.1.1 Areclor Mittal to Silver Oaks Landfill* | *650,000* | *CY* | *1 Contractor Zulu* | *4,920,500* | *0* | *4,920,500* | *1,033,305* | *5,953,805* |
| **7 Item 7 Permitting and Regulatory** | | | | | | | | |
| *7.1 7.a Material Management Plan* | *3* | *EA* | | *60,000* | *0* | *0* | *0* | *60,000* |
| *7.2 7.b Site Pre-construction soil testing* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| *7.3 7.c Dredged sediment material monitoring* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| *7.4 7.d Site enviromental qaulity monitoring* | *3* | *EA* | | *15,000* | *0* | *0* | *0* | *15,000* |
| **8 Item 8 Project Management, E & D, S & A** | | | | | | | | |
| **8.1 8.a Overhead and Management** | | | | | | | | |
| *8.1.1 Overhead and Management* | *3* | *EA* | | *450,000* | *0* | *0* | *0* | *450,000* |
| **8.2 8.b Engineering & Design** | | | | | | | | |
| *8.2.1 Engineering & Design* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |
| **8.3 8.c Supervision & Administration** | | | | | | | | |
| *8.3.1 Supervision & Administration* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |

# Appendix H3 Option 2: Detailed Cost Estimate for 25-acre Upper River Material Handling Site

Estimated by Paul H Farrell, USACE
Designed by Tom Borrowman, ERDC
Prepared by Paul H Farrell, USACE
Preparation Date 12/13/2010
Effective Date of Pricing 12/13/2010
Estimated Construction Time 180 Days

Right click here and select "Update Field" to build the Table of Contents for this report.

| Date | Author | Note |
|---|---|---|
| 12/28/2010 | PHF | All Unit Costs were developed as per ERDC's request. |
| 12/28/2010 | PHF | No design documents were provided in determining Quantities. Reference materials were provided, Estimators judgement and assumptions noted where necessary. |
| 1/7/2011 | PHF | All quantities of materials were provided by ERDC on the Cover Speadsheet hightlight the major cost items. This cost estimate covers the components of each cost element and develops a unit cost to mulitply against the quantities developed by ERDC. |
| 2/14/2011 | PHF | Project Contingency used is 12.2%. this percentage was determined using the Abbreviated Cost Risk Analysis Spreadsheet for projects less than 40 million. The detailed spreadsheet can be found under the Cost Contingency Analysis Option2 Tab. |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| **Project Cost** | | | **18,899,541.01** | **0.00** | **2,305,744.00** | **0.00** | **21,205,285.01** |
| **Item 1 Land Acquisition** | **25.0** | **ACR** | *38,720.00* **968,000.00** | **0.00** | **118,096.00** | **0.00** | *43,443.84* **1,086,096.00** |
| **1.a Land** | **25.0** | **ACR** | *38,720.00* **968,000.00** | **0.00** | **118,096.00** | **0.00** | *43,443.84* **1,086,096.00** |
| **Item 2 Site Preparation and Construction** | **1.0** | **EA** | *1,068,856.03* **1,068,856.03** | **0.00** | **130,400.44** | **0.00** | *1,199,256.46* **1,199,256.46** |
| **2.a Mob/Demob** | **3.0** | **EA** | *102,842.79* **308,528.36** | **0.00** | **37,640.46** | **0.00** | *115,389.61* **346,168.82** |
| **2.b Clearing & Grubbing** | **16.7** | **ACR** | *3,774.10* **63,027.41** | **0.00** | **7,689.34** | **0.00** | *4,234.54* **70,716.75** |
| **2.c Equipment & Scrap removal** | **1.0** | **LS** | **121,000.00** | **0.00** | **14,762.00** | **0.00** | **135,762.00** |
| **2.d Site Grading** | **1,003.0** | **BCY** | *0.99* **990.71** | **0.00** | **120.87** | **0.00** | *1.11* **1,111.58** |
| **2.e Construct Retention Pond & Outfall** | **3,350.0** | **BCY** | *3.51* **11,751.43** | **0.00** | **1,433.67** | **0.00** | *3.94* **13,185.10** |
| **2.f Construct Facility Runoff Berms** | **5,540.0** | **LF** | *51.68* **286,301.47** | **0.00** | **34,928.78** | **0.00** | *57.98* **321,230.25** |
| **2.g Construct/Upgrade Haul Road** | **5,550.0** | **LF** | *34.38* **190,816.78** | **0.00** | **23,279.65** | **0.00** | *38.58* **214,096.43** |
| **2.h Site Erosion Control** | **1.2** | **ACR** | *19,806.11* **22,777.03** | **0.00** | **2,778.80** | **0.00** | *22,222.46* **25,555.82** |
| **2.i Construct Wharf Staging Area/Offloading Site** | **1.0** | **LS** | **63,662.84** | **0.00** | **7,766.87** | **0.00** | **71,429.71** |
| **Item 3 Dredging Operations** | **650,000.0** | **CY** | *7.01* **4,555,161.00** | **0.00** | **555,729.64** | **0.00** | *7.86* **5,110,890.64** |
| **3.a Mob/Demob of Dredging Equipment** | **3.0** | **EA** | *231,387.00* **694,161.00** | **0.00** | **84,687.64** | **0.00** | *259,616.21* **778,848.64** |
| **3.b Dredging Operations** | **650,000.0** | **CY** | *5.94* **3,861,000.00** | **0.00** | **471,042.00** | **0.00** | *6.66* **4,332,042.00** |
| **Item 4 Transportation to Material Handling Site** | **650,000.0** | **CY** | *4.03* **2,619,100.06** | **0.00** | **319,530.21** | **0.00** | *4.52* **2,938,630.27** |
| **4.a Offloading Scows into Haul Trucks** | **650,000.0** | **CY** | *2.30* **1,495,127.61** | **0.00** | **182,405.57** | **0.00** | *2.58* **1,677,533.18** |
| **4.b Truck Transport Hauling Costs** | **650,000.0** | **CY** | *1.73* **1,123,972.45** | **0.00** | **137,124.64** | **0.00** | *1.94* **1,261,097.09** |
| **Item 5 Operations and Maintenance - Material Handling** | **650,000.0** | **CY** | *4.01* **2,609,423.92** | **0.00** | **318,349.72** | **0.00** | *4.50* **2,927,773.64** |
| **5.a Material Handling/Material Turn Over** | **650,000.0** | **CY** | *1.38* **899,627.17** | **0.00** | **109,754.51** | **0.00** | *1.55* **1,009,381.68** |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| **5.b Stockpiling** | **650,000.0** | **CY** | *1.38* **899,627.17** | **0.00** | **109,754.51** | **0.00** | *1.55* **1,009,381.68** |
| **5.c Load Out** | **650,000.0** | **CY** | *1.07* **694,214.77** | **0.00** | **84,694.20** | **0.00** | *1.20* **778,908.98** |
| **5.d Dust Control** | **650,000.0** | **CY** | *0.06* **40,954.81** | **0.00** | **4,996.49** | **0.00** | *0.07* **45,951.30** |
| **5.e Annual Site Maintenance** | **3.0** | **EA** | *25,000.00* **75,000.00** | **0.00** | **9,150.00** | **0.00** | *28,050.00* **84,150.00** |
| **Item 6 Transport to End Use Site** | **650,000.0** | **CY** | *9.16* **5,954,000.00** | **0.00** | **726,388.00** | **0.00** | *10.28* **6,680,388.00** |
| **6.a Trucking Costs** | **650,000.0** | **CY** | *9.16* **5,954,000.00** | **0.00** | **726,388.00** | **0.00** | *10.28* **6,680,388.00** |
| **Item 7 Permitting and Regulatory** | **3.0** | **EA** | *75,000.00* **225,000.00** | **0.00** | **27,450.00** | **0.00** | *84,150.00* **252,450.00** |
| **Item 8 Project Management, E & D, S & A** | **3.0** | **EA** | *300,000.00* **900,000.00** | **0.00** | **109,800.00** | **0.00** | *336,600.00* **1,009,800.00** |
| **8.a Overhead and Management** | **3.0** | **EA** | *150,000.00* **450,000.00** | **0.00** | **54,900.00** | **0.00** | *168,300.00* **504,900.00** |
| **8.b Engineering & Design** | **3.0** | **EA** | *75,000.00* **225,000.00** | **0.00** | **27,450.00** | **0.00** | *84,150.00* **252,450.00** |
| **8.c Supervision & Administration** | **3.0** | **EA** | *75,000.00* **225,000.00** | **0.00** | **27,450.00** | **0.00** | *84,150.00* **252,450.00** |

