US Army Corps of Engineers ®
Chicago District

BUBBLY CREEK, SOUTH BRANCH OF THE CHICAGO RIVER, ILLINOIS FEASIBILITY STUDY

APPENDIX F
HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

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APRIL 2015

BUBBLY CREEK, SOUTH BRANCH OF THE CHICAGO RIVER, ILLINOIS ECOSYSTEM RESTORATION FEASIBILITY STUDY

APPENDIX F – HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

April 2015

List of Attachments

Attachment 1: Hazardous, Toxic, and Radioactive Waste Investigation for South Fork South Branch, Chicago River, May 2006

Attachment 2: Phase I Environmental Site Assessment: Bubbly Creek – Chicago River South Fork of the South Branch Chicago, Cook County, Illinois 84 Total Parcels

Attachment 3: 2013 HTRW Updates for South Fork South Branch (Bubbly Creek) Memorandum for Record, September 2013

Attachment 4: Review of Potential Environmental Issues for Bubbly Creek (South Fork South Branch Chicago River) Memorandum for Record, September 2014

Attachment 5: Sediment Gas Ebullition and Flux Studies Bubbly Creek, South Fork South Branch, Chicago River Volume 1 of 2: Report with Appendices A-D

Attachment 6: Sediment Gas Ebullition and Flux Studies Bubbly Creek, South Fork South Branch, Chicago River Volume 2 of 2: Appendix E Analytical Results

Attachment 1:

Hazardous, Toxic, and Radioactive Waste Investigation for South Fork South Branch, Chicago River, May 2006

CELRC-TS-DH

MEMORANDUM FOR CELRC-PM-PM (Kirston Buczak)

SUBJECT: HTRW Investigation Report for SFSB Chicago River.

1. This document covers an HTRW Investigation of the South Fork South Branch, Chicago River, performed by TS-D-HE. Throughout project phases the PDT should be aware of sediment quality data described herein as well as the information collected from environmental databases. If a chosen restoration alternative includes sediment removal for disposal at a landfill, the PDT should expect requirements for additional sediment sampling from the chosen landfill. Sampling of riverbank soils may also be necessary if bank stabilization is included in an alternative, particularly if the work is near one of the potential sites of concern identified during the database review. Finally if a chosen alternative includes sediment capping there may be a need for groundwater modeling or other groundwater studies to support the cap design.

2. The point of contact for questions about this memo is Nicole Roach at extension 5504.

JAY A. SEMMLER, P.E.
Chief, Hydraulics and Environmental
Engineering Section

HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE INVESTIGATION FOR SOUTH FORK SOUTH BRANCH, CHICAGO RIVER

Prepared By:

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MAY 5, 2006

INTRODUCTION **1**

AUTHORITY **1**

GUIDANCE **1**

LAWS AND REGULATIONS **2**

FEDERAL 2
STATE 2

SITE DESCRIPTION **2**

PROJECT DESCRIPTION **4**

GENERAL METHOD FOR HTRW SEARCH **4**

EXISTING INFORMATION REVIEW **4**

Air Sampling and Analysis *4*
Sediment Sampling and Analysis *5*
Hazardous Waste Testing *9*

DATABASE SEARCH **11**

RESULTS 12
NPL *12*
CERCLIS *12*
CERCLIS-NFRAP *13*
RCRA Info *14*
ERNS *15*
UST/LUST *16*

FINDINGS AND CONCLUSIONS **17**

EXISTING INFORMATION REVIEW 18
DATABASE REVIEW 18
RECOMMENDATIONS: 19

REFERENCES **19**

INTRODUCTION

The purpose of this document is to discuss the Hazardous, Toxic and Radioactive Waste (HTRW) investigation for the South Fork South Branch, Chicago River (SFSB) project site. This report will be included in the 905(b) analysis, reconnaissance report for the SFSB project. This text describes the methods employed while conducting the investigation, and identifies any associated environmental issues. This report provides conclusions and recommendations regarding potential HTRW impacts associated with the proposed restoration project. Non-HTRW environmental issues have also been investigated.

AUTHORITY

Engineer Regulation (ER) 1165-2-132, Hazardous, Toxic, and Radioactive Waste Guidance for Civil Works projects, requires that a site investigation be conducted as early as possible to identify and evaluate potential HTRW problems. According to this directive, non-HTRW environmental issues that do not comply with federal, state, and local regulations should also be discussed in this investigation, along with HTRW issues.

No HTRW/Phase I investigation can wholly eliminate uncertainty regarding the potential for HTRW associated with a project area. Performance of the HTRW investigation is intended to reduce, but not eliminate, uncertainty regarding the potential for HTRW in connection with a project area. This practice recognizes time and cost constraints inherent in project planning.

GUIDANCE

Primary guidance for the investigation was the U.S. Army Corps of Engineer's Engineering Regulation (ER) 1165-2-132. The objective of ER 1165-2-132 is to outline procedures to facilitate early identification and appropriate consideration of HTRW problems. This investigation, therefore, identifies potential HTRW problems and discusses resolutions and/or provides recommendations regarding the HTRW problems identified.

Supplemental guidance was provided by the Standard Practice for Environmental Assessments: Phase I Environmental Site Assessment Process (Designation: E 1527-00) prepared by American Society for Testing of Materials (ASTM). These standards include a record review, site reconnaissance, interviews, database searches, and report preparation guidelines.

According to ER 1165-2-132, non-HTRW environmental issues that do not comply with federal, state and local regulations should be discussed in the HTRW investigation along with HTRW issues. For example, solid waste is a non-HTRW issue that was considered. Therefore, non-HTRW and HTRW issues identified are discussed in this report.

LAWS AND REGULATIONS

Federal

The definition of HTRW according to ER 1165-2-132 on page 1, paragraph 4(a) reads as follows: "Except for dredged material and sediments beneath navigable water proposed for dredging, for the purposes of this guidance, HTRW includes any material listed as a 'hazardous substance' under the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601 *et seq*. (CERCLA). Hazardous substances under CERCLA include 'hazardous wastes' under Section 3001 of the Resource Conservation and Recovery Act, 42 U.S.C. 6921 *et seq*. (RCRA); 'hazardous substances' identified under Section 311 of the Clean Air Act, 33 U.S.C. 1321; 'toxic pollutants' designated under Section 307 of the Clean Water Act, 33 U.S.C. 1317; 'hazardous air pollutants' designated under Section 112 of the Clean Air Act, 42 U.S.C. 7142; and 'imminently hazardous chemical substances or mixtures' on which EPA has taken action under Section 7 of the Toxic Substances Control Act, 15 U.S.C. 2606; these do not include petroleum or natural gas unless already included in the above categories. (See 42 U.S.C. 9601 (14).)"

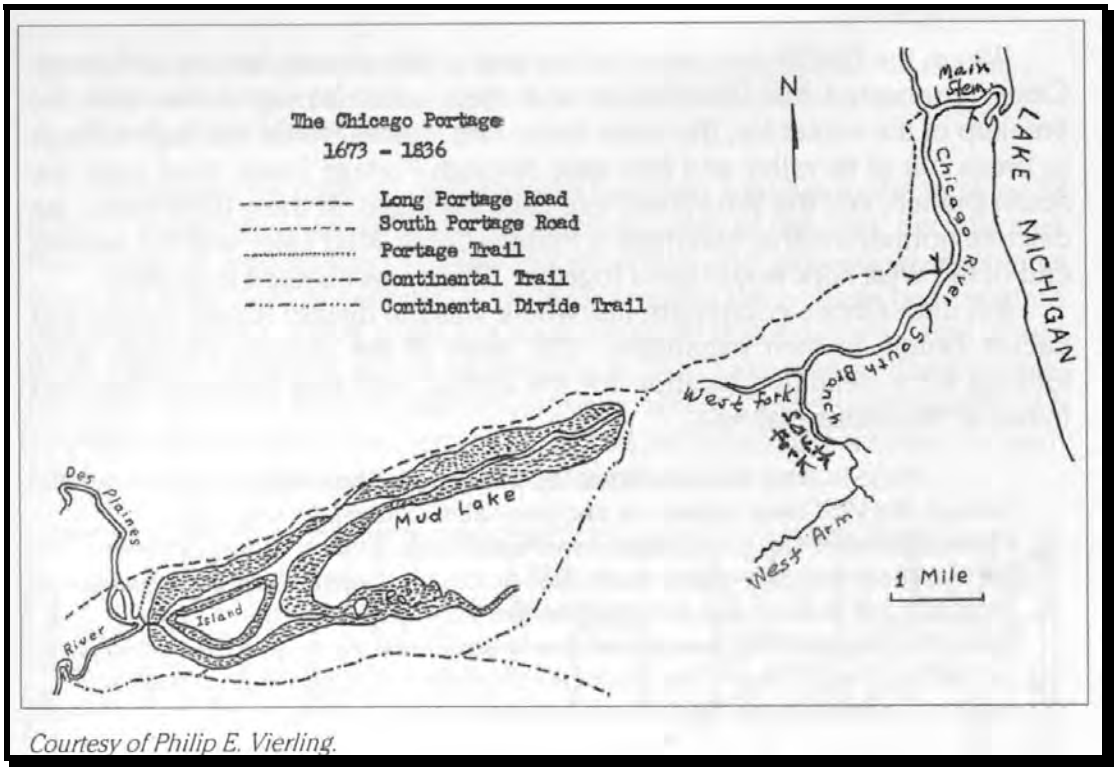
As stated in the definition of hazardous substance in the Environmental Statutes, 1988 Edition, the term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance under the definition. Underground storage tanks (USTs) are federally regulated under 40 CFR Part 280, technical standards and corrective action requirements for owners and operators of USTs.

State

The Illinois State regulations were examined to determine the impacts of USTs on the project area. Illinois regulates USTs under Illinois Administrative Code, Title 35, Subtitle G, Chapter 1, Subchapter d, Part 731, Underground Storage Tanks. In addition to this state regulation, the Illinois Environmental Protection Agency (IEPA) publishes a LUST manual to provide an instructive guide to leaking tank owner's/operator's responsibilities. These guidelines are intended to be used in conjunction with the state and federal regulations.

SITE DESCRIPTION

The South Fork of the South Branch (SFSB) of the Chicago River, better known as Bubbly Creek, is a 6,600-foot long channel that begins near Racine Avenue and 38th Street, along the north side of the Racine Avenue Pump Station (RAPS) and flows north to the South Branch of the Chicago River. SFSB has been greatly altered through urban development.



Courtesy of Philip E. Vierling.

Figure 1: Bubbly Creek, 1836

Figure 2: Bubbly Creek, 1911

A combined sewer system was constructed in the late 1800's, and now over 30 square miles of the Downtown and Southside of Chicago drain to the Racine Avenue Pumping Station (RAPS), which discharges at the south end of the project site during major storm events.

PROJECT DESCRIPTION

Current problems within the SFSB include an impervious watershed, stream channel filling and widening, large quantities of biological refuse, and an unnatural and flashy hydraulic regime. Problems that would be addressed by the proposed project include stream channelization, sediment degradation, severe hydrologic alterations, lack of in-stream and riparian habitat, and water quality issues. Potential restoration measures being considered for feasibility include selective dredging, sediment capping, alterations to RAPS overflow and bypassing RAPS overflow.

GENERAL METHOD FOR HTRW SEARCH

This assessment relies primarily on existing analytical data on the project site, and on the location of regulated sites within the immediate vicinity of the project area through a database search. The following sections contain information that was gathered in accordance with ER 1165-2-132. Information was obtained from:

- Review of existing site information, including a review of sediment and air quality data and photographs
- Search of state and local databases for regulated sites in the area

EXISTING INFORMATION REVIEW

Air Sampling and Analysis

Although air samples do not impact our sediment/ecosystem work per se, poor air quality is a general indication of industrial stresses on the area. Industrial pressures such as air pollution could be indicative of other discharges too, such as water discharges that could impact our project. The results of air sampling conducted at the SFSB project site by Chicago Department of Environment (DOE) in 2004 and 2005 summarized below. Available data has raised no significant concerns about air quality in the project area.

Chicago DOE conducted three incidents of air sampling at the SFSB water surface, and has provided the resulting data to USACE for inclusion in this report. First in October 2004, Chicago DOE conducted air screening for VOCs, O_2, LEL, CO, and H_2S at the SFSB using a PID, LEL, and H_2S meter (Attachment A-1). DOE indicated in an email dated 30 March 2006 that all results came up normal except for VOCs, and subsequent measurement was conducted the following week that showed VOCs at normal ambient levels.

In January 2005 DOE collected air samples for laboratory analyses of VOCs (Attachment A-2). According to DOE the results were comparable to background and were reviewed by the Chicago Health Department, who didn't see a significant health risk based on the results.

Finally DOE repeated air screening with a PID and H_2S meter in summer 2005. According to DOE, the results for H_2S were below detection limits and VOCs were consistent with background (0 to 2 ppm).

Sediment Sampling and Analysis

USACE, USEPA, MWRD, and IEPA have all performed past sediment sampling in the SFSB (Figure 3 & Figure 4). USACE and USEPA results are documented in separate reports (USEPA 2003, CDM 2005). Only the data itself is available for IEPA and MWRD studies. Bulk chemistry results are consistent among these sediment sampling events in that they all show detections of polyaromatic hydrocarbons (PAH) in the parts per million range (CDM 2005). Other detected contaminants included semi volatile organic compounds (SVOC), volatile organic compounds (VOC), polychlorinated biphenyls (PCB), oil and grease, and heavy metals.

Figure 3: SAMPLING LOCATIONS FOR USEPA, MWRD, AND IEPA STUDIES.

IEPA, MWRD and USEPA sampling locations are shown in Figure 3. IEPA collected two samples from the creek in September 1994. One sample was collected beneath the 35th Street Bridge, and the other beneath the Stevenson Expressway Bridge. MWRD collected sediment samples from three locations in the SFSB in January of 1995. One sample was collected in the turning basin at the north end of the SFSB, one near the O Keefe Brothers Coal and Oil Company, and one on the south end of the fork, north of the Racine Avenue Pumping Station. USEPA performed a survey of sediment contamination over the entire Chicago River in October of 2000 (USEPA 2003). A 72-inch sediment core was collected in the SFSB during this event. Resulting analytical data from all three events described above are included as Attachment C.

USACE performed collection and analysis of SFSB sediment in April of 2004 utilizing the services of CDM Federal Programs Corporation (Figure 4). Five (5) grab samples and thirteen (13) sediment cores equal to the thickness of the sediment layer (ranging from 5.5-16 foot depth) were collected during this event. All samples were analyzed for bulk chemistry and core samples were analyzed for additional TCLP and hazardous waste criteria (Attachment B). Laboratory analyses for bulk chemistry and hazardous waste parameters were performed by Mitkem Corporation of Warwick, Rhode Island.

Bulk Chemistry results of this sampling event show elevated levels of PAHs and heavy metals. High concentrations of nutrients, oil and grease were also detected. Hazardous waste testing revealed levels of reactive sulfide that are considered problematic based on RCRA guidance that has been withdrawn by EPA, and also revealed a single sample with a flash point that does not meet RCRA standards. Hazardous waste issues are further discussed under the subsection titled Hazardous Waste Testing.

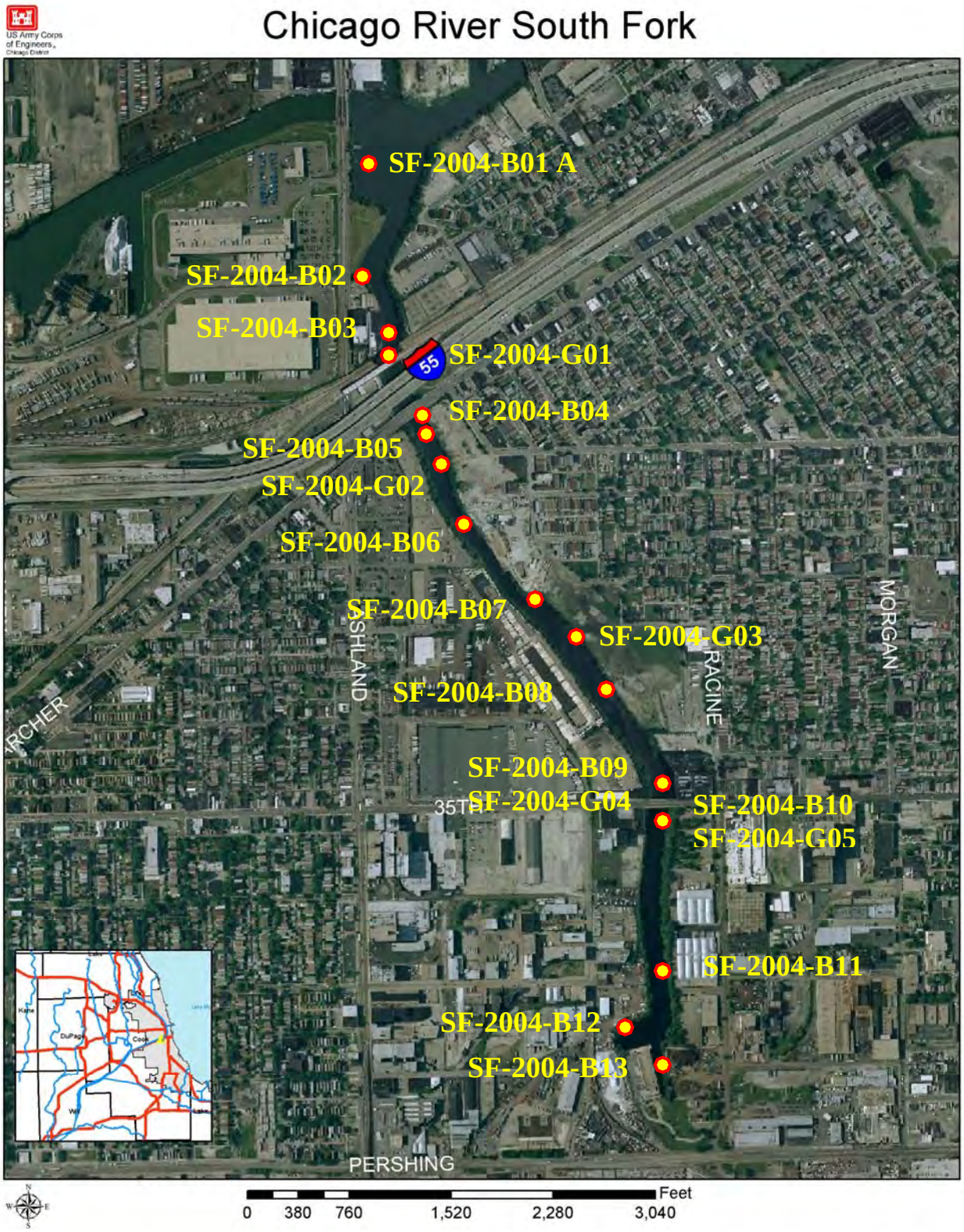


Figure 4: 2004 Sediment Sampling Locations. Chemical data for these samples is included in Appendix A.

Hazardous Waste Testing

The previously described analyses for hazardous waste criteria were done to determine if sampled material is characteristically toxic, corrosive, reactive or ignitable per 40 CFR 261.20-24 (Subpart C), and thus is classifiable as “hazardous waste”. Thirteen (13) sediment core samples collected in April of 2004 were analyzed. Testing parameters included TCLP VOCs, TCLP SVOCs, TCLP Pesticides, TCLP Herbicides, TCLP Metals, pH, Reactive Cyanide, Reactive Sulfide and Flashpoint.

Material test results do not indicate that material is characteristically corrosive or toxic under RCRA. Regulatory criteria for pH ($\leq$ 2 or $\geq$12) were not exceeded for any samples, and TCLP test results were not found to exceed any EPA regulatory levels (Attachment B-2).

Interpretations of results for ignitablilty and reactivity were less straight-forward. First regarding ignitability, 40 CFR 261.21 indicates that a liquid with a flashpoint less than 140 degrees Fahrenheit, when determined by a Pensky-Martens Closed Cup Tester, is characteristically hazardous for "ignitability". One (1) SFSB sample out of thirteen (13) tested using the Pensky-Martens Closed Cup Tester method exhibited a flash point below this guidance level of 140 degrees Fahrenheit (TABLE 1). This may be an isolated case and an anomaly, however, further investigation is recommended before drawing conclusions on whether this material shall be considered hazardous based on ignitability.

It is also noteable from Table 1 that in eleven (11) of the thirteen (13) samples the material temperature did not even reach 140ºF during the flash point test. In an e-mail correspondence to USACE dated 01 July 2004, CDM explained that according to the lab operations manager at Mitkem Laboratory (Ed Lawler) and CDM chemist/data validator (Scott Kirchner) the moisture in the samples was vaporized as the temperature increased during the test procedure, thereby extinguishing the flame at the temperature reported, which is the opposite of igniting.

TABLE 1: SFSB ANALYTICAL RESULTS FOR REACTIVE SULFIDE AND FLASH POINT USING METHODS SW-846 CHAPTER 7: 7.3.4.2 AND 1010, RESPECTIVELY.

Sample ID #	Depth below surface (ft)	Reactive Sulfide (mg/kg)	Flash Point (ºF)**
SF-2004-B01A	10-12	5200	“No flash up to 119”
SF-2004-B02	4-6	8200	“Flash at 124”
SF-2004-B03	4-6	5000	“No flash up to 130”

Sample ID #	Depth below surface (ft)	Reactive Sulfide (mg/kg)	Flash Point (ºF)**
SF-2004-B04	4-6	4100	"No flash up to 125"
SF-2004-B05	4-6	3200	"No flash up to 107"
SF-2004-B06	6-8	730	"No flash up to 138"
SF-2004-B07	6-8	1100	"No flash up to 135"
SF-2004-B08	4-6	2200	"No flash up to 140"
SF-2004-B09	6-8	3200	"No flash up to 110"
SF-2004-B10	10-12	42	"No flash up to 137"
SF-2004-B11	0-2	640	"No flash up to 137"
SF-2004-B12	14-16	910	"No flash up to 138"
SF-2004-B13	2-4	110	"No flash up to 145"

**Mitkem Laboratory indicated that some results were not heated all the way to 140ºF because high water content in the samples was putting out the test flame.

Secondly regarding reactivity, 40 CFR 261.23 indicates that a material is characteristically hazardous for "reactivity" if it is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment. Revision 3 of SW-846 published in December 1996 included paragraph 7.3.4 "Interim Guidance for Reactive Sulfide" containing a laboratory method for measuring releasable sulfide in solids, and an associated EPA guidance level of 500 mg/kg, above which the material could be deemed characteristically hazardous for reactivity. SFSB samples were analyzed for reactive sulfide using the SW-846 method given in Revision 3, and levels of sulfide were found to exceed the established EPA guidance level of 500 mg/kg in eleven (11) out of thirteen (13) samples (TABLE 1).