| Description | Quantity | UOM | Contractor | DirectLabor | DirectEQ | DirectMatl | DirectCost | DirectSubBid | DirectUserCost | DirectCost |
|---|---|---|---|---|---|---|---|---|---|---|
| **Project Direct Summary** | | | | **1,583,271.72** | **3,118,009.87** | **1,141,181.23** | **17,651,623.82** | **11,809,161.00** | **0.00** | **17,651,623.82** |
| **Item 1 Land Acquisition** | **25.0** | **ACR** | **Contractor Zulu** | **0.00** | **0.00** | **800,000.00** | **800,000.00** | **0.00** | **0.00** | **800,000.00** |
| **1.a Land** | **25.0** | **ACR** | **Contractor Zulu** | **0.00** | **0.00** | **800,000.00** | **800,000.00** | **0.00** | **0.00** | **800,000.00** |
| **Item 2 Site Preparation and Construction** | **1.0** | **EA** | **Contractor Zulu** | **202,334.41** | **239,836.45** | **341,181.23** | **883,352.09** | **100,000.00** | **0.00** | **883,352.09** |
| **2.a Mob/Demob** | **3.0** | **EA** | **Contractor Zulu** | **85,322.55** | **169,659.56** | **0.00** | **254,982.11** | **0.00** | **0.00** | **254,982.11** |
| **2.b Clearing & Grubbing** | **16.7** | **ACR** | **Contractor Zulu** | **39,365.48** | **12,723.28** | **0.00** | **52,088.77** | **0.00** | **0.00** | **52,088.77** |
| **2.c Equipment & Scrap removal** | **1.0** | **LS** | **Contractor Zulu** | **0.00** | **0.00** | **0.00** | **100,000.00** | **100,000.00** | **0.00** | **100,000.00** |
| **2.d Site Grading** | **1,003.0** | **BCY** | **Contractor Zulu** | **272.91** | **545.86** | **0.00** | **818.77** | **0.00** | **0.00** | **818.77** |
| **2.e Construct Retention Pond & Outfall** | **3,350.0** | **BCY** | **Contractor Zulu** | **2,921.00** | **6,790.92** | **0.00** | **9,711.92** | **0.00** | **0.00** | **9,711.92** |
| **2.f Construct Facility Runoff Berms** | **5,540.0** | **LF** | **Contractor Zulu** | **37,516.04** | **39,317.95** | **159,778.80** | **236,612.79** | **0.00** | **0.00** | **236,612.79** |
| **2.g Construct/Upgrade Haul Road** | **5,550.0** | **LF** | **Contractor Zulu** | **10,119.70** | **7,788.57** | **139,791.55** | **157,699.82** | **0.00** | **0.00** | **157,699.82** |
| **2.h Site Erosion Control** | **1.2** | **ACR** | **Contractor Zulu** | **15,088.34** | **843.77** | **2,891.88** | **18,823.99** | **0.00** | **0.00** | **18,823.99** |
| **2.i Construct Wharf Staging Area/Offloading Site** | **1.0** | **LS** | **Contractor Zulu** | **11,728.38** | **2,166.54** | **38,719.00** | **52,613.92** | **0.00** | **0.00** | **52,613.92** |
| **Item 3 Dredging Operations** | **650,000.0** | **CY** | | **0.00** | **0.00** | **0.00** | **4,555,161.00** | **4,555,161.00** | **0.00** | **4,555,161.00** |
| **3.a Mob/Demob of Dredging Equipment** | **3.0** | **EA** | | **0.00** | **0.00** | **0.00** | **694,161.00** | **694,161.00** | **0.00** | **694,161.00** |
| **3.b Dredging Operations** | **650,000.0** | **CY** | | **0.00** | **0.00** | **0.00** | **3,861,000.00** | **3,861,000.00** | **0.00** | **3,861,000.00** |
| **Item 4 Transportation to Material Handling Site** | **650,000.0** | **CY** | **Contractor Zulu** | **526,374.03** | **1,638,171.47** | **0.00** | **2,164,545.51** | **0.00** | **0.00** | **2,164,545.51** |
| **4.a Offloading Scows into Haul Trucks** | **650,000.0** | **CY** | **Contractor Zulu** | **300,704.02** | **934,938.63** | **0.00** | **1,235,642.65** | **0.00** | **0.00** | **1,235,642.65** |
| **4.b Truck Transport Hauling Costs** | **650,000.0** | **CY** | **Contractor Zulu** | **225,670.01** | **703,232.84** | **0.00** | **928,902.85** | **0.00** | **0.00** | **928,902.85** |
| **Item 5 Operations and Maintenance - Material Handling** | **650,000.0** | **CY** | **Contractor Zulu** | **854,563.27** | **1,240,001.95** | **0.00** | **2,169,565.22** | **75,000.00** | **0.00** | **2,169,565.22** |
| **5.a Material Handling/Material Turn Over** | **650,000.0** | **CY** | **Contractor Zulu** | **320,355.90** | **423,137.62** | **0.00** | **743,493.52** | **0.00** | **0.00** | **743,493.52** |
| **5.b Stockpiling** | **650,000.0** | **CY** | **Contractor Zulu** | **320,355.90** | **423,137.62** | **0.00** | **743,493.52** | **0.00** | **0.00** | **743,493.52** |
| **5.c Load Out** | **650,000.0** | **CY** | **Contractor Zulu** | **213,851.47** | **359,879.75** | **0.00** | **573,731.22** | **0.00** | **0.00** | **573,731.22** |
| **5.d Dust Control** | **650,000.0** | **CY** | **Contractor Zulu** | **0.00** | **33,846.95** | **0.00** | **33,846.95** | **0.00** | **0.00** | **33,846.95** |
| **5.e Annual Site Maintenance** | **3.0** | **EA** | **Contractor Zulu** | **0.00** | **0.00** | **0.00** | **75,000.00** | **75,000.00** | **0.00** | **75,000.00** |
| **Item 6 Transport to End Use Site** | **650,000.0** | **CY** | | **0.00** | **0.00** | **0.00** | **5,954,000.00** | **5,954,000.00** | **0.00** | **5,954,000.00** |
| **6.a Trucking Costs** | **650,000.0** | **CY** | | **0.00** | **0.00** | **0.00** | **5,954,000.00** | **5,954,000.00** | **0.00** | **5,954,000.00** |
| **Item 7 Permitting and Regulatory** | **3.0** | **EA** | | **0.00** | **0.00** | **0.00** | **225,000.00** | **225,000.00** | **0.00** | **225,000.00** |
| **Item 8 Project Management, E & D, S & A** | **3.0** | **EA** | | **0.00** | **0.00** | **0.00** | **900,000.00** | **900,000.00** | **0.00** | **900,000.00** |
| **8.a Overhead and Management** | **3.0** | **EA** | | **0.00** | **0.00** | **0.00** | **450,000.00** | **450,000.00** | **0.00** | **450,000.00** |
| **8.b Engineering & Design** | **3.0** | **EA** | | **0.00** | **0.00** | **0.00** | **225,000.00** | **225,000.00** | **0.00** | **225,000.00** |
| **8.c Supervision & Administration** | **3.0** | **EA** | | **0.00** | **0.00** | **0.00** | **225,000.00** | **225,000.00** | **0.00** | **225,000.00** |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **Alt. View** | | | | | | | | |
| **1 Item 1 Land Acquisition** | | | | | | | | |
| **1.1 1.a Land** | | | | | | | | |
| *1.1.1 Land Acre Cost* | *25* | *ACR* | *1 Contractor Zulu* | *800,000* | *0* | *800,000* | *168,000* | *968,000* |
| **2 Item 2 Site Preparation and Construction** | | | | | | | | |
| **2.1 2.a Mob/Demob** | | | | | | | | |
| **2.1.1 Equipment** | | | | | | | | |
| *2.1.1.1 LOADER, FRONT END, CRAWLER, 3.20 CY BUCKET* | *48* | *HR* | *1 Contractor Zulu* | *3,451* | *0* | *3,451* | *725* | *4,175* |
| *2.1.1.2 BRUSH CHIPPER, 13" CAPACITY, DRUM TYPE, TRAILER MTD* | *48* | *HR* | *1 Contractor Zulu* | *828* | *0* | *828* | *174* | *1,002* |
| *2.1.1.3 LOADER / BACKHOE, WHEEL, 0.80 CY FRONT END BUCKET, 24" DIP, 4.3 CF, 12' DIGGING DEPTH, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *911* | *0* | *911* | *191* | *1,102* |
| *2.1.1.4 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.5 TRACTOR, CRAWLER (DOZER), 341-440 HP (254-328 KW), POWERSHIFT, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *7,837* | *0* | *7,837* | *1,646* | *9,483* |
| *2.1.1.6 TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.7 ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6.6 TON, 56" WIDE, 2X1, ASPHALT COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,069* | *0* | *2,069* | *435* | *2,504* |
| *2.1.1.8 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,499* | *0* | *2,499* | *525* | *3,024* |
| *2.1.1.9 CRANES, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 5.0 CY, 130' BOOM (ADD BUCKET)* | *192* | *HR* | *1 Contractor Zulu* | *31,251* | *0* | *31,251* | *6,563* | *37,814* |
| *2.1.1.10 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *192* | *HR* | *1 Contractor Zulu* | *24,151* | *0* | *24,151* | *5,072* | *29,223* |
| *2.1.1.11 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 29 CY, 40 TON, 6X6, REAR DUMP* | *48* | *HR* | *1 Contractor Zulu* | *5,243* | *0* | *5,243* | *1,101* | *6,344* |
| *2.1.1.12 LOADER, FRONT END, WHEEL, SKID-STEER, 13.0 CF, 60" BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *516* | *0* | *516* | *108* | *624* |
| *2.1.1.13 LOADER, FRONT END, WHEEL, ARTICULATED, 7.00 CY (5.4 M3) BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *6,644* | *0* | *6,644* | *1,395* | *8,039* |
| *2.1.1.14 HYDRAULIC EXCAVATOR, CRAWLER, 140,000 LB (63,503 KG), 3.50 CY (2.7 M3) BUCKET, 31.4' (9.6 M) MAX DIGGING DEPTH* | *48* | *HR* | *1 Contractor Zulu* | *7,233* | *0* | *7,233* | *1,519* | *8,752* |
| *2.1.1.15 ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 3 TON (2.7 MT), 47" (1.2 M) WIDE, SOIL COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *1,049* | *0* | *1,049* | *220* | *1,269* |
| **2.1.2 Truck Transportation of Equipment** | | | | | | | | |
| *2.1.2.1 TRUCK TRAILER, LOWBOY, 75 TON, 3 AXLE (ADD TOWING TRUCK)* | *1,104* | *HR* | *1 Contractor Zulu* | *11,238* | *0* | *11,238* | *2,360* | *13,598* |