Since Revision 3 of SW-846 was released however, USEPA has found significant problems with the method and guidance given in paragraph 7.3.4. Revision 4 of SW-846, published in November 2004 was released without the guidance and simply paraphrases the regulatory definition for reactivity. Because there is no guidance in place for allowable concentrations of reactive sulfide in a waste SFSB sediment is not considered hazardous from a regulatory standpoint. However the PDT will consider reactive sulfide levels along with all other sediment data when determining proper sediment handling and disposal in later project phases.

DATABASE SEARCH

Method

The purpose of the database search is to identify state or federally regulated sites in the vicinity of the project site that may impact the proposed work. Database information was obtained through Environmental Data Resources (EDR) in accordance with the recommended search distance provided by the Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process (ASTM E 1527-00). The search was performed based upon the longitude and latitude coordinates at the approximate center of the SFSB. The search was done in compliance with recommended search radii for Federal and State database listings. Table 2 outlines the recommended search radii for Federal and State database listings, as provided in "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E 1527-00)".

Table 2: Recommended Search Radii for Federal and State Database Searches

Database Listing	Approximate Minimum Search Distance (mi)
Federal NPL List	1.0
Federal CERCLIS List	0.5
Federal CERCLIS NFRAP List	Property and adjoining properties
Federal RCRA Facilities List	1.0
Federal RCRA Generators List	Property and adjoining properties
Federal ERNS List	Property Only
State Landfill and/or solid waste disposal	0.5
State Leaking UST Lists	0.5
State registered UST lists	Property and adjoining properties

The most significant databases searched are listed below. The National Priorities List (NPL) database and the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) contain information about "Superfund" sites.

CERCLIS-NFRAP sites were also searched and are CERCLIS sites where, following an initial investigation, either no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration. The RCRA Info database identifies facilities that transport, store, and dispose regulated chemicals. In addition, the Emergency Response Notification System (ERNS) the Illinois LUST and UST databases were searched. Determination of the potential for HTRW issues during review of database listings is based on overall potential for contaminant migration off the listed site and distance from the proposed construction area.

A large number of regulated sites were identified within the designated search radius. To manage this volume of data our review of the report was limited to CERCLIS and RCRA Corrective Action sites, CERCLIS-NFRAP sites that fall on the property or adjoining properties, and LUST or UST sites that fall directly on or immediately adjacent the property. Given the known current site conditions at SFSB, RCRA small quantity generator (SQG) facilities and offsite LUST facilities are considered less risk to the project, and were not considered in this review.

Results

NPL

The National Priorities List (NPL) database is a subset of CERCLIS and identifies high priority cleanup sites under the Superfund program. The source of this database is USEPA. There were no NPL sites identified within 1 mile of the project site.

CERCLIS

The CERCLIS database lists any site for which the USEPA Office of Superfund has taken any action. Typically, the CERCLIS database indicates the stages of evaluation and remediation that have been completed for any given site. There were seven (7) CERCLIS sites identified within the search area. Only one (1) of these sites, People's Gas Light and Coke, was deemed significant based on the database review.

People's Gas Light & Coke is located near South Racine and Cermak, 0.25 miles north of the South Branch of the Chicago River (Figure 5). No closure date is indicated in the CERCLIS listing. A phone conversation with the IEPA project manager for this site, Jason Krampen (217) 557-8859, revealed that site issues are still open and under investigation. Contaminants of concern are mainly VOCs and PNAs, soil has been impacted but the extent of contamination is unknown, and groundwater may be impacted but this has not been confirmed. No remedial action is scheduled in the near future. *The site is not directly adjacent to the proposed project area but due to the level of uncertainty associated with current conditions it cannot be ruled out as a potential HTRW concern. The status of this site should be periodically updated during planning and design of the SFSB restoration project to ensure early identification of migration pathways for contaminants of concern (COCs) toward the SFSB project area if they exist.*

Figure 5: Approximate location of People's Gas Light and Coke site

CERCLIS-NFRAP

There were 29 sites identified within the search radius on the CERCLIS-NFRAP (no further remedial action planned) list. One (1) of these sites, Engineered Polymer Solutions (2841 S Ashland Avenue), was deemed significant because it is located very close to the project site. If the listed address is correct this is situated east of Ashland Avenue and south of the SFSB turning basin (Figure 6). According to the database entry the CERCLIS site was assigned a low priority in 1984 after a preliminary assessment was done. An HRS (Hazard Ranking System) package was completed in 1986 and the site was archived as NFRAP in November 1995. This site is also identified as a RCRA-LQG however no associated violations are reported. There is currently no additional information available about Engineered Polymer Solutions site. *Although there is no further remedial action planned, more information on site conditions might be needed if project activities call for sediment removal or bank disturbance in the area. Additional investigation is recommended through interviews with regulatory agencies and possibly environmental sampling if construction plans call for this type of disturbance.*

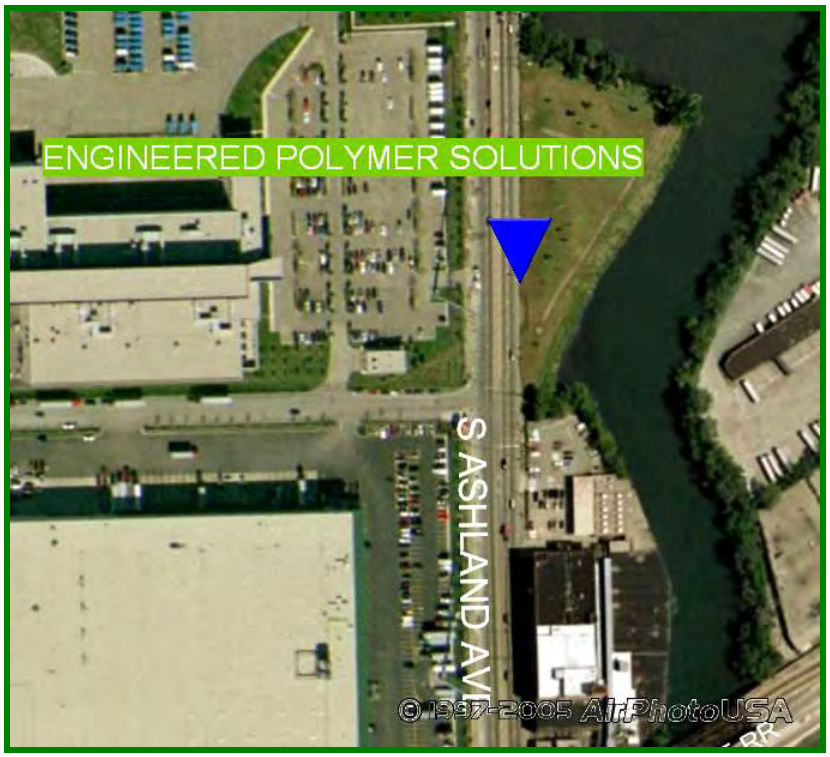


Figure 6: Approximate location of Engineered Polymer Solutions site, adjacent to the SFSB.

RCRA Info

The RCRA Info database listing provided a list for the search area including the following criteria:

Large and small quantity generators
Treatment, storage, and disposal facilities
Site regulatory status
Burners and blenders

There were thirteen (13) RCRA Corrective Action (CORRACTS) sites identified within the search radius. Only one (1) of these sites was deemed significant. Operating under Safety Kleen, the company Custom Organics is located on 1445 W 42nd Street, a little over ½ mile south of SFSB (Figure 7). According to database listings a RFI was deemed necessary on 09/30/1992. In September of 1993 the site was deemed not amenable to stabilization and assigned a low corrective action priority. This site also appears on the NFRAP list as having been archived in 1984. Additionally, the site is listed as a RCRA TSD Facility with a number of associated violations.

To get additional information TS-D-HE interviewed Anna Van Orden at IEPA (847) 294-4068 who had limited data on the CORRACTS status of the site but her records did indicate that there had been site closure. She also indicated that the site is closely

monitored under an existing TSDF permit and if there was a known potential for migration of contaminants away from the site, this would be in violation of that permit. Anna's records show no outstanding TSDF violations so based on this, and distance from the project area (over 0.5 miles), the Custom Organics site not considered an HTRW concern.

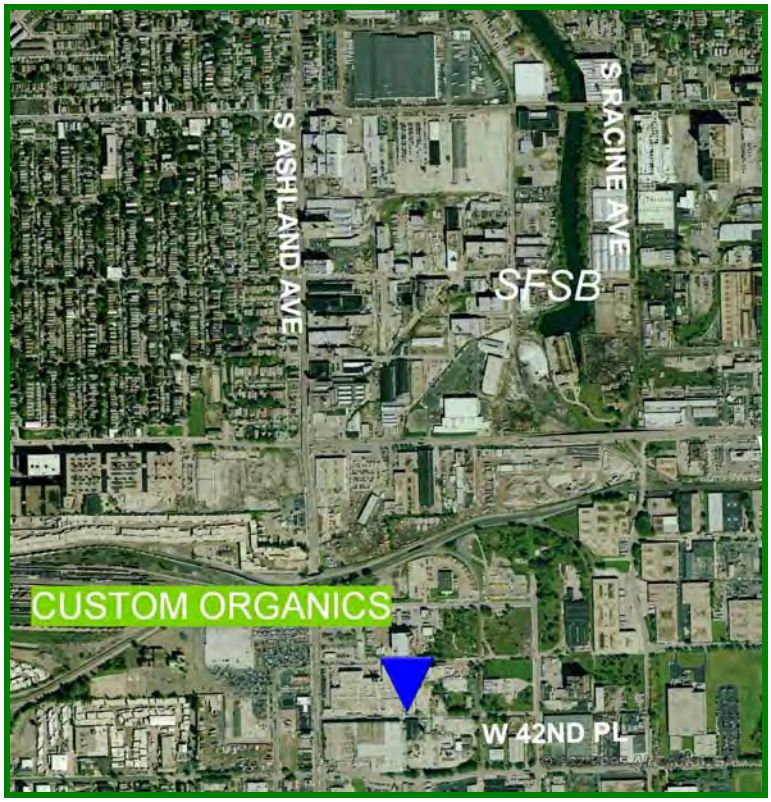


Figure 7: Custom Organics site location.

ERNS

The ERNS database lists all reports of a release of a regulated or hazardous substance to the Emergency Response Notification System.

Seventy five (75) ERNS spills were identified within the search area. Only two (2) of these spills were investigated further because they occurred fairly close to the project site (Figure 8). One release was 100-gallons of oil that occurred on land in 1994, approximately 500 feet west of the project site. The site report does not indicate a cleanup date, but because the spill occurred on land only and it has been over 12 years since the occurrence, migration of spilled oil from this site to the project area is not expected. The other identified release was an air release reported in 2000 at 1400 W 37th St., which would not be expected to have any significant long-term environmental effects.

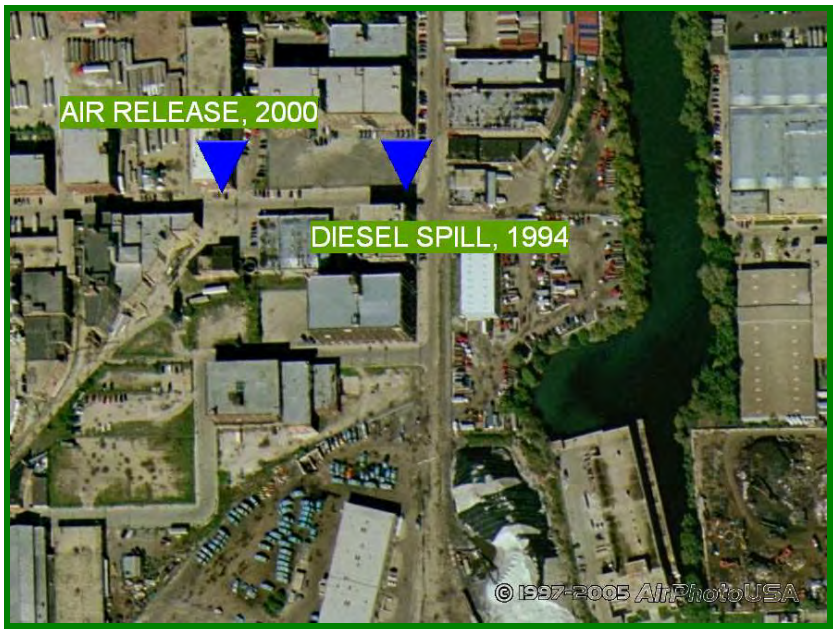


Figure 8: Approximate locations of two ERNS sites that were deemed significant.

UST/LUST

The underground storage tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). Any UST or LUST could pose a hazard to the project if it is located in an area where it could physically interfere with construction. LUST sites specifically could also impact the project thorough migration of contaminants that originated from the leaking tank.

A listing of underground storage tanks (UST) was obtained from the Indiana Department of Environmental Management (IDEM). Two (2) UST sites were found close to the project area (Figure 9) and are listed in Table 3 below. *These could affect the project if they are buried in a location where they could interfere with construction.*

Table 3: UST on or adjacent to the project site.

UST	Address	Remarks
Continental Bldg Corp	1301 W 35th Street	4 older tanks, not being used.
LEVCO Associated Properties	1300 W 35th Street	4 older tanks, not being used.

Figure 9: Listed UST and open LUST site immediately adjacent to the SFSB.

Identified LUST incidents are listed in Table 4. Incidents at two out of the three identified LUST sites have been closed. There is no listed closure date for LEVCO associated properties located at 35th St and the SFSB (Figure 9), so *there is potential for this LUST to affect the project if contaminated soil or groundwater remains on the site, or if the tank is buried in a location where it could interfere with construction.*

Table 4: LUST on or adjacent to the project site.

LUST	Address	Remarks
LEVCO Associated Properties	1300 W 35th Street	1 tank. 1996 incident, diesel, closure date not indicated.
R4 Services	1301 W 35th Street	2 tanks. 1992 and 1998 incidents, both closed.
Illinois Dept of Conservation	East of Ashland Avenue	1 tank. 1992 incident, closed.

FINDINGS AND CONCLUSIONS

To complete an HTRW investigation for the SFSB Chicago River project site two methods were employed:

- Review of Existing Project Information
- Database Review

The following sections summarize the conclusions of this investigation and associated recommendations regarding potential HTRW impacts to the project.

Existing Information Review

The most significant source of HTRW in the SFSB Chicago River is the substrate sediment of the streambed, which represents years of unregulated industrial activity in the surrounding area. Sediment bulk chemistry data shows elevated levels of PAHs and heavy metals. High concentrations of nutrients, oil and grease were also detected.

Analyses for hazardous waste criteria were done to determine if SFSB sediment is characteristically toxic, corrosive, reactive or ignitable per 40 CFR 261.20-24 (Subpart C), and thus is classifiable as "hazardous waste". Results showed elevated levels of reactive sulfide and a single sample with flash point that does not meet RCRA standards (flashpoint is below 140ºF). The flash point result is an isolated case that may be an anomaly. To confirm whether or not material is hazardous based on ignitability, further investigation is required. Sediments are not considered hazardous waste based on reactivity (reactive sulfide levels) from a regulatory standpoint, but sulfide levels will be considered along with all other sediment data when making decisions about material handling and disposal.

Database Review

Given the known current condition of the channel sediments it seems comparatively unlikely that more remotely located sites (CERCLIS and CORRACTS) and less severe incidents (UST, LUST, CERCLIS-NFRAP) identified in the database review would significantly impact the project. However in selected cases a need for more detailed information about existing site conditions and about overall potential for contaminant migration limits the ability to eliminate a site as a potential concern. As such, the following sites are acknowledged for consideration during future project phases.

People's Gas Light & Coke, located near South Racine and Cermak, 0.25 mile north of the South Branch of the Chicago River is an open CERCLIS site, involving VOC and PNA contaminated soil and possibly groundwater (Figure 5). The extent of contamination is still being investigated and no remedial action is scheduled in the near future. *This site is not directly adjacent to the proposed project area but due to the level of uncertainty associated with current conditions, it cannot be ruled out as a potential HTRW concern. The status of this site should be periodically updated during planning and design of the SFSB restoration project to ensure early identification of any migration pathways for contaminants of concern (COCs) toward the SFSB project area.*

One (1) CERCLIS-NFRAP site, Engineered Polymer Solutions (2841 S Ashland Avenue), was deemed significant because it appears to be located very close to the project site, east of Ashland Avenue and south of the SFSB turning basin (Figure 6). *Although there is no further remedial action planned, more info on site conditions might be needed if project activities call for sediment removal or bank disturbance in this area. Should construction plans call for this type of disturbance, additional investigation is recommended through interviews with regulatory agencies and possibly through environmental sampling.*

Two UST Sites, Continental Building Corp and LEVCO Associated Properties, were identified near the project site. *These USTs could potentially impact the project if they are buried in a location where they could physically interfere with construction.*

There is also a listed LUST incident for LEVCO Associated Properties, with no indication of a closure date. *This site therefore has the potential to impact the project if there is contamination remaining on the site, or through physical interference with construction.*

Recommendations:

Throughout future project phases the PDT should be aware all existing sediment data described herein, and all the information collected from the environmental databases.

To achieve the goal of ecosystem restoration at SFSB a number of potential alternatives will be identified during the Feasibility Study phase. If a chosen alternative includes sediment removal for disposal at a landfill, the PDT should expect requirements for additional sediment sampling from the chosen landfill. Sampling of riverbank soils may also be necessary if bank stabilization is included in an alternative, particularly if the work is near one of the potential sites of concern identified during the database review. Finally if a chosen alternative includes sediment capping there may be a need for groundwater modeling or other groundwater studies to support the cap design.

REFERENCES

ASTM. Standard Practice for Environmental Assessments: Phase I Environmental Site Assessment Process (E 1527-94).

CDM. 2005. Collection and Analysis of Sediment Samples from the South Fork South Branch, Chicago River. Chicago, Illinois.

MWRDGC. 2003. Report No. 03-1: Bubbly Creek Water Quality Improvement. Chicago, Illinois.

USEPA. 2003. "October 2000 and August 2002 survey of sediment contamination in the Chicago River, Chicago, Illinois." USEPA Great Lakes National Program Office.

Wetlands Initiative. 2001. The South Fork: A New Urban Environment. Chicago, IL

ATTACHMENT A

Chicago DOE Air Monitoring Results

OCTOBER 2004 SFSB AIR SAMPLING PERFORMED BY CHICAGO DEPARTMENT OF ENVIRONMENT (DOE)						
Site	Run	CO	VOC	H2S	LEL	O2
1	1	42	0.1	0	0	20.9
	2	34	0.1	0	0	20.9
	3	36	0.1	0	0	20.9
	Maximum		0.1			
2	1	0	160	0	0	20.9
	2	0	168	0	0	20.9
	3	0	175	0	0	20.9
	Maximum		198			
3	1	0	50	0	0	20.9
	2	0	48	0	0	20.9
	3	0	54	0	0	20.9
	Maximum		77			
4	1	0	171	0	0	20.9
	2	0	166	0	0	20.9
	3	0	159	0	0	20.9
	Maximum		171			
5	1	0	213	0	0	20.9
	2	0	210	0	0	20.9
	3	0	208	0	0	20.9
	Maximum		213			
6	1	0	235	0	0	20.9
	2	0	227	0	0	20.9
	3	0	231	0	0	20.9
	Maximum		235			
7	1	0	251	0	0	20.9
	2	0	260	0	0	20.9
	3	0	268	0	0	20.9
	Maximum		344			
8	1	0	3	0	0	20.9
	2	0	0	0	0	20.9
	3	0	19.2	0	0	20.9
	Maximum		79			
9	1	0	1.5	0	0	20.9
	2	0	42.2	0	0	20.9
	3	0	57	0	0	20.9
	Maximum		57			
10	1	0	103	0	0	20.9
	2	0	64	0	0	20.9
	3	0	363	0	0	20.9
	Maximum		363			
11	1	15	0	0	0	20.9
	2	5	0	0	0	20.9
	3	0	0	0	0	20.9
	Maximum		0			
12	1	0	820	0	0	20.9
	2	0	847	0	0	20.9
	3	0	874	0	0	20.9
	Maximum		945			

OCTOBER 2004 SFSB AIR SAMPLING (CONT) PERFORMED BY CHICAGO DEPARTMENT OF ENVIRONMENT (DOE)						
Site	Run	CO	VOC	H2S	LEL	O2
13	1	0	492	0	0	20.9
	2	0	516	0	0	20.9
	3	0	563	0	0	20.9
	Maximum		668			
1 repeat	1	0	324	0	0	20.9
	2	0	328	0	0	20.9
	3	0	336	0	0	20.9
	Maximum		365			

Comments: In boat slip, did not see high VOC, did pick up CO between 1-26 units, likely boat exhaust.
Meter located 18 inches above water surface, on boat bow.
Observed floatables in Bubbly Creek.
Oily sheen on Bubbly creek water surface, particularly near mouth.
Overcast, cool, estimated 60 degrees F.
Start Time: 11:30 AM
Finish Time: 1:00 PM

STAT Analysis Corporation
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January 27, 2005

City of Chicago Department of Environment
30 N. LaSalle St.
25th Floor
Chicago, IL 60602-2575
Telephone: (312) 774-7311
Fax: (312) 744-6451

RE: River Samples, Chicago River STAT Project No: 0501332

Dear Renante Marante:

STAT Analysis received 3 samples for the referenced project on 1/18/2005. The analytical results are presented in the following report.

All analyses were performed in accordance with methods as referenced on the analytical report. Those analytical results expressed on a dry weight basis are also noted on the analytical report.

All analyses were performed within established holding time criteria, and all Quality Control criteria met AIHA, EPA or laboratory specifications except when noted in the Case Narrative or Analytical Report. If required, an estimate of uncertainty for the analyses can be provided.

Thank you for the opportunity to serve you and I look forward to working with you in the future. If you have any questions regarding the enclosed materials, please contact me at (312) 563-0371.

Sincerely,

Craig Chawla
Project Manager

The information contained in this report and any attachments is confidential information intended only for the use of the individual or entities named above. The results of this report relate only to the samples tested. If you have received this report in error, please notify us immediately by phone. This report shall not be reproduced, except in its entirety, unless written approval has been obtained from the laboratory.