| *2.1.2.2 TRUCK, HIGHWAY, 75,000 LBS GVW, 2 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)* | *1,104* | *HR* | *1 Contractor Zulu* | *54,388* | *0* | *54,388* | *11,422* | *65,810* |
| **2.1.3 Labor to Mob.Demob Equipment** | | | | | | | | |
| *2.1.3.1 Outside Equip. Operators, Medium* | *1,104* | *HR* | *1 Contractor Zulu* | *47,765* | *0* | *47,765* | *10,031* | *57,795* |
| *2.1.3.2 Outside Truck Drivers, Heavy* | *1,104* | *HR* | *1 Contractor Zulu* | *37,558* | *0* | *37,558* | *7,887* | *45,445* |
| **2.2 2.b Clearing & Grubbing** | | | | | | | | |
| *2.2.1 Clearing & grubbing, cut & chip light trees, to 6" diameter* | *17* | *ACR* | *1 Contractor Zulu* | *52,089* | *0* | *52,089* | *10,939* | *63,027* |
| **2.3 2.c Equipment & Scrap removal** | | | | | | | | |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| *2.3.1 2.c Equipment & Scrap Removal* | *1* | *LS* | *1 Contractor Zulu* | *100,000* | *0* | *100,000* | *21,000* | *121,000* |
| **2.4 2.d Site Grading** | | | | | | | | |
| *2.4.1 Rough grading, open site, large area, 300 H.P., dozer* | *1,003* | *BCY* | *1 Contractor Zulu* | *819* | *0* | *819* | *172* | *991* |
| **2.5 2.e Construct Retention Pond & Outfall** | | | | | | | | |
| *2.5.1 Excavate and load, bank measure, medium material, 5 C.Y. bucket, hydraulic excavator* | *3,350* | *BCY* | *1 Contractor Zulu* | *3,291* | *0* | *3,291* | *691* | *3,982* |
| *2.5.2 Shape enbankment, slope greater than 1 in 4, by machine* | *3,350* | *BCY* | *1 Contractor Zulu* | *3,905* | *0* | *3,905* | *820* | *4,726* |
| *2.5.3 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *20* | *BCY* | *1 Contractor Zulu* | *2,516* | *0* | *2,516* | *528* | *3,044* |
| **2.6 2.f Construct Facility Runoff Berms** | | | | | | | | |
| *2.6.1 Shape enbankment, slope greater than 1 in 4, by machine* | *19,944* | *SY* | *1 Contractor Zulu* | *23,251* | *0* | *23,251* | *4,883* | *28,134* |
| *2.6.2 Fill by borrow and utility bedding, borrow, for embankments, 1 mile haul, spread, by dozer* | *17,950* | *LCY* | *1 Contractor Zulu* | *173,446* | *0* | *173,446* | *36,424* | *209,869* |
| *2.6.3 Geotextile soil stabilization, geotextile fabric, woven, heavy duty, 600 lb. tensile strength* | *18,448* | *SY* | *1 Contractor Zulu* | *39,916* | *0* | *39,916* | *8,382* | *48,299* |
| **2.7 2.g Construct/Upgrade Haul Road** | | | | | | | | |
| *2.7.1 Aggregate for earthwork, crushed stone, 1.40 tons per C.Y., 1-1/2", spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction* | *2,664* | *CY* | *1 Contractor Zulu* | *138,063* | *0* | *138,063* | *28,993* | *167,056* |
| *2.7.2 Compaction, riding, vibrating roller, 4 passes, 12" lifts* | *2,664* | *ECY* | *1 Contractor Zulu* | *1,022* | *0* | *1,022* | *215* | *1,237* |
| *2.7.3 Geotextile soil stabilization, geotextile fabric, woven, heavy duty, 600 lb. tensile strength* | *8,603* | *SY* | *1 Contractor Zulu* | *18,614* | *0* | *18,614* | *3,909* | *22,523* |
| **2.8 2.h Site Erosion Control** | | | | | | | | |
| *2.8.1 Topsoil placement and grading, loam or topsoil, fine grading and seeding, with equipment* | *1* | *ACR* | *1 Contractor Zulu* | *16,257* | *0* | *16,257* | *3,414* | *19,671* |
| *2.8.2 Erosion control, silt fence, polypropylene, fence only, 3' high* | *961* | *LF* | *1 Contractor Zulu* | *2,567* | *0* | *2,567* | *539* | *3,106* |
| **2.9 2.i Construct Wharf Staging Area/Offloading Site** | | | | | | | | |
| *2.9.1 Erosion control, silt fence, polypropylene, fence only, 3' high* | *900* | *LF* | *1 Contractor Zulu* | *2,404* | *0* | *2,404* | *505* | *2,909* |
| *2.9.2 Security vehicle barriers, concrete barrier, jersey, 20' L x 2' by 0.5' W x 32" H* | *45* | *EA* | *1 Contractor Zulu* | *46,152* | *0* | *46,152* | *9,692* | *55,844* |
| **2.9.1 Water Control** | | | | | | | | |
| *2.9.1.1 Public Storm Utility Drainage Piping, corrugated metal pipe, galvanized and bituminous coated/w paved invert, 20' lengths, 16 ga., 8" diameter, excludes excavation and backfill* | *20* | *LF* | *1 Contractor Zulu* | *363* | *0* | *363* | *76* | *439* |
| *2.9.1.2 Rough grading, open site, small area, 75 H.P., dozer* | *1,115* | *BCY* | *1 Contractor Zulu* | *1,024* | *0* | *1,024* | *215* | *1,239* |
| *2.9.1.3 Public Storm Utility Drainage Piping, concrete, box culvert, cast in place, 6' x 6', excludes excavation or backfill* | *6* | *LF* | *1 Contractor Zulu* | *2,537* | *0* | *2,537* | *533* | *3,069* |
| *2.9.1.4 Excavating, trench or continuous footing, common earth, 1-1/2 C.Y. excavator, 4' to 6' deep, excludes sheeting or dewatering* | *50* | *BCY* | *1 Contractor Zulu* | *134* | *0* | *134* | *28* | *162* |
| **3 Item 3 Dredging Operations** | | | | | | | | |
| **3.1 3.a Mob/Demob of Dredging Equipment** | | | | | | | | |
| *3.1.1 Mob/Demob of Dredging Equipment* | *3* | *EA* | | *694,161* | *0* | *0* | *0* | *694,161* |
| **3.2 3.b Dredging Operations** | | | | | | | | |
| *3.2.1 Dredging* | *650,000* | *CY* | | *3,861,000* | *0* | *0* | *0* | *3,861,000* |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **4 Item 4 Transportation to Material Handling Site** | | | | | | | | |
| **4.1 4.a Offloading Scows into Haul Trucks** | | | | | | | | |
| **4.1.1 Equipment** | | | | | | | | |
| *4.1.1.1 CRANES, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 5.0 CY, 130' BOOM (ADD BUCKET)* | *3,698* | *HR* | *1 Contractor Zulu* | *601,914* | *0* | *601,914* | *126,402* | *728,316* |
| *4.1.1.2 LOADER, FRONT END, WHEEL, SKID-STEER, 13.0 CF, 60" BUCKET, 4X4* | *650* | *HR* | *1 Contractor Zulu* | *6,983* | *0* | *6,983* | *1,466* | *8,450* |
| *4.1.1.3 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *650* | *HR* | *1 Contractor Zulu* | *33,847* | *0* | *33,847* | *7,108* | *40,955* |
| *4.1.1.4 LOADER, FRONT END, WHEEL, 9.00 CY BUCKET, ARTICULATED, 4X4* | *2,111* | *HR* | *1 Contractor Zulu* | *292,195* | *0* | *292,195* | *61,361* | *353,556* |
| **4.1.2 Labor** | | | | | | | | |
| *4.1.2.1 Outside Equip. Operators, Heavy* | *5,809* | *HR* | *1 Contractor Zulu* | *251,326* | *0* | *251,326* | *52,778* | *304,105* |
| *4.1.2.2 Outside Equip. Operators, Light* | *650* | *HR* | *1 Contractor Zulu* | *27,265* | *0* | *27,265* | *5,726* | *32,991* |
| *4.1.2.3 Outside Truck Drivers, Heavy* | *650* | *HR* | *1 Contractor Zulu* | *22,113* | *0* | *22,113* | *4,644* | *26,757* |
| **4.2 4.b Truck Transport Hauling Costs** | | | | | | | | |
| *4.2.1 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *5,216* | *HR* | *1 Contractor Zulu* | *656,116* | *0* | *656,116* | *137,784* | *793,900* |
| *4.2.2 Outside Equip. Operators, Heavy* | *5,216* | *HR* | *1 Contractor Zulu* | *225,670* | *0* | *225,670* | *47,391* | *273,061* |
| *4.2.3 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *1,739* | *HR* | *1 Contractor Zulu* | *47,117* | *0* | *47,117* | *9,895* | *57,012* |
| **5 Item 5 Operations and Maintenance - Material Handling** | | | | | | | | |
| **5.1 5.a Material Handling/Material Turn Over** | | | | | | | | |
| *5.1.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.2 5.b Stockpiling** | | | | | | | | |
| *5.2.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.3 5.c Load Out** | | | | | | | | |
| *5.3.1 Excavate and load, bank measure, medium material, 7 C.Y. bucket, wheeled loader* | *650,000* | *BCY* | *1 Contractor Zulu* | *573,731* | *0* | *573,731* | *120,484* | *694,215* |
| **5.4 5.d Dust Control** | | | | | | | | |
| *5.4.1 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *650* | *HR* | *1 Contractor Zulu* | *33,847* | *0* | *33,847* | *7,108* | *40,955* |
| **5.5 5.e Annual Site Maintenance** | | | | | | | | |
| *5.5.1 Annual Site Maintenance* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| **6 Item 6 Transport to End Use Site** | | | | | | | | |
| **6.1 6.a Trucking Costs** | | | | | | | | |
| *6.1.1 Areclor Mittal to Silver Oaks Landfill* | *650,000* | *CY* | | *5,954,000* | *0* | *0* | *0* | *5,954,000* |
| **7 Item 7 Permitting and Regulatory** | | | | | | | | |
| *7.1 7.a Material Management Plan* | *3* | *EA* | | *60,000* | *0* | *0* | *0* | *60,000* |
| *7.2 7.b Site Pre-construction soil testing* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| *7.3 7.c Dredged sediment material monitoring* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| *7.4 7.d Site enviromental qaulity monitoring* | *3* | *EA* | | *15,000* | *0* | *0* | *0* | *15,000* |
| **8 Item 8 Project Management, E & D, S & A** | | | | | | | | |
| **8.1 8.a Overhead and Management** | | | | | | | | |
| *8.1.1 Overhead and Management* | *3* | *EA* | | *450,000* | *0* | *0* | *0* | *450,000* |
| **8.2 8.b Engineering & Design** | | | | | | | | |
| *8.2.1 Engineering & Design* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |
| **8.3 8.c Supervision & Administration** | | | | | | | | |
| *8.3.1 Supervision & Administration* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |

# Appendix H4 Option 3: Hydraulic Placement at the CDFs

Estimated by Paul H Farrell, USACE
Designed by Tom Borrowman, ERDC
Prepared by Paul H Farrell, USACE
Preparation Date 12/13/2010
Effective Date of Pricing 12/13/2010
Estimated Construction Time 180 Days

*Right click here and select "Update Field" to build the Table of Contents for this report.*

| Date | Author | Note |
|---|---|---|
| 12/28/2010 | PHF | All Unit Costs were developed as per ERDC's request. |
| 12/28/2010 | PHF | No design documents were provided in determining Quantities. Reference materials were provided, Estimators judgement and assumptions noted where necessary. |
| 1/7/2011 | PHF | All quantities of materials were provided by ERDC on the Cover Speadsheet hightlight the major cost items. This cost estimate covers the components of each cost element and develops a unit cost to mulitply against the quantities developed by ERDC. |
| 2/14/2011 | PHF | Project Contingency used is 11.4%. This percentage was determined using the Abbreviated Cost Risk Analysis Spreadsheet for projects less than 40 million. The detailed spreadsheet can be found under the Cost Contingency analysis Option 3 Tab. |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| **Project Cost** | | | **19,249,020.49** | **0.00** | **2,194,388.34** | **0.00** | **21,443,408.83** |
| **Item 2 Site Preparation and Construction** | **1.0** | **EA** | *475,529.76* **475,529.76** | **0.00** | **54,210.39** | **0.00** | *529,740.16* **529,740.16** |
| **2.a Mob/Demob** | **3.0** | **EA** | *102,842.79* **308,528.36** | **0.00** | **35,172.23** | **0.00** | *114,566.86* **343,700.59** |
| **2.d Site Grading** | **1,000.0** | **BCY** | *0.99* **987.75** | **0.00** | **112.60** | **0.00** | *1.10* **1,100.35** |
| **2.f Construct Facility Runoff Berms** | **600.0** | **LF** | *276.69* **166,013.66** | **0.00** | **18,925.56** | **0.00** | *308.23* **184,939.21** |
| **Item 3 Dredging Operations** | **650,000.0** | **CY** | *11.18* **7,265,732.00** | **0.00** | **828,293.45** | **0.00** | *12.45* **8,094,025.45** |
| **3.a Mob/Demob of Dredging Equipment** | **3.0** | **LS** | **765,732.00** | **0.00** | **87,293.45** | **0.00** | **853,025.45** |
| **3.b Dredging Operations** | **650,000.0** | **CY** | *10.00* **6,500,000.00** | **0.00** | **741,000.00** | **0.00** | *11.14* **7,241,000.00** |
| **Item 5 Operations and Maintenance - Material Handling** | **650,000.0** | **CY** | *5.78* **3,753,758.73** | **0.00** | **427,928.50** | **0.00** | *6.43* **4,181,687.23** |
| **5.a Material Handling/Material Turn Over** | **650,000.0** | **CY** | *1.38* **899,627.17** | **0.00** | **102,557.50** | **0.00** | *1.54* **1,002,184.66** |
| **5.b Stockpiling** | **650,000.0** | **CY** | *1.38* **899,627.17** | **0.00** | **102,557.50** | **0.00** | *1.54* **1,002,184.66** |
| **5.c Load Out** | **650,000.0** | **CY** | *1.07* **694,214.77** | **0.00** | **79,140.48** | **0.00** | *1.19* **773,355.26** |
| **5.d Dust Control** | **650,000.0** | **CY** | *0.06* **40,954.81** | **0.00** | **4,668.85** | **0.00** | *0.07* **45,623.66** |
| **5.e Annual Site Maintenance** | **3.0** | **EA** | *25,000.00* **75,000.00** | **0.00** | **8,550.00** | **0.00** | *27,850.00* **83,550.00** |
| **5.f Wick Drains** | **822,375.0** | **LF** | *1.39* **1,144,334.81** | **0.00** | **130,454.17** | **0.00** | *1.55* **1,274,788.98** |
| **Item 6 Transport to Final Placement** | **650,000.0** | **CY** | *10.20* **6,629,000.00** | **0.00** | **755,706.00** | **0.00** | *11.36* **7,384,706.00** |
| **6.a CDF to Silver Oaks Trucking** | **200,000.0** | **CY** | *11.32* **2,264,000.00** | **0.00** | **258,096.00** | **0.00** | *12.61* **2,522,096.00** |
| **CDF to Brooke Park** | **450,000.0** | **EA** | *9.70* **4,365,000.00** | **0.00** | **497,610.00** | **0.00** | *10.81* **4,862,610.00** |
| **Item 7 Permitting and Regulatory** | **3.0** | **EA** | *75,000.00* **225,000.00** | **0.00** | **25,650.00** | **0.00** | *83,550.00* **250,650.00** |
| **Item 8 Project Management, E & D, S & A** | **3.0** | **EA** | *300,000.00* **900,000.00** | **0.00** | **102,600.00** | **0.00** | *334,200.00* **1,002,600.00** |
| | | | *150,000.00* | | | | *167,100.00* |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| **8.a Overhead and Management** | **3.0** | **EA** | **450,000.00** | **0.00** | **51,300.00** | **0.00** | **501,300.00** |
| | | | *75,000.00* | | | | *83,550.00* |
| **8.b Engineering & Design** | **3.0** | **EA** | **225,000.00** | **0.00** | **25,650.00** | **0.00** | **250,650.00** |
| | | | *75,000.00* | | | | *83,550.00* |
| **8.c Supervision & Administration** | **3.0** | **EA** | **225,000.00** | **0.00** | **25,650.00** | **0.00** | **250,650.00** |