STAT Analysis Corporation

Date: January 27, 2005

Client: City of Chicago Department of Environment
Project: River Samples, Chicago River
Lab Order: 0501332

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Tag Number	Collection Date	Date Received
0501332-001A	#1 River Air E		1/18/2005 10:00:00 AM	1/18/2005
0501332-002A	#2 River Air W		1/18/2005 10:00:00 AM	1/18/2005
0501332-003A	#3 Background		1/18/2005 11:30:00 AM	1/18/2005

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Report Date: January 27, 2005
Print Date: January 27, 2005

Client:	City of Chicago Department of Environment	**Client Sample ID:**	#1 River Air E
Lab Order:	0501332	**Tag Number:**	
Project:	River Samples, Chicago River	**Collection Date:**	1/18/2005 10:00:00 AM
Lab ID:	0501332-001A	**Matrix:**	Air

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Volatile Organic Compounds in Air by GC/MS	**TO-15A**			Prep Date: **1/21/2005**		Analyst: **PAB**
1,1,1-Trichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1,2,2-Tetrachloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1,2-Trichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1-Dichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1-Dichloroethene	ND	0.4	*	ppbv	1	1/21/2005
1,2,4-Trichlorobenzene	ND	0.71	*	ppbv	1	1/21/2005
1,2,4-Trimethylbenzene	ND	0.4	*	ppbv	1	1/21/2005
1,2-Dibromoethane	ND	0.4	*	ppbv	1	1/21/2005
1,2-Dichlorobenzene	ND	0.4	*	ppbv	1	1/21/2005
1,2-Dichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,3,5-Trimethylbenzene	ND	0.4	*	ppbv	1	1/21/2005
1,3-Dichlorobenzene	ND	0.4	*	ppbv	1	1/21/2005
1,4-Dichlorobenzene	0.6	0.4	*	ppbv	1	1/21/2005
Benzene	0.46	0.4	*	ppbv	1	1/21/2005
Bromomethane	ND	0.4	*	ppbv	1	1/21/2005
Carbon tetrachloride	ND	0.4	*	ppbv	1	1/21/2005
Chlorobenzene	ND	0.4	*	ppbv	1	1/21/2005
Chloroethane	ND	0.4	*	ppbv	1	1/21/2005
Chloroform	ND	0.4	*	ppbv	1	1/21/2005
cis-1,2-Dichloroethene	ND	0.4	*	ppbv	1	1/21/2005
cis-1,3-Dichloropropene	ND	0.4	*	ppbv	1	1/21/2005
Dichlorodifluoromethane	ND	0.81	*	ppbv	1	1/21/2005
Ethylbenzene	ND	0.4	*	ppbv	1	1/21/2005
Freon-113	ND	0.4	*	ppbv	1	1/21/2005
Freon-114	ND	0.4	*	ppbv	1	1/21/2005
Hexachlorobutadiene	ND	0.5	*	ppbv	1	1/21/2005
m,p-Xylene	ND	0.81	*	ppbv	1	1/21/2005
Methylene chloride	ND	0.4	*	ppbv	1	1/21/2005
o-Xylene	ND	0.4	*	ppbv	1	1/21/2005
Styrene	ND	0.4	*	ppbv	1	1/21/2005
Tetrachloroethene	ND	0.4	*	ppbv	1	1/21/2005
Toluene	0.44	0.4	*	ppbv	1	1/21/2005
trans-1,3-Dichloropropene	ND	0.4	*	ppbv	1	1/21/2005
Trichloroethene	ND	0.4	*	ppbv	1	1/21/2005
Trichlorofluoromethane	ND	0.4	*	ppbv	1	1/21/2005
Vinyl chloride	ND	0.4	*	ppbv	1	1/21/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
HT - Sample received past holding time
* - Non-accredited parameter
RL - Reporting / Quantitation Limit for the analysis
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H - Holding time exceeded

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Report Date: January 27, 2005
Print Date: January 27, 2005

Client:	City of Chicago Department of Environment	**Client Sample ID:**	#2 River Air W
Lab Order:	0501332	**Tag Number:**	
Project:	River Samples, Chicago River	**Collection Date:**	1/18/2005 10:00:00 AM
Lab ID:	0501332-002A	**Matrix:**	Air

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Volatile Organic Compounds in Air by GC/MS	**TO-15A**			Prep Date: **1/21/2005**		Analyst: **PAB**
1,1,1-Trichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1,2,2-Tetrachloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1,2-Trichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1-Dichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,1-Dichloroethene	ND	0.4	*	ppbv	1	1/21/2005
1,2,4-Trichlorobenzene	ND	0.71	*	ppbv	1	1/21/2005
1,2,4-Trimethylbenzene	ND	0.4	*	ppbv	1	1/21/2005
1,2-Dibromoethane	ND	0.4	*	ppbv	1	1/21/2005
1,2-Dichlorobenzene	ND	0.4	*	ppbv	1	1/21/2005
1,2-Dichloroethane	ND	0.4	*	ppbv	1	1/21/2005
1,3,5-Trimethylbenzene	ND	0.4	*	ppbv	1	1/21/2005
1,3-Dichlorobenzene	ND	0.4	*	ppbv	1	1/21/2005
1,4-Dichlorobenzene	0.42	0.4	*	ppbv	1	1/21/2005
Benzene	0.46	0.4	*	ppbv	1	1/21/2005
Bromomethane	ND	0.4	*	ppbv	1	1/21/2005
Carbon tetrachloride	ND	0.4	*	ppbv	1	1/21/2005
Chlorobenzene	ND	0.4	*	ppbv	1	1/21/2005
Chloroethane	ND	0.4	*	ppbv	1	1/21/2005
Chloroform	ND	0.4	*	ppbv	1	1/21/2005
cis-1,2-Dichloroethene	ND	0.4	*	ppbv	1	1/21/2005
cis-1,3-Dichloropropene	ND	0.4	*	ppbv	1	1/21/2005
Dichlorodifluoromethane	ND	0.81	*	ppbv	1	1/21/2005
Ethylbenzene	0.5	0.4	*	ppbv	1	1/21/2005
Freon-113	ND	0.4	*	ppbv	1	1/21/2005
Freon-114	ND	0.4	*	ppbv	1	1/21/2005
Hexachlorobutadiene	ND	0.5	*	ppbv	1	1/21/2005
m,p-Xylene	1.3	0.81	*	ppbv	1	1/21/2005
Methylene chloride	1.5	0.4	*	ppbv	1	1/21/2005
o-Xylene	ND	0.4	*	ppbv	1	1/21/2005
Styrene	ND	0.4	*	ppbv	1	1/21/2005
Tetrachloroethene	0.44	0.4	*	ppbv	1	1/21/2005
Toluene	1.8	0.4	*	ppbv	1	1/21/2005
trans-1,3-Dichloropropene	ND	0.4	*	ppbv	1	1/21/2005
Trichloroethene	ND	0.4	*	ppbv	1	1/21/2005
Trichlorofluoromethane	ND	0.4	*	ppbv	1	1/21/2005
Vinyl chloride	ND	0.4	*	ppbv	1	1/21/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
HT - Sample received past holding time
* - Non-accredited parameter
RL - Reporting / Quantitation Limit for the analysis
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R - RPD outside accepted recovery limits
E - Value above quantitation range
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Report Date: January 27, 2005
Print Date: January 27, 2005

Client:	City of Chicago Department of Environment	**Client Sample ID:**	#3 Background
Lab Order:	0501332	**Tag Number:**	
Project:	River Samples, Chicago River	**Collection Date:**	1/18/2005 11:30:00 AM
Lab ID:	0501332-003A	**Matrix:**	Air

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Volatile Organic Compounds in Air by GC/MS	**TO-15A**			Prep Date: **1/21/2005**		Analyst: **PAB**
1,1,1-Trichloroethane	ND	0.41	*	ppbv	1	1/21/2005
1,1,2,2-Tetrachloroethane	ND	0.41	*	ppbv	1	1/21/2005
1,1,2-Trichloroethane	ND	0.41	*	ppbv	1	1/21/2005
1,1-Dichloroethane	ND	0.41	*	ppbv	1	1/21/2005
1,1-Dichloroethene	ND	0.41	*	ppbv	1	1/21/2005
1,2,4-Trichlorobenzene	ND	0.72	*	ppbv	1	1/21/2005
1,2,4-Trimethylbenzene	ND	0.41	*	ppbv	1	1/21/2005
1,2-Dibromoethane	ND	0.41	*	ppbv	1	1/21/2005
1,2-Dichlorobenzene	ND	0.41	*	ppbv	1	1/21/2005
1,2-Dichloroethane	ND	0.41	*	ppbv	1	1/21/2005
1,3,5-Trimethylbenzene	ND	0.41	*	ppbv	1	1/21/2005
1,3-Dichlorobenzene	ND	0.41	*	ppbv	1	1/21/2005
1,4-Dichlorobenzene	ND	0.41	*	ppbv	1	1/21/2005
Benzene	0.43	0.41	*	ppbv	1	1/21/2005
Bromomethane	ND	0.41	*	ppbv	1	1/21/2005
Carbon tetrachloride	ND	0.41	*	ppbv	1	1/21/2005
Chlorobenzene	ND	0.41	*	ppbv	1	1/21/2005
Chloroethane	ND	0.41	*	ppbv	1	1/21/2005
Chloroform	ND	0.41	*	ppbv	1	1/21/2005
cis-1,2-Dichloroethene	ND	0.41	*	ppbv	1	1/21/2005
cis-1,3-Dichloropropene	ND	0.41	*	ppbv	1	1/21/2005
Dichlorodifluoromethane	ND	0.82	*	ppbv	1	1/21/2005
Ethylbenzene	ND	0.41	*	ppbv	1	1/21/2005
Freon-113	ND	0.41	*	ppbv	1	1/21/2005
Freon-114	ND	0.41	*	ppbv	1	1/21/2005
Hexachlorobutadiene	ND	0.51	*	ppbv	1	1/21/2005
m,p-Xylene	ND	0.82	*	ppbv	1	1/21/2005
Methylene chloride	ND	0.41	*	ppbv	1	1/21/2005
o-Xylene	ND	0.41	*	ppbv	1	1/21/2005
Styrene	ND	0.41	*	ppbv	1	1/21/2005
Tetrachloroethene	ND	0.41	*	ppbv	1	1/21/2005
Toluene	0.45	0.41	*	ppbv	1	1/21/2005
trans-1,3-Dichloropropene	ND	0.41	*	ppbv	1	1/21/2005
Trichloroethene	ND	0.41	*	ppbv	1	1/21/2005
Trichlorofluoromethane	ND	0.41	*	ppbv	1	1/21/2005
Vinyl chloride	ND	0.41	*	ppbv	1	1/21/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
HT - Sample received past holding time
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e-mail address: STATinfo@STATAnalysis.com AIHA accredited 10248, NVLAP accredited 101202-0

CHAIN OF CUSTODY RECORD

N°: 807841 Page : ____ of ____

Company: Chicago DOE
Project Number: Client Tracking No.:
Project Name: River Samples
Location/Address: Chicago River
Sampler(s): JAM, RM
Report To: Phone: 312-742-0123
QC Level: 1 ____ 2 ____ 3 ____ 4 ____ Fax:
Regulatory Program: NPEDS/MWRD RCRA SDWA SRP TACO Other: ____

P.O. No.:
Quote No.:

Turn Around: Std.
Results Needed: / / am/pm

Client Sample Number/Description:	Date Taken	Time Taken	Matrix	Comp.	Grab	Preserv.	No. of Containers	VOC	Remarks	Lab No.
#1 River Air E	1-18	10:00a	Air				1	X		001
#2 River Air W	1-18	10:00a	Air				1	X		002
#3 Background	1-18	11:30a	Air				1	X		003

Relinquished by: (Signature) [signature] Date/Time: 1/18/04 30
Received by: (Signature) Date/Time:
Relinquished by: (Signature) Date/Time:
Received for lab by: (Signature) [signature] Date/Time: 1/18/04 150
Relinquished by: (Signature) Date/Time:

Preservation Code:
A = None B = HNO_3 C = NaOH
D = H_2SO_4 E = HCl F = 5035/EnCore

STAT Analysis Corporation

Sample Receipt Checklist

Client Name DOENV

Date and Time Received: 01/18/2005

Work Order Numbe 0501332

Received by: JC

Checklist completed by: Jesus Carter (Signature) 1/18/05 (Date)

Reviewed by: cc (Initials) 1/27/05 (Date)

Matrix

Carrier name Client Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container or Temp Blank temperature in compliance?	Yes ☑	No ☐	Temperature Ambient °C
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☐	No ☐
Water - Samples properly preserved/ pH checked?	Yes ☐	No ☐	

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

ATTACHMENT B

SEDIMENT SAMPLING DATA FROM USACE SAMPLING EVENT

APRIL 2004

B-1 SUMMARY OF APRIL 2004 BULK CHEMISTRY RESULTS (CDM 2005).