| Description | Quantity | UOM | Contractor | DirectLabor | DirectEQ | DirectMatl | DirectCost | DirectSubBid | DirectUserCost | DirectCost |
|---|---|---|---|---|---|---|---|---|---|---|
| **Project Direct Summary** | | | | 960,063.92 | 1,431,531.11 | 95,970.00 | 18,528,028.28 | 16,040,463.25 | 0.00 | 18,528,028.28 |
| **Item 2 Site Preparation and Construction** | 1.0 | EA | Contractor Zulu | 105,500.64 | 191,529.16 | 95,970.00 | 392,999.80 | 0.00 | 0.00 | 392,999.80 |
| **2.a Mob/Demob** | 3.0 | EA | Contractor Zulu | 85,322.55 | 169,659.56 | 0.00 | 254,982.11 | 0.00 | 0.00 | 254,982.11 |
| **2.d Site Grading** | 1,000.0 | BCY | Contractor Zulu | 272.10 | 544.22 | 0.00 | 816.32 | 0.00 | 0.00 | 816.32 |
| **2.f Construct Facility Runoff Berms** | 600.0 | LF | Contractor Zulu | 19,905.99 | 21,325.38 | 95,970.00 | 137,201.37 | 0.00 | 0.00 | 137,201.37 |
| **Item 3 Dredging Operations** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 7,265,732.00 | 7,265,732.00 | 0.00 | 7,265,732.00 |
| **3.a Mob/Demob of Dredging Equipment** | 3.0 | LS | | 0.00 | 0.00 | 0.00 | 765,732.00 | 765,732.00 | 0.00 | 765,732.00 |
| **3.b Dredging Operations** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 6,500,000.00 | 6,500,000.00 | 0.00 | 6,500,000.00 |
| **Item 5 Operations and Maintenance - Material Handling** | 650,000.0 | CY | Contractor Zulu | 854,563.27 | 1,240,001.95 | 0.00 | 3,115,296.47 | 1,020,731.25 | 0.00 | 3,115,296.47 |
| **5.a Material Handling/Material Turn Over** | 650,000.0 | CY | Contractor Zulu | 320,355.90 | 423,137.62 | 0.00 | 743,493.52 | 0.00 | 0.00 | 743,493.52 |
| **5.b Stockpiling** | 650,000.0 | CY | Contractor Zulu | 320,355.90 | 423,137.62 | 0.00 | 743,493.52 | 0.00 | 0.00 | 743,493.52 |
| **5.c Load Out** | 650,000.0 | CY | Contractor Zulu | 213,851.47 | 359,879.75 | 0.00 | 573,731.22 | 0.00 | 0.00 | 573,731.22 |
| **5.d Dust Control** | 650,000.0 | CY | Contractor Zulu | 0.00 | 33,846.95 | 0.00 | 33,846.95 | 0.00 | 0.00 | 33,846.95 |
| **5.e Annual Site Maintenance** | 3.0 | EA | Contractor Zulu | 0.00 | 0.00 | 0.00 | 75,000.00 | 75,000.00 | 0.00 | 75,000.00 |
| **5.f Wick Drains** | 822,375.0 | LF | Contractor Zulu | 0.00 | 0.00 | 0.00 | 945,731.25 | 945,731.25 | 0.00 | 945,731.25 |
| **Item 6 Transport to Final Placement** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 6,629,000.00 | 6,629,000.00 | 0.00 | 6,629,000.00 |
| **6.a CDF to Silver Oaks Trucking** | 200,000.0 | CY | | 0.00 | 0.00 | 0.00 | 2,264,000.00 | 2,264,000.00 | 0.00 | 2,264,000.00 |
| **CDF to Brooke Park** | 450,000.0 | EA | | 0.00 | 0.00 | 0.00 | 4,365,000.00 | 4,365,000.00 | 0.00 | 4,365,000.00 |
| **Item 7 Permitting and Regulatory** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |
| **Item 8 Project Management, E & D, S & A** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 900,000.00 | 900,000.00 | 0.00 | 900,000.00 |
| **8.a Overhead and Management** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 450,000.00 | 450,000.00 | 0.00 | 450,000.00 |
| **8.b Engineering & Design** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |
| **8.c Supervision & Administration** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **Alt. View** | | | | | | | | |
| **2 Item 2 Site Preparation and Construction** | | | | | | | | |
| **2.1 2.a Mob/Demob** | | | | | | | | |
| **2.1.1 Equipment** | | | | | | | | |
| *2.1.1.1 LOADER, FRONT END, CRAWLER, 3.20 CY BUCKET* | *48* | *HR* | *1 Contractor Zulu* | *3,451* | *0* | *3,451* | *725* | *4,175* |
| *2.1.1.2 BRUSH CHIPPER, 13" CAPACITY, DRUM TYPE, TRAILER MTD* | *48* | *HR* | *1 Contractor Zulu* | *828* | *0* | *828* | *174* | *1,002* |
| *2.1.1.3 LOADER / BACKHOE, WHEEL, 0.80 CY FRONT END BUCKET, 24" DIP, 4.3 CF, 12' DIGGING DEPTH, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *911* | *0* | *911* | *191* | *1,102* |
| *2.1.1.4 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.5 TRACTOR, CRAWLER (DOZER), 341-440 HP (254-328 KW), POWERSHIFT, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *7,837* | *0* | *7,837* | *1,646* | *9,483* |
| *2.1.1.6 TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.7 ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6.6 TON, 56" WIDE, 2X1, ASPHALT COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,069* | *0* | *2,069* | *435* | *2,504* |
| *2.1.1.8 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,499* | *0* | *2,499* | *525* | *3,024* |
| *2.1.1.9 CRANES, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 5.0 CY, 130' BOOM (ADD BUCKET)* | *192* | *HR* | *1 Contractor Zulu* | *31,251* | *0* | *31,251* | *6,563* | *37,814* |
| *2.1.1.10 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *192* | *HR* | *1 Contractor Zulu* | *24,151* | *0* | *24,151* | *5,072* | *29,223* |
| *2.1.1.11 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 29 CY, 40 TON, 6X6, REAR DUMP* | *48* | *HR* | *1 Contractor Zulu* | *5,243* | *0* | *5,243* | *1,101* | *6,344* |
| *2.1.1.12 LOADER, FRONT END, WHEEL, SKID-STEER, 13.0 CF, 60" BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *516* | *0* | *516* | *108* | *624* |
| *2.1.1.13 LOADER, FRONT END, WHEEL, ARTICULATED, 7.00 CY (5.4 M3) BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *6,644* | *0* | *6,644* | *1,395* | *8,039* |
| *2.1.1.14 HYDRAULIC EXCAVATOR, CRAWLER, 140,000 LB (63,503 KG), 3.50 CY (2.7 M3) BUCKET, 31.4' (9.6 M) MAX DIGGING DEPTH* | *48* | *HR* | *1 Contractor Zulu* | *7,233* | *0* | *7,233* | *1,519* | *8,752* |
| *2.1.1.15 ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 3 TON (2.7 MT), 47" (1.2 M) WIDE, SOIL COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *1,049* | *0* | *1,049* | *220* | *1,269* |
| **2.1.2 Truck Transportation of Equipment** | | | | | | | | |
| *2.1.2.1 TRUCK TRAILER, LOWBOY, 75 TON, 3 AXLE (ADD TOWING TRUCK)* | *1,104* | *HR* | *1 Contractor Zulu* | *11,238* | *0* | *11,238* | *2,360* | *13,598* |
| *2.1.2.2 TRUCK, HIGHWAY, 75,000 LBS GVW, 2 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)* | *1,104* | *HR* | *1 Contractor Zulu* | *54,388* | *0* | *54,388* | *11,422* | *65,810* |
| **2.1.3 Labor to Mob.Demob Equipment** | | | | | | | | |
| *2.1.3.1 Outside Equip. Operators, Medium* | *1,104* | *HR* | *1 Contractor Zulu* | *47,765* | *0* | *47,765* | *10,031* | *57,795* |
| *2.1.3.2 Outside Truck Drivers, Heavy* | *1,104* | *HR* | *1 Contractor Zulu* | *37,558* | *0* | *37,558* | *7,887* | *45,445* |
| **2.4 2.d Site Grading** | | | | | | | | |
| *2.4.1 Rough grading, open site, large area, 300 H.P., dozer* | *1,000* | *BCY* | *1 Contractor Zulu* | *816* | *0* | *816* | *171* | *988* |
| **2.6 2.f Construct Facility Runoff Berms** | | | | | | | | |
| *2.6.1 Shape enbankment, slope greater than 1 in 4, by machine* | *5,880* | *SY* | *1 Contractor Zulu* | *6,855* | *0* | *6,855* | *1,440* | *8,294* |
| *2.6.2 Fill by borrow and utility bedding, borrow, for embankments, 1 mile haul, spread, by dozer* | *12,267* | *LCY* | *1 Contractor Zulu* | *118,533* | *0* | *118,533* | *24,892* | *143,424* |
| *2.6.3 Geotextile soil stabilization, geotextile fabric, woven, heavy duty, 600 lb. tensile* | *5,460* | *SY* | *1 Contractor Zulu* | *11,814* | *0* | *11,814* | *2,481* | *14,295* |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| *strength* | | | | | | | | |
| **3 Item 3 Dredging Operations** | | | | | | | | |
| **3.1 3.a Mob/Demob of Dredging Equipment** | | | | | | | | |
| *3.1.1 Mob/Demob of Dredging Equipment* | *3* | *EA* | | *765,732* | *0* | *0* | *0* | *765,732* |
| **3.2 3.b Dredging Operations** | | | | | | | | |
| *3.2.1 Dredging* | *650,000* | *EA* | | *6,500,000* | *0* | *0* | *0* | *6,500,000* |
| **5 Item 5 Operations and Maintenance - Material Handling** | | | | | | | | |
| **5.1 5.a Material Handling/Material Turn Over** | | | | | | | | |
| *5.1.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.2 5.b Stockpiling** | | | | | | | | |
| *5.2.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.3 5.c Load Out** | | | | | | | | |
| *5.3.1 Excavate and load, bank measure, medium material, 7 C.Y. bucket, wheeled loader* | *650,000* | *BCY* | *1 Contractor Zulu* | *573,731* | *0* | *573,731* | *120,484* | *694,215* |
| **5.4 5.d Dust Control** | | | | | | | | |
| *5.4.1 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *650* | *HR* | *1 Contractor Zulu* | *33,847* | *0* | *33,847* | *7,108* | *40,955* |
| **5.5 5.e Annual Site Maintenance** | | | | | | | | |
| *5.5.1 Annual Site Maintenance* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| **5.6 5.f Wick Drains** | | | | | | | | |
| *5.6.1 Wick Drain* | *822,375* | *LF* | *1 Contractor Zulu* | *945,731* | *0* | *945,731* | *198,604* | *1,144,335* |
| **6 Item 6 Transport to Final Placement** | | | | | | | | |
| **6.1 6.a CDF to Silver Oaks Trucking** | | | | | | | | |
| *6.1.1 CDF to Silver Oaks Landfill* | *200,000* | *CY* | | *2,264,000* | *0* | *0* | *0* | *2,264,000* |
| **6.3 CDF to Brooke Park** | | | | | | | | |
| *6.3.1 CDF to Brooke Park* | *450,000* | *CY* | | *4,365,000* | *0* | *0* | *0* | *4,365,000* |
| **7 Item 7 Permitting and Regulatory** | | | | | | | | |
| *7.1 7.a Material Management Plan* | *3* | *EA* | | *60,000* | *0* | *0* | *0* | *60,000* |
| *7.2 7.b Site Pre-construction soil testing* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| *7.3 7.c Dredged sediment material monitoring* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| *7.4 7.d Site enviromental qaulity monitoring* | *3* | *EA* | | *15,000* | *0* | *0* | *0* | *15,000* |
| **8 Item 8 Project Management, E & D, S & A** | | | | | | | | |
| **8.1 8.a Overhead and Management** | | | | | | | | |
| *8.1.1 Overhead and Management* | *3* | *EA* | | *450,000* | *0* | *0* | *0* | *450,000* |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **8.2 8.b Engineering & Design** | | | | | | | | |
| *8.2.1 Engineering & Design* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |
| **8.3 8.c Supervision & Administration** | | | | | | | | |
| *8.3.1 Supervision & Administration* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |

# Appendix H5 Option 4: Mechanical Placement at the CDFs

Estimated by Paul H Farrell, USACE

Designed by Tom Borrowman, ERDC

Prepared by Paul H Farrell, USACE

Preparation Date 12/13/2010

Effective Date of Pricing 12/13/2010

Estimated Construction Time 180 Days

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| Date | Author | Note |
|---|---|---|
| 12/28/2010 | PHF | All Unit Costs were developed as per ERDC's request. |
| 12/28/2010 | PHF | No design documents were provided in determining Quantities. Reference materials were provided, Estimators judgement and assumptions noted where necessary. |
| 1/7/2011 | PHF | All quantities of materials were provided by ERDC on the Cover Speadsheet hightlight the major cost items. This cost estimate covers the components of each cost element and develops a unit cost to mulitply against the quantities developed by ERDC. |
| 2/14/2011 | PHF | Project Contingency used is 17.1%. This percentage was determined using the Abbreviated Cost Risk Analysis Spreadsheet for projects less than 40 million. The detailed spreadsheet can be found under the Cost Contingency analysis Option 4 Tab. |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| **Project Cost** | | | **19,429,181.96** | **0.00** | **3,322,390.12** | **0.00** | **22,751,572.07** |
| **Item 2 Site Preparation and Construction** | **3.0** | **EA** | *491,843.25* **1,475,529.76** | **0.00** | **252,315.59** | **0.00** | *575,948.45* **1,727,845.35** |
| **2.a Mob/Demob** | **3.0** | **EA** | *102,842.79* **308,528.36** | **0.00** | **52,758.35** | **0.00** | *120,428.90* **361,286.70** |
| **2.d Site Grading** | **1,000.0** | **BCY** | *0.99* **987.75** | **0.00** | **168.91** | **0.00** | *1.16* **1,156.65** |
| **2.f Construct Facility Runoff Berms** | **600.0** | **LF** | *276.69* **166,013.66** | **0.00** | **28,388.34** | **0.00** | *324.00* **194,401.99** |
| **2.i Construct Wharf Staging Area/Offloading Site** | **1.0** | **LS** | **1,000,000.00** | **0.00** | **171,000.00** | **0.00** | **1,171,000.00** |
| **Item 3 Dredging Operations** | **650,000.0** | **CY** | *7.65* **4,971,161.00** | **0.00** | **850,068.53** | **0.00** | *8.96* **5,821,229.53** |
| **3.a Mob/Demob of Dredging Equipment** | **3.0** | **EA** | *231,387.00* **694,161.00** | **0.00** | **118,701.53** | **0.00** | *270,954.18* **812,862.53** |
| **3.b Dredging Operations** | **650,000.0** | **CY** | *6.58* **4,277,000.00** | **0.00** | **731,367.00** | **0.00** | *7.71* **5,008,367.00** |
| **Item 4 Transportation to Material Handling Site** | **650,000.0** | **CY** | *4.03* **2,619,067.28** | **0.00** | **447,860.50** | **0.00** | *4.72* **3,066,927.78** |
| **4.a Offloading Scows into Haul Trucks** | **650,000.0** | **CY** | *2.30* **1,495,127.61** | **0.00** | **255,666.82** | **0.00** | *2.69* **1,750,794.43** |
| **4.b Truck Transport Hauling Costs** | **650,000.0** | **CY** | *1.73* **1,123,939.67** | **0.00** | **192,193.68** | **0.00** | *2.02* **1,316,133.35** |
| **Item 5 Operations and Maintenance - Material Handling** | **650,000.0** | **CY** | *4.01* **2,609,423.92** | **0.00** | **446,211.49** | **0.00** | *4.70* **3,055,635.41** |
| **5.a Material Handling/Material Turn Over** | **650,000.0** | **CY** | *1.38* **899,627.17** | **0.00** | **153,836.25** | **0.00** | *1.62* **1,053,463.41** |
| **5.b Stockpiling** | **650,000.0** | **CY** | *1.38* **899,627.17** | **0.00** | **153,836.25** | **0.00** | *1.62* **1,053,463.41** |
| **5.c Load Out** | **650,000.0** | **CY** | *1.07* **694,214.77** | **0.00** | **118,710.73** | **0.00** | *1.25* **812,925.50** |
| **5.d Dust Control** | **650,000.0** | **CY** | *0.06* **40,954.81** | **0.00** | **7,003.27** | **0.00** | *0.07* **47,958.09** |
| **5.e Annual Site Maintenance** | **3.0** | **LS** | **75,000.00** | **0.00** | **12,825.00** | **0.00** | **87,825.00** |
| **Item 6 Transport to Silver Oaks Landfill** | **650,000.0** | **CY** | *10.20* **6,629,000.00** | **0.00** | **1,133,559.00** | **0.00** | *11.94* **7,762,559.00** |
| **6.a CDF to Silver Oaks Trucking** | **200,000.0** | **CY** | *11.32* **2,264,000.00** | **0.00** | **387,144.00** | **0.00** | *13.26* **2,651,144.00** |
| **6.b CDF to Brooke Park** | **450,000.0** | **CY** | *9.70* **4,365,000.00** | **0.00** | **746,415.00** | **0.00** | *11.36* **5,111,415.00** |

| Description | Quantity | UOM | ContractCost | Escalation | Contingency | SIOH | ProjectCost |
|---|---|---|---|---|---|---|---|
| | | | *75,000.00* | | | | *87,825.00* |
| **Item 7 Permitting and Regulatory** | **3.0** | **EA** | **225,000.00** | **0.00** | **38,475.00** | **0.00** | **263,475.00** |
| | | | *300,000.00* | | | | *351,300.00* |
| **Item 8 Project Management, E & D, S & A** | **3.0** | **EA** | **900,000.00** | **0.00** | **153,900.00** | **0.00** | **1,053,900.00** |
| | | | *150,000.00* | | | | *175,650.00* |
| **8.a Overhead and Management** | **3.0** | **EA** | **450,000.00** | **0.00** | **76,950.00** | **0.00** | **526,950.00** |
| | | | *75,000.00* | | | | *87,825.00* |
| **8.b Engineering & Design** | **3.0** | **EA** | **225,000.00** | **0.00** | **38,475.00** | **0.00** | **263,475.00** |
| | | | *75,000.00* | | | | *87,825.00* |
| **8.c Supervision & Administration** | **3.0** | **EA** | **225,000.00** | **0.00** | **38,475.00** | **0.00** | **263,475.00** |

| Description | Quantity | UOM | Contractor | DirectLabor | DirectEQ | DirectMatl | DirectCost | DirectSubBid | DirectUserCost | DirectCost |
|---|---|---|---|---|---|---|---|---|---|---|
| **Project Direct Summary** | | | | 1,486,437.95 | 3,069,675.48 | 95,970.00 | 18,452,244.44 | 13,800,161.00 | 0.00 | 18,452,244.44 |
| **Item 2 Site Preparation and Construction** | 3.0 | EA | Contractor Zulu | 105,500.64 | 191,529.16 | 95,970.00 | 1,392,999.80 | 1,000,000.00 | 0.00 | 1,392,999.80 |
| **2.a Mob/Demob** | 3.0 | EA | Contractor Zulu | 85,322.55 | 169,659.56 | 0.00 | 254,982.11 | 0.00 | 0.00 | 254,982.11 |
| **2.d Site Grading** | 1,000.0 | BCY | Contractor Zulu | 272.10 | 544.22 | 0.00 | 816.32 | 0.00 | 0.00 | 816.32 |
| **2.f Construct Facility Runoff Berms** | 600.0 | LF | Contractor Zulu | 19,905.99 | 21,325.38 | 95,970.00 | 137,201.37 | 0.00 | 0.00 | 137,201.37 |
| **2.i Construct Wharf Staging Area/Offloading Site** | 1.0 | LS | Contractor Zulu | 0.00 | 0.00 | 0.00 | 1,000,000.00 | 1,000,000.00 | 0.00 | 1,000,000.00 |
| **Item 3 Dredging Operations** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 4,971,161.00 | 4,971,161.00 | 0.00 | 4,971,161.00 |
| **3.a Mob/Demob of Dredging Equipment** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 694,161.00 | 694,161.00 | 0.00 | 694,161.00 |
| **3.b Dredging Operations** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 4,277,000.00 | 4,277,000.00 | 0.00 | 4,277,000.00 |
| **Item 4 Transportation to Material Handling Site** | 650,000.0 | CY | Contractor Zulu | 526,374.03 | 1,638,144.38 | 0.00 | 2,164,518.41 | 0.00 | 0.00 | 2,164,518.41 |
| **4.a Offloading Scows into Haul Trucks** | 650,000.0 | CY | Contractor Zulu | 300,704.02 | 934,938.63 | 0.00 | 1,235,642.65 | 0.00 | 0.00 | 1,235,642.65 |
| **4.b Truck Transport Hauling Costs** | 650,000.0 | CY | Contractor Zulu | 225,670.01 | 703,205.75 | 0.00 | 928,875.76 | 0.00 | 0.00 | 928,875.76 |
| **Item 5 Operations and Maintenance - Material Handling** | 650,000.0 | CY | Contractor Zulu | 854,563.27 | 1,240,001.95 | 0.00 | 2,169,565.22 | 75,000.00 | 0.00 | 2,169,565.22 |
| **5.a Material Handling/Material Turn Over** | 650,000.0 | CY | Contractor Zulu | 320,355.90 | 423,137.62 | 0.00 | 743,493.52 | 0.00 | 0.00 | 743,493.52 |
| **5.b Stockpiling** | 650,000.0 | CY | Contractor Zulu | 320,355.90 | 423,137.62 | 0.00 | 743,493.52 | 0.00 | 0.00 | 743,493.52 |
| **5.c Load Out** | 650,000.0 | CY | Contractor Zulu | 213,851.47 | 359,879.75 | 0.00 | 573,731.22 | 0.00 | 0.00 | 573,731.22 |
| **5.d Dust Control** | 650,000.0 | CY | Contractor Zulu | 0.00 | 33,846.95 | 0.00 | 33,846.95 | 0.00 | 0.00 | 33,846.95 |
| **5.e Annual Site Maintenance** | 3.0 | LS | Contractor Zulu | 0.00 | 0.00 | 0.00 | 75,000.00 | 75,000.00 | 0.00 | 75,000.00 |
| **Item 6 Transport to Silver Oaks Landfill** | 650,000.0 | CY | | 0.00 | 0.00 | 0.00 | 6,629,000.00 | 6,629,000.00 | 0.00 | 6,629,000.00 |
| **6.a CDF to Silver Oaks Trucking** | 200,000.0 | CY | | 0.00 | 0.00 | 0.00 | 2,264,000.00 | 2,264,000.00 | 0.00 | 2,264,000.00 |
| **6.b CDF to Brooke Park** | 450,000.0 | CY | | 0.00 | 0.00 | 0.00 | 4,365,000.00 | 4,365,000.00 | 0.00 | 4,365,000.00 |
| **Item 7 Permitting and Regulatory** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |
| **Item 8 Project Management, E & D, S & A** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 900,000.00 | 900,000.00 | 0.00 | 900,000.00 |
| **8.a Overhead and Management** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 450,000.00 | 450,000.00 | 0.00 | 450,000.00 |
| **8.b Engineering & Design** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |
| **8.c Supervision & Administration** | 3.0 | EA | | 0.00 | 0.00 | 0.00 | 225,000.00 | 225,000.00 | 0.00 | 225,000.00 |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **Alt. View** | | | | | | | | |
| **2 Item 2 Site Preparation and Construction** | | | | | | | | |
| **2.1 2.a Mob/Demob** | | | | | | | | |
| **2.1.1 Equipment** | | | | | | | | |
| *2.1.1.1 LOADER, FRONT END, CRAWLER, 3.20 CY BUCKET* | *48* | *HR* | *1 Contractor Zulu* | *3,451* | *0* | *3,451* | *725* | *4,175* |
| *2.1.1.2 BRUSH CHIPPER, 13" CAPACITY, DRUM TYPE, TRAILER MTD* | *48* | *HR* | *1 Contractor Zulu* | *828* | *0* | *828* | *174* | *1,002* |
| *2.1.1.3 LOADER / BACKHOE, WHEEL, 0.80 CY FRONT END BUCKET, 24" DIP, 4.3 CF, 12' DIGGING DEPTH, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *911* | *0* | *911* | *191* | *1,102* |
| *2.1.1.4 TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE (ADD ATTACHMENTS)* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.5 TRACTOR, CRAWLER (DOZER), 341-440 HP (254-328 KW), POWERSHIFT, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *7,837* | *0* | *7,837* | *1,646* | *9,483* |
| *2.1.1.6 TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE* | *48* | *HR* | *1 Contractor Zulu* | *5,175* | *0* | *5,175* | *1,087* | *6,262* |
| *2.1.1.7 ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6.6 TON, 56" WIDE, 2X1, ASPHALT COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,069* | *0* | *2,069* | *435* | *2,504* |
| *2.1.1.8 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *48* | *HR* | *1 Contractor Zulu* | *2,499* | *0* | *2,499* | *525* | *3,024* |
| *2.1.1.9 CRANES, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 5.0 CY, 130' BOOM (ADD BUCKET)* | *192* | *HR* | *1 Contractor Zulu* | *31,251* | *0* | *31,251* | *6,563* | *37,814* |
| *2.1.1.10 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *192* | *HR* | *1 Contractor Zulu* | *24,151* | *0* | *24,151* | *5,072* | *29,223* |
| *2.1.1.11 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 29 CY, 40 TON, 6X6, REAR DUMP* | *48* | *HR* | *1 Contractor Zulu* | *5,243* | *0* | *5,243* | *1,101* | *6,344* |
| *2.1.1.12 LOADER, FRONT END, WHEEL, SKID-STEER, 13.0 CF, 60" BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *516* | *0* | *516* | *108* | *624* |
| *2.1.1.13 LOADER, FRONT END, WHEEL, ARTICULATED, 7.00 CY (5.4 M3) BUCKET, 4X4* | *48* | *HR* | *1 Contractor Zulu* | *6,644* | *0* | *6,644* | *1,395* | *8,039* |
| *2.1.1.14 HYDRAULIC EXCAVATOR, CRAWLER, 140,000 LB (63,503 KG), 3.50 CY (2.7 M3) BUCKET, 31.4' (9.6 M) MAX DIGGING DEPTH* | *48* | *HR* | *1 Contractor Zulu* | *7,233* | *0* | *7,233* | *1,519* | *8,752* |
| *2.1.1.15 ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 3 TON (2.7 MT), 47" (1.2 M) WIDE, SOIL COMPACTOR* | *48* | *HR* | *1 Contractor Zulu* | *1,049* | *0* | *1,049* | *220* | *1,269* |
| **2.1.2 Truck Transportation of Equipment** | | | | | | | | |
| *2.1.2.1 TRUCK TRAILER, LOWBOY, 75 TON, 3 AXLE (ADD TOWING TRUCK)* | *1,104* | *HR* | *1 Contractor Zulu* | *11,238* | *0* | *11,238* | *2,360* | *13,598* |
| *2.1.2.2 TRUCK, HIGHWAY, 75,000 LBS GVW, 2 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)* | *1,104* | *HR* | *1 Contractor Zulu* | *54,388* | *0* | *54,388* | *11,422* | *65,810* |
| **2.1.3 Labor to Mob.Demob Equipment** | | | | | | | | |
| *2.1.3.1 Outside Equip. Operators, Medium* | *1,104* | *HR* | *1 Contractor Zulu* | *47,765* | *0* | *47,765* | *10,031* | *57,795* |
| *2.1.3.2 Outside Truck Drivers, Heavy* | *1,104* | *HR* | *1 Contractor Zulu* | *37,558* | *0* | *37,558* | *7,887* | *45,445* |
| **2.4 2.d Site Grading** | | | | | | | | |
| *2.4.1 Rough grading, open site, large area, 300 H.P., dozer* | *1,000* | *BCY* | *1 Contractor Zulu* | *816* | *0* | *816* | *171* | *988* |
| **2.6 2.f Construct Facility Runoff Berms** | | | | | | | | |
| *2.6.1 Shape enbankment, slope greater than 1 in 4, by machine* | *5,880* | *SY* | *1 Contractor Zulu* | *6,855* | *0* | *6,855* | *1,440* | *8,294* |
| *2.6.2 Fill by borrow and utility bedding, borrow, for embankments, 1 mile haul, spread, by dozer* | *12,267* | *LCY* | *1 Contractor Zulu* | *118,533* | *0* | *118,533* | *24,892* | *143,424* |
| *2.6.3 Geotextile soil stabilization, geotextile fabric, woven, heavy duty, 600 lb. tensile* | *5,460* | *SY* | *1 Contractor Zulu* | *11,814* | *0* | *11,814* | *2,481* | *14,295* |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| *strength* | | | | | | | | |
| **2.9 2.i Construct Wharf Staging Area/Offloading Site** | | | | | | | | |
| **2.9.2 Wharf Area** | | | | | | | | |
| *2.9.2.1 Unloading Area* | *1* | *LS* | | *1,000,000* | *0* | *0* | *0* | *1,000,000* |
| **3 Item 3 Dredging Operations** | | | | | | | | |
| **3.1 3.a Mob/Demob of Dredging Equipment** | | | | | | | | |
| *3.1.1 Mob/Demob of Dredging Equipment* | *3* | *EA* | | *694,161* | *0* | *0* | *0* | *694,161* |
| **3.2 3.b Dredging Operations** | | | | | | | | |
| *3.2.1 Dredging* | *650,000* | *EA* | | *4,277,000* | *0* | *0* | *0* | *4,277,000* |
| **4 Item 4 Transportation to Material Handling Site** | | | | | | | | |
| **4.1 4.a Offloading Scows into Haul Trucks** | | | | | | | | |
| **4.1.1 Equipment** | | | | | | | | |
| *4.1.1.1 CRANES, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 5.0 CY, 130' BOOM (ADD BUCKET)* | *3,698* | *HR* | *1 Contractor Zulu* | *601,914* | *0* | *601,914* | *126,402* | *728,316* |
| *4.1.1.2 LOADER, FRONT END, WHEEL, SKID-STEER, 13.0 CF, 60" BUCKET, 4X4* | *650* | *HR* | *1 Contractor Zulu* | *6,983* | *0* | *6,983* | *1,466* | *8,450* |
| *4.1.1.3 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *650* | *HR* | *1 Contractor Zulu* | *33,847* | *0* | *33,847* | *7,108* | *40,955* |
| *4.1.1.4 LOADER, FRONT END, WHEEL, 9.00 CY BUCKET, ARTICULATED, 4X4* | *2,111* | *HR* | *1 Contractor Zulu* | *292,195* | *0* | *292,195* | *61,361* | *353,556* |
| **4.1.2 Labor** | | | | | | | | |
| *4.1.2.1 Outside Equip. Operators, Heavy* | *5,809* | *HR* | *1 Contractor Zulu* | *251,326* | *0* | *251,326* | *52,778* | *304,105* |
| *4.1.2.2 Outside Equip. Operators, Light* | *650* | *HR* | *1 Contractor Zulu* | *27,265* | *0* | *27,265* | *5,726* | *32,991* |
| *4.1.2.3 Outside Truck Drivers, Heavy* | *650* | *HR* | *1 Contractor Zulu* | *22,113* | *0* | *22,113* | *4,644* | *26,757* |
| **4.2 4.b Truck Transport Hauling Costs** | | | | | | | | |
| *4.2.1 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *5,216* | *HR* | *1 Contractor Zulu* | *656,116* | *0* | *656,116* | *137,784* | *793,900* |
| *4.2.2 Outside Equip. Operators, Heavy* | *5,216* | *HR* | *1 Contractor Zulu* | *225,670* | *0* | *225,670* | *47,391* | *273,061* |
| *4.2.3 TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 28 CY, 40 TON, 6X6, REAR DUMP* | *1,738* | *HR* | *1 Contractor Zulu* | *47,090* | *0* | *47,090* | *9,889* | *56,979* |
| **5 Item 5 Operations and Maintenance - Material Handling** | | | | | | | | |
| **5.1 5.a Material Handling/Material Turn Over** | | | | | | | | |
| *5.1.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.2 5.b Stockpiling** | | | | | | | | |
| *5.2.1 Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 500' haul* | *650,000* | *SY* | *1 Contractor Zulu* | *743,494* | *0* | *743,494* | *156,134* | *899,627* |
| **5.3 5.c Load Out** | | | | | | | | |
| *5.3.1 Excavate and load, bank measure, medium material, 7 C.Y. bucket, wheeled loader* | *650,000* | *BCY* | *1 Contractor Zulu* | *573,731* | *0* | *573,731* | *120,484* | *694,215* |
| **5.4 5.d Dust Control** | | | | | | | | |
| *5.4.1 TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL, W/CAT 613C TRACTOR* | *650* | *HR* | *1 Contractor Zulu* | *33,847* | *0* | *33,847* | *7,108* | *40,955* |