	Analyte	Number of Detections	Number of Samples Analyzed[a]	Minimum Concentration Detected	Maximum Concentration Detected	Location of Highest Detection[b]	Average Concentration or Result
VOCs (µg/kg) by EPA 8260B	Vinyl Chloride	1	19	19	19	B03	11[e]
	Acetone	19	19	8 J	2700	B09	543
	Carbon disulfide	11	19	6	37 J	B05	13 [e]
	Methylene chloride	15	19	2 JB	63 DJB	B12DL	9 [e]
	2-Butanone (MEK)	15	19	15	1500 E	D05	259 [e]
	cis-1,2-Dichloroethene	1	19	6 J	6 J	B03	10 [e]
	Chloroform	12	19	1 J	26 DJ	B12DL	9 [e]
	Benzene	11	19	4 J	31	B02	11 [e]
	Toluene	16	19	2 J	8000 D	G02DL	471 [e]
	Chlorobenzene	7	19	2 J	16	B13	9 [e]
	Ethylbenzene	10	19	6 J	87	B12	25 [e]
	o-xylene	13	19	3 J	630 E	B02	107 [e]
	p-xylene	13	19	1 J	620	B02	154 [e]
	Xylenes (total)	13	19	4 J	1200	B02	275 [e]
	Isopropylbenzene	12	19	2 J	64	B12	25 [e]
	n-Propylbenzene	11	19	3 J	190	B12	52 [e]
	1,3,5-Trimethylbenzene	16	19	2 J	770	B12	192 [e]
	1,2,4-Trimethylbenzene	17	19	1 J	2000 E	B12	222 [e]
	sec-butylbenzene	11	19	4 J	240	B12	77 [e]
	Cymene	16	19	2 J	820 E	B12	154 [e]
	1,4-Dichlorobenzene	9	19	4 J	200	B10	37 [e]
	n-Butylbenzene	14	19	3 J	620	B12	178 [e]
	1,2-Dichlorobenzene	2	19	3 J	11	B05	10 [e]
	Naphthalene	18	19	3 J	670	B10	143 [e]
SVOCs (µg/kg) by EPA 8270C (except PNAs)	Phenol	1	19	110 J	110 J	B02	2630 [e]
	1,4-Dichlorobenzene	14	19	110 J	2800	B11	1876 [e]
	1,2-Dichlorobenzene	4	19	130 J	550 J	B06	2405 [e]
	4-Methylphenol	9	19	250 J	5200	G02	2132 [e]
	4-Chloroaniline	1	19	1900	1900	B02	2724 [e]
	Dibenzofuran	16	19	83 J	6400	B13	2408 [e]
	Carbazole	11	19	500	9900 D	B13DL	3363 [e]
	Di-n-butylphthalate	2	19	83 J	560 J	B02	2635 [e]
	Butylbenzylphthalate	3	19	340 J	880 DJ	G02DL	2646 [e]
	bis(2-Ethylhexyl)phthalate	18	19	2500	41,000	B06	17489 [e]
	Di-n-octylphthalate	5	19	370 J	1300 DJ	B02DL	2324 [e]
Metals (mg/kg)	Arsenic	19	19	2.6	35.2	B09	17.3
	Barium	19	19	43	659	B12	349
	Cadmium	19	19	0.89	28.5	B01a	11.6
	Chromium	19	19	30.8 N	4440 N	B02	688
	Copper	19	19	79.8	534	D05	303
	Lead	19	19	136	2820	B09	1233
	Nickel	19	19	11.4	247	D05	95.9
	Selenium	19	19	0.63 B	6.8	D05	3.59
	Silver	18	19	2.3	70.4	B07	22.2 [e]
	Zinc	19	19	207	6600	B09	2690
	Mercury	19	19	0.72	15.9	B10	6.34

	Analyte	Number of Detections	Number of Samples Analyzed[a]	Minimum Concentration Detected	Maximum Concentration Detected	Location of Highest Detection[b]	Average Concentration or Result
PNAs by 8270 SIM	Naphthalene	19	19	120	8600 D	B13DL	2157
	2-Methylnaphthalene	19	19	170	18,000	D05	6024 [d]
	Acenaphthylene	19	19	47	2600	B01A	609
	Acenaphthene	19	19	180	8,900	B11	2682 [d]
	Fluorene	19	19	220	9100 D	B13	3448 [d]
	Phenanthrene	19	19	2000	100,000 D	G01DL	25658 [d]
	Anthracene	19	19	370	12,000 D	B13DL	4201 [d]
	Fluoranthene	19	19	3,800	110,000 D	B13DL	30316 [d]
	Pyrene	19	19	3,100	93,000 D	B13DL	23374 [d]
	Benzo(a)anthracene	19	19	1100	34,000 D	B13DL	10168 [d]
	Chrysene	19	19	1100	60,000 D	B13DL	15379 [d]
	Benzo(b)fluoranthene	19	19	1400	40,000 D	B13DL	12647 [d]
	Benzo(k)fluoranthene	19	19	470	15,000 D	B13DL	4319 [d]
	Benzo(a)pyrene	19	19	1000	28,000 D	B13DL	8442 [d]
	Indeno(1,2,3-cd)pyrene	19	19	450	16,000 D	B13DL	3490 [d]
	Dibenz(a,h)anthracene	19	19	140	3800	B13	1026
	Benzo(g,h,i)perylene	19	19	1200	18,000 D	B13DL	3336 [d]
PCBs (µg/kg)	Aroclor-1248	17	19	100 P	8000	B10	3233 [e]
	Aroclor-1260	18	19	360	3300 P	B03	1607 [e]
Other Inorganics (mg/kg unless noted)	Total volatile solids (wt %)	19	19	1.8 B	46 B	B09	16.3
	Total Solids (%)	19	19	36	79	B13	52.8
	Phosphorus, Total (as P)	17	19	540	17,000	D05	5787 [e]
	Total organic carbon	19	19	5900	>12,000	(c)	97205
	Nitrogen, ammonia	19	19	62	13,000	B02	2891
	Chemical oxygen demand	16	19	430	6,600	D05	2221
	Chromium, hexavalent	0	19	ND	ND	ND	N/A
	Oil & Grease, total	19	19	1300	20,000	B02	7984
	Cyanide	17	19	0.49 BN	9.3 N	B02/ B09	3.26 [e]
Particle Size (%)	Gravel	19	19	0	41.2	B06	5.5
	Coarse Sand	19	19	0	19.5	B13	2.9
	Medium Sand	19	19	1.6	47.1	B13	8.8
	Fine Sand	19	19	6.7	86.7	G05	38.6
	Silt	19	19	0.1	53.1	B04	25.9
	Clay	19	19	2.9	37	B04	18.1
Specific Gravity	Specific Gravity	14	14	1.44	2.57	G05	2.09

(a) Including one field quality control duplicate sample
(b) Sample identification name has SF-2004- preceeding the location. B = (boring) core sample
(c) Several samples with TOC results > 12,000
(d) PNA results by method 8270C were used when method 8270C SIM results exceeded calibration range
(e) Average concentration incorporates reporting limit value for non-detected analytes
B = detected in the blank sample (except for metals/inorganics, where B = concentration below reporting limit)
D = diluted
DL = sample analyzed after dilution
E = exceeds calibration range (for metals E = estimated concentration due to interference)
J = estimated concentration
N = sample recovery outside of control limits
N/A = Not Applicable
ND = No Detections
P = the difference for detected concentration of an Aroclor target analyte is greater than 25% between the two GC columns.

B-2 SUMMARY OF APRIL 2004 TCLP AND HAZARDOUS WASTE CRITERIA RESULTS (CDM 2005).

	Analyte	Number of Detections	Number of Samples Analyzed[a]	Minimum Concentration Detected	Maximum Concentration Detected	Location of Highest Detection[b]	TCLP and Hazardous Waste Criteria	Average Concentration
TCLP VOCs (µg/L)	Vinyl Chloride	0	14	ND	ND	N/A	200	N/A
	1,1-Dichloroethene	0	14	ND	ND	N/A	700	N/A
	2-Butanone	12	14	2 J	38	B08	200,000	16 (e)
	Chloroform	0	14	ND	ND	N/A	6,000	N/A
	Carbon Tetrachloride	0	14	ND	ND	N/A	500	N/A
	1,2-Dichloroethane	0	14	ND	ND	N/A	500	N/A
	Benzene	0	14	ND	ND	N/A	500	N/A
	Trichloroethene	0	14	ND	ND	N/A	500	N/A
	Tetrachloroethene	0	14	ND	ND	N/A	700	N/A
	Chlorobenzene	1	14	9	9	B13	100,000	5.3 [d]
TCLP SVOCs (µg/L)	1,4-Dichlorobenzene	1	14	2 J	2 J	B13	7,500	9.4 [d]
	2-Methylphenol	0	14	ND	ND	N/A	200,000	N/A
	4-Methylphenol	1	14	2 J	2 J	B13	200,000	9.4 [d]
	Hexachloroethane	0	14	ND	ND	N/A	3,000	N/A
	Nitrobenzene	0	14	ND	ND	N/A	2,000	N/A
	Hexachlorobutadiene	0	14	ND	ND	N/A	500	N/A
	2,4,6-Trichlorophenol	1	14	1 J	1 J	B13	2,000	9.3 [d]
	2,4,5- Trichlorophenol	1	14	1 J	1 J	B13	400,000	18.6 [d]
	2,4-Dinitrotoluene	1	14	1 J	1 J	B13	130	9.3 [d]
	Hexachlorobenzene	0	14	ND	ND	N/A	130	N/A
	Pentachlorophenol	0	14	ND	ND	N/A	100,000	N/A
	Pyridine	1	14	27	27	B13	5,000	11.2 [d]
TCLP Pesticides	gamma-BHC (Lindane)	0	14	ND	ND	N/A	400	N/A
	Heptachlor	0	14	ND	ND	N/A	8	N/A
	Heptachlor epoxide	0	14	ND	ND	N/A	8	N/A
	Endrin	0	14	ND	ND	N/A	20	N/A
	Methoxychlor	0	14	ND	ND	N/A	10,000	N/A
	Toxaphene	0	14	ND	ND	N/A	500	N/A
	Chlordane	0	14	ND	ND	N/A	30	N/A
TCLP Herbicides	2,4-D (Dichlorophenoxyacetic Acid)	0	14	ND	ND	N/A	10,000	N/A
	Silvex (2,4,5-TP)	0	14	ND	ND	N/A	1,000	N/A
TCLP Metals (µg/L)	Arsenic	14	14	9.7 B	53	B09	5,000	27.3
	Barium	14	14	595 E	944 E	B09	100,000	680
	Cadmium	14	14	2.5 B	9	B06	1,000	4.1
	Chromium	14	14	10.2 B	126	B06	5,000	40.7
	Lead	13	14	7.4 B	154	B07	5,000	56.3 [d]
	Mercury	3	14	0.15 B	0.22 B	B12	200	0.11 [d]
	Selenium	2	14	12 B	12.4 B	B04	1,000	9.5 [d]
	Silver	14	14	10.5 B	31	B06	5,000	16.8
Cyanide (mg/kg)	Reactive Cyanide	0	13	ND	ND	N/A	250 [c]	N/A
Sulfide (mg/kg)	**Reactive Sulfide**	**13**	**13**	**42**	**8,200**	**B02**	**500 [c]**	**2664**
Flashpoint	**Ignitability (degrees F)**	**1**	**13**	**ND**	**124**	**B02**	**<140°**	**N/A**
pH	pH (standard units)	14	14	7.6	8.5	B10	≤ 2 or ≥ 12.5	8
Paint Filter	Paint Filter (Free liquid) (mL/100 g)	3	13	4	13	B11	N/A	2.8 [d]

Data have not been validated, but a quality assessment has been performed by USACE

(a) Including one field quality control duplicate sample
(b) Sample identification name has SF-2004- preceeding the location. B = (boring) core sample
(c) Per SW-846 Chapter 7 Section 7.3.3.2, 7.3.4.2.
(d) Average concentration includes reporting limit value for undetected samples
B = detected in the blank sample (except for metals/inorganics, where B = concentration below reporting limit)
E = exceeds calibration range (for metals E = estimated concentration due to interference)
J = estimated concentration
N/A = Not Applicable

ATTACHMENT C

SEDIMENT SAMPLING DATA FROM USEPA, MWRD AND IEPA SAMPLING EVENTS

C-1 CHEMICAL DATA COLLECTED BY USEPA IN OCTOBER 2000 (USEPA 2003). SEDIMENT BORING CHR00-09-A HAS BEEN DIVIDED INTO 4 SEGMENTS: A (DEPTH = 0 TO 6"), B (6 TO 18"), C (18 TO 54"), AND D (54-72").

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
% Ash @550 +/-50 C	ChR00-09-A	2540G	79.6	%	0.3
% Ash @550 +/-50 C	ChR00-09-B	2540G	83	%	0.3
% Ash @550 +/-50 C	ChR00-09-C	2540G	80	%	0.2
% Ash @550 +/-50 C	ChR00-09-D	2540G	73.8	%	0.3
% Moisture	ChR00-09-A	2540G	70.9	%	0.3
% Moisture	ChR00-09-B	2540G	62.3	%	0.3
% Moisture	ChR00-09-C	2540G	58	%	0.2
% Moisture	ChR00-09-D	2540G	61.4	%	0.3
% Solids	ChR00-09-A	2540G	29.1	%	0.3
% Solids	ChR00-09-B	2540G	37.7	%	0.3
% Solids	ChR00-09-C	2540G	42	%	0.2
% Solids	ChR00-09-D	2540G	38.6	%	0.3
1,2,4-Trichlorobenzene	ChR00-09-A	8270C	ND	ug/Kg	5600
1,2,4-Trichlorobenzene	ChR00-09-B	8270C	ND	ug/Kg	4300
1,2,4-Trichlorobenzene	ChR00-09-C	8270C	ND	ug/Kg	7800
1,2,4-Trichlorobenzene	ChR00-09-D	8270C	ND	ug/Kg	8500
1,2-Dichlorobenzene	ChR00-09-A	8270C	ND	ug/Kg	5600
1,2-Dichlorobenzene	ChR00-09-B	8270C	ND	ug/Kg	4300
1,2-Dichlorobenzene	ChR00-09-C	8270C	ND	ug/Kg	7800

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
1,2-Dichlorobenzene	ChR00-09-D	8270C	ND	ug/Kg	8500
1,3-Dichlorobenzene	ChR00-09-A	8270C	ND	ug/Kg	5600
1,3-Dichlorobenzene	ChR00-09-B	8270C	ND	ug/Kg	4300
1,3-Dichlorobenzene	ChR00-09-C	8270C	ND	ug/Kg	7800
1,3-Dichlorobenzene	ChR00-09-D	8270C	ND	ug/Kg	8500
1,4-Dichlorobenzene	ChR00-09-A	8270C	1900 (<RL)	ug/Kg	5600
1,4-Dichlorobenzene	ChR00-09-B	8270C	1000 (<RL)	ug/Kg	4300
1,4-Dichlorobenzene	ChR00-09-C	8270C	ND	ug/Kg	7800
1,4-Dichlorobenzene	ChR00-09-D	8270C	ND	ug/Kg	8500
2,2-oxybis (1-chloropropane)	ChR00-09-A	8270C	ND	ug/Kg	5600
2,2-oxybis (1-chloropropane)	ChR00-09-B	8270C	ND	ug/Kg	4300
2,2-oxybis (1-chloropropane)	ChR00-09-C	8270C	ND	ug/Kg	7800
2,2-oxybis (1-chloropropane)	ChR00-09-D	8270C	ND	ug/Kg	8500
2,4,5-Trichlorophenol	ChR00-09-A	8270C	ND	ug/Kg	29000
2,4,5-Trichlorophenol	ChR00-09-B	8270C	ND	ug/Kg	22000
2,4,5-Trichlorophenol	ChR00-09-C	8270C	ND	ug/Kg	40000
2,4,5-Trichlorophenol	ChR00-09-D	8270C	ND	ug/Kg	44000
2,4,6-Trichlorophenol	ChR00-09-A	8270C	ND	ug/Kg	5600
2,4,6-Trichlorophenol	ChR00-09-B	8270C	ND	ug/Kg	4300
2,4,6-Trichlorophenol	ChR00-09-C	8270C	ND	ug/Kg	7800
2,4,6-Trichlorophenol	ChR00-09-D	8270C	ND	ug/Kg	8500
2,4-Dichlorophenol	ChR00-09-	8270C	ND	ug/Kg	5600

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	A				
2,4-Dichlorophenol	ChR00-09-B	8270C	ND	ug/Kg	4300
2,4-Dichlorophenol	ChR00-09-C	8270C	ND	ug/Kg	7800
2,4-Dichlorophenol	ChR00-09-D	8270C	ND	ug/Kg	8500
2,4-Dimethylphenol	ChR00-09-A	8270C	ND	ug/Kg	5600
2,4-Dimethylphenol	ChR00-09-B	8270C	ND	ug/Kg	4300
2,4-Dimethylphenol	ChR00-09-C	8270C	ND	ug/Kg	7800
2,4-Dimethylphenol	ChR00-09-D	8270C	ND	ug/Kg	8500
2,4-Dinitrophenol	ChR00-09-A	8270C	ND	ug/Kg	29000
2,4-Dinitrophenol	ChR00-09-B	8270C	ND	ug/Kg	22000
2,4-Dinitrophenol	ChR00-09-C	8270C	ND	ug/Kg	40000
2,4-Dinitrophenol	ChR00-09-D	8270C	ND	ug/Kg	44000
2,4-Dinitrotoluene	ChR00-09-A	8270C	ND	ug/Kg	5600
2,4-Dinitrotoluene	ChR00-09-B	8270C	ND	ug/Kg	4300
2,4-Dinitrotoluene	ChR00-09-C	8270C	ND	ug/Kg	7800
2,4-Dinitrotoluene	ChR00-09-D	8270C	ND	ug/Kg	8500
2,6-Dinitrotoluene	ChR00-09-A	8270C	ND	ug/Kg	5600
2,6-Dinitrotoluene	ChR00-09-B	8270C	ND	ug/Kg	4300
2,6-Dinitrotoluene	ChR00-09-C	8270C	ND	ug/Kg	7800
2,6-Dinitrotoluene	ChR00-09-D	8270C	ND	ug/Kg	8500
2-Chloronaphthalene	ChR00-09-A	8270C	ND	ug/Kg	5600
2-Chloronaphthalene	ChR00-09-B	8270C	ND	ug/Kg	4300

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
2-Chloronaphthalene	ChR00-09-C	8270C	ND	ug/Kg	7800
2-Chloronaphthalene	ChR00-09-D	8270C	ND	ug/Kg	8500
2-Chlorophenol	ChR00-09-A	8270C	ND	ug/Kg	5600
2-Chlorophenol	ChR00-09-B	8270C	ND	ug/Kg	4300
2-Chlorophenol	ChR00-09-C	8270C	ND	ug/Kg	7800
2-Chlorophenol	ChR00-09-D	8270C	ND	ug/Kg	8500
2-Methylnaphthalene	ChR00-09-A	8270C	ND	ug/Kg	5600
2-Methylnaphthalene	ChR00-09-B	8270C	ND	ug/Kg	4300
2-Methylnaphthalene	ChR00-09-C	8270C	9700	ug/Kg	7800
2-Methylnaphthalene	ChR00-09-D	8270C	14000	ug/Kg	8500
2-Methylphenol (o-cresol)	ChR00-09-A	8270C	ND	ug/Kg	5600
2-Methylphenol (o-cresol)	ChR00-09-B	8270C	ND	ug/Kg	4300
2-Methylphenol (o-cresol)	ChR00-09-C	8270C	ND	ug/Kg	7800
2-Methylphenol (o-cresol)	ChR00-09-D	8270C	ND	ug/Kg	8500
2-Nitroaniline	ChR00-09-A	8270C	ND	ug/Kg	29000
2-Nitroaniline	ChR00-09-B	8270C	ND	ug/Kg	22000
2-Nitroaniline	ChR00-09-C	8270C	ND	ug/Kg	40000
2-Nitroaniline	ChR00-09-D	8270C	ND	ug/Kg	44000
2-Nitrophenol	ChR00-09-A	8270C	ND	ug/Kg	5600
2-Nitrophenol	ChR00-09-B	8270C	ND	ug/Kg	4300
2-Nitrophenol	ChR00-09-C	8270C	ND	ug/Kg	7800
2-Nitrophenol	ChR00-09-	8270C	ND	ug/Kg	8500

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	D				
3,3-Dichlorobenzidine	ChR00-09-A	8270C	ND	ug/Kg	11000
3,3-Dichlorobenzidine	ChR00-09-B	8270C	ND	ug/Kg	8800
3,3-Dichlorobenzidine	ChR00-09-C	8270C	ND	ug/Kg	16000
3,3-Dichlorobenzidine	ChR00-09-D	8270C	ND	ug/Kg	17000
3-Nitroaniline	ChR00-09-A	8270C	ND	ug/Kg	29000
3-Nitroaniline	ChR00-09-B	8270C	ND	ug/Kg	22000
3-Nitroaniline	ChR00-09-C	8270C	ND	ug/Kg	40000
3-Nitroaniline	ChR00-09-D	8270C	ND	ug/Kg	44000
4,6-Dinitro-2-methylphenol	ChR00-09-A	8270C	ND	ug/Kg	29000
4,6-Dinitro-2-methylphenol	ChR00-09-B	8270C	ND	ug/Kg	22000
4,6-Dinitro-2-methylphenol	ChR00-09-C	8270C	ND	ug/Kg	40000
4,6-Dinitro-2-methylphenol	ChR00-09-D	8270C	ND	ug/Kg	44000
4-Bromophenyl phenyl ether	ChR00-09-A	8270C	ND	ug/Kg	5600
4-Bromophenyl phenyl ether	ChR00-09-B	8270C	ND	ug/Kg	4300
4-Bromophenyl phenyl ether	ChR00-09-C	8270C	ND	ug/Kg	7800
4-Bromophenyl phenyl ether	ChR00-09-D	8270C	ND	ug/Kg	8500
4-Chloro-3-methylphenol	ChR00-09-A	8270C	ND	ug/Kg	5600
4-Chloro-3-methylphenol	ChR00-09-B	8270C	ND	ug/Kg	4300
4-Chloro-3-methylphenol	ChR00-09-C	8270C	ND	ug/Kg	7800
4-Chloro-3-methylphenol	ChR00-09-D	8270C	ND	ug/Kg	8500
4-Chloroaniline	ChR00-09-A	8270C	ND	ug/Kg	5600