| Description | Quantity | UOM | Contractor | DirectCost | SubCMU | CostToPrime | PrimeCMU | ContractCost |
|---|---|---|---|---|---|---|---|---|
| **5.5 5.e Annual Site Maintenance** | | | | | | | | |
| *5.5.1 Annual Site Maintenance* | *3* | *LS* | | *75,000* | *0* | *0* | *0* | *75,000* |
| **6 Item 6 Transport to Silver Oaks Landfill** | | | | | | | | |
| **6.1 6.a CDF to Silver Oaks Trucking** | | | | | | | | |
| *6.1.1 CDF to Silver Oaks Landfill* | *200,000* | *CY* | | *2,264,000* | *0* | *0* | *0* | *2,264,000* |
| **6.3 6.b CDF to Brooke Park** | | | | | | | | |
| *6.3.1 CDF to Brooke Park* | *450,000* | *CY* | | *4,365,000* | *0* | *0* | *0* | *4,365,000* |
| **7 Item 7 Permitting and Regulatory** | | | | | | | | |
| *7.1 7.a Material Management Plan* | *3* | *EA* | | *60,000* | *0* | *0* | *0* | *60,000* |
| *7.2 7.b Site Pre-construction soil testing* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| *7.3 7.c Dredged sediment material monitoring* | *3* | *EA* | | *75,000* | *0* | *0* | *0* | *75,000* |
| *7.4 7.d Site enviromental qaulity monitoring* | *3* | *EA* | | *15,000* | *0* | *0* | *0* | *15,000* |
| **8 Item 8 Project Management, E & D, S & A** | | | | | | | | |
| **8.1 8.a Overhead and Management** | | | | | | | | |
| *8.1.1 Overhead and Management* | *3* | *EA* | | *450,000* | *0* | *0* | *0* | *450,000* |
| **8.2 8.b Engineering & Design** | | | | | | | | |
| *8.2.1 Engineering & Design* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |
| **8.3 8.c Supervision & Administration** | | | | | | | | |
| *8.3.1 Supervision & Administration* | *3* | *EA* | | *225,000* | *0* | *0* | *0* | *225,000* |

# Appendix H6: Cost Estimate for CDF Expansion

## Cleveland 10B Extension

| | |
|---|---|
| General CDF construction w/ Contingencies 27% | $49,450,000 |
| Outfall Relocations (Unknown if any in area by USACE) | $0 |
| Environmental Compliance | $150,000 |
| Real Estate | $45,000 |
| Develop and Exceute Project Partnership Agreement (PPA) | $60,000 |
| Real Estate Acquisition | $0 |
| Design Analysis (2.5%) | $1,236,250 |
| Construction Management (7.5%) | $3,708,750 |
| ***Subtotal (Cost -share Amount)*** | $54,650,000 |
| O&M Costs | |
| **Total** | $54,650,000 |
| Design Capacity (CY) | 1,000,000 |
| **Total Cost per CY** | $54.65 |