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
4-Chloroaniline	ChR00-09-B	8270C	ND	ug/Kg	4300
4-Chloroaniline	ChR00-09-C	8270C	ND	ug/Kg	7800
4-Chloroaniline	ChR00-09-D	8270C	ND	ug/Kg	8500
4-Chlorophenyl phenyl ether	ChR00-09-A	8270C	ND	ug/Kg	5600
4-Chlorophenyl phenyl ether	ChR00-09-B	8270C	ND	ug/Kg	4300
4-Chlorophenyl phenyl ether	ChR00-09-C	8270C	ND	ug/Kg	7800
4-Chlorophenyl phenyl ether	ChR00-09-D	8270C	ND	ug/Kg	8500
4-Methylphenol (m/p-cresol)	ChR00-09-A	8270C	9300	ug/Kg	5600
4-Methylphenol (m/p-cresol)	ChR00-09-B	8270C	4900	ug/Kg	4300
4-Methylphenol (m/p-cresol)	ChR00-09-C	8270C	ND	ug/Kg	7800
4-Methylphenol (m/p-cresol)	ChR00-09-D	8270C	ND	ug/Kg	8500
4-Nitroaniline	ChR00-09-A	8270C	ND	ug/Kg	29000
4-Nitroaniline	ChR00-09-B	8270C	ND	ug/Kg	22000
4-Nitroaniline	ChR00-09-C	8270C	ND	ug/Kg	40000
4-Nitroaniline	ChR00-09-D	8270C	ND	ug/Kg	44000
4-Nitrophenol	ChR00-09-A	8270C	ND	ug/Kg	29000
4-Nitrophenol	ChR00-09-B	8270C	ND	ug/Kg	22000
4-Nitrophenol	ChR00-09-C	8270C	ND	ug/Kg	40000
4-Nitrophenol	ChR00-09-D	8270C	ND	ug/Kg	44000
Acenaphthene	ChR00-09-A	8270C	1800 (<RL)	ug/Kg	5600
Acenaphthene	ChR00-09-B	8270C	ND	ug/Kg	4300
Acenaphthene	ChR00-09-	8270C	2200 (<RL)	ug/Kg	7800

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	C				
Acenaphthene	ChR00-09-D	8270C	2500 (<RL)	ug/Kg	8500
Acenaphthylene	ChR00-09-A	8270C	ND	ug/Kg	5600
Acenaphthylene	ChR00-09-B	8270C	ND	ug/Kg	4300
Acenaphthylene	ChR00-09-C	8270C	ND	ug/Kg	7800
Acenaphthylene	ChR00-09-D	8270C	ND	ug/Kg	8500
Ammonia (NH3), as N	ChR00-09-A	350.2	1300	mg/Kg	88
Ammonia (NH3), as N	ChR00-09-B	350.2	710	mg/Kg	35
Ammonia (NH3), as N	ChR00-09-C	350.2	2400	mg/Kg	370
Ammonia (NH3), as N	ChR00-09-D	350.2	3800	mg/Kg	400
Anthracene	ChR00-09-A	8270C	4500 (<RL)	ug/Kg	5600
Anthracene	ChR00-09-B	8270C	1200 (<RL)	ug/Kg	4300
Anthracene	ChR00-09-C	8270C	3300 (<RL)	ug/Kg	7800
Anthracene	ChR00-09-D	8270C	4300 (<RL)	ug/Kg	8500
Aroclor 1016	ChR00-09-A	8082	ND	ug/Kg	570
Aroclor 1016	ChR00-09-B	8082	ND	ug/Kg	1100
Aroclor 1016	ChR00-09-C	8082	ND	ug/Kg	200
Aroclor 1016	ChR00-09-D	8082	ND	ug/Kg	1100
Aroclor 1221	ChR00-09-A	8082	ND	ug/Kg	570
Aroclor 1221	ChR00-09-B	8082	ND	ug/Kg	1100
Aroclor 1221	ChR00-09-C	8082	ND	ug/Kg	200
Aroclor 1221	ChR00-09-D	8082	ND	ug/Kg	1100

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
Aroclor 1232	ChR00-09-A	8082	ND	ug/Kg	570
Aroclor 1232	ChR00-09-B	8082	ND	ug/Kg	1100
Aroclor 1232	ChR00-09-C	8082	ND	ug/Kg	200
Aroclor 1232	ChR00-09-D	8082	ND	ug/Kg	1100
Aroclor 1242	ChR00-09-A	8082	ND	ug/Kg	570
Aroclor 1242	ChR00-09-B	8082	ND	ug/Kg	1100
Aroclor 1242	ChR00-09-C	8082	2000	ug/Kg	200
Aroclor 1242	ChR00-09-D	8082	7600	ug/Kg	1100
Aroclor 1248	ChR00-09-A	8082	ND	ug/Kg	570
Aroclor 1248	ChR00-09-B	8082	ND	ug/Kg	1100
Aroclor 1248	ChR00-09-C	8082	ND	ug/Kg	200
Aroclor 1248	ChR00-09-D	8082	ND	ug/Kg	1100
Aroclor 1254	ChR00-09-A	8082	ND	ug/Kg	570
Aroclor 1254	ChR00-09-B	8082	ND	ug/Kg	1100
Aroclor 1254	ChR00-09-C	8082	ND	ug/Kg	200
Aroclor 1254	ChR00-09-D	8082	ND	ug/Kg	1100
Aroclor 1260	ChR00-09-A	8082	2800	ug/Kg	570
Aroclor 1260	ChR00-09-B	8082	5500	ug/Kg	1100
Aroclor 1260	ChR00-09-C	8082	250	ug/Kg	200
Aroclor 1260	ChR00-09-D	8082	7200	ug/Kg	1100
Arsenic (As)	ChR00-09-A	6010B	10.1	mg/Kg	1.9
Arsenic (As)	ChR00-09-	6010B	7.5	mg/Kg	1.5

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	B				
Arsenic (As)	ChR00-09-C	6010B	24.8	mg/Kg	1.2
Arsenic (As)	ChR00-09-D	6010B	30.0	mg/Kg	1.5
Barium (Ba)	ChR00-09-A	6010B	193	mg/Kg	1.9
Barium (Ba)	ChR00-09-B	6010B	190	mg/Kg	1.5
Barium (Ba)	ChR00-09-C	6010B	509	mg/Kg	1.2
Barium (Ba)	ChR00-09-D	6010B	540	mg/Kg	1.5
Benzidine	ChR00-09-A	8270C	ND	ug/Kg	56000
Benzidine	ChR00-09-B	8270C	ND	ug/Kg	43000
Benzidine	ChR00-09-C	8270C	ND	ug/Kg	78000
Benzidine	ChR00-09-D	8270C	ND	ug/Kg	85000
Benzo(a)anthracene	ChR00-09-A	8270C	7800	ug/Kg	5600
Benzo(a)anthracene	ChR00-09-B	8270C	2800 (<RL)	ug/Kg	4300
Benzo(a)anthracene	ChR00-09-C	8270C	8200	ug/Kg	7800
Benzo(a)anthracene	ChR00-09-D	8270C	9700	ug/Kg	8500
Benzo(a)pyrene	ChR00-09-A	8270C	6800	ug/Kg	5600
Benzo(a)pyrene	ChR00-09-B	8270C	2500 (<RL)	ug/Kg	4300
Benzo(a)pyrene	ChR00-09-C	8270C	8700	ug/Kg	7800
Benzo(a)pyrene	ChR00-09-D	8270C	9500	ug/Kg	8500
Benzo(b)fluoranthene	ChR00-09-A	8270C	5400 (<RL)	ug/Kg	5600
Benzo(b)fluoranthene	ChR00-09-B	8270C	3100 (<RL)	ug/Kg	4300
Benzo(b)fluoranthene	ChR00-09-C	8270C	5900 (<RL)	ug/Kg	7800

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
Benzo(b)fluoranthene	ChR00-09-D	8270C	6800 (<RL)	ug/Kg	8500
Benzo(ghi)perylene	ChR00-09-A	8270C	3700 (<RL)	ug/Kg	5600
Benzo(ghi)perylene	ChR00-09-B	8270C	1800 (<RL)	ug/Kg	4300
Benzo(ghi)perylene	ChR00-09-C	8270C	5800 (<RL)	ug/Kg	7800
Benzo(ghi)perylene	ChR00-09-D	8270C	6000 (<RL)	ug/Kg	8500
Benzo(k)fluoranthene	ChR00-09-A	8270C	12000	ug/Kg	5600
Benzo(k)fluoranthene	ChR00-09-B	8270C	4100 (<RL)	ug/Kg	4300
Benzo(k)fluoranthene	ChR00-09-C	8270C	14000	ug/Kg	7800
Benzo(k)fluoranthene	ChR00-09-D	8270C	14000	ug/Kg	8500
Benzoic acid	ChR00-09-A	8270C	ND	ug/Kg	29000
Benzoic acid	ChR00-09-B	8270C	ND	ug/Kg	22000
Benzoic acid	ChR00-09-C	8270C	ND	ug/Kg	40000
Benzoic acid	ChR00-09-D	8270C	ND	ug/Kg	44000
Benzyl alcohol	ChR00-09-A	8270C	ND	ug/Kg	5600
Benzyl alcohol	ChR00-09-B	8270C	ND	ug/Kg	4300
Benzyl alcohol	ChR00-09-C	8270C	ND	ug/Kg	7800
Benzyl alcohol	ChR00-09-D	8270C	ND	ug/Kg	8500
Bis(2-chloroethoxy)methane	ChR00-09-A	8270C	ND	ug/Kg	5600
Bis(2-chloroethoxy)methane	ChR00-09-B	8270C	ND	ug/Kg	4300
Bis(2-chloroethoxy)methane	ChR00-09-C	8270C	ND	ug/Kg	7800
Bis(2-chloroethoxy)methane	ChR00-09-D	8270C	ND	ug/Kg	8500
Bis(2-chloroethyl)ether	ChR00-09-	8270C	ND	ug/Kg	5600

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	A				
Bis(2-chloroethyl)ether	ChR00-09-B	8270C	ND	ug/Kg	4300
Bis(2-chloroethyl)ether	ChR00-09-C	8270C	ND	ug/Kg	7800
Bis(2-chloroethyl)ether	ChR00-09-D	8270C	ND	ug/Kg	8500
Bis(2-ethylhexyl)phthalate	ChR00-09-A	8270C	43000	ug/Kg	5600
Bis(2-ethylhexyl)phthalate	ChR00-09-B	8270C	36000	ug/Kg	4300
Bis(2-ethylhexyl)phthalate	ChR00-09-C	8270C	47000	ug/Kg	7800
Bis(2-ethylhexyl)phthalate	ChR00-09-D	8270C	9500	ug/Kg	8500
Butyl benzyl phthalate	ChR00-09-A	8270C	ND	ug/Kg	5600
Butyl benzyl phthalate	ChR00-09-B	8270C	ND	ug/Kg	4300
Butyl benzyl phthalate	ChR00-09-C	8270C	ND	ug/Kg	7800
Butyl benzyl phthalate	ChR00-09-D	8270C	ND	ug/Kg	8500
Cadmium (Cd)	ChR00-09-A	6010B	3.6	mg/Kg	0.38
Cadmium (Cd)	ChR00-09-B	6010B	4.2	mg/Kg	0.29
Cadmium (Cd)	ChR00-09-C	6010B	21.6	mg/Kg	0.25
Cadmium (Cd)	ChR00-09-D	6010B	27.1	mg/Kg	0.30
Carbazole	ChR00-09-A	8270C	2800 (<RL)	ug/Kg	5600
Carbazole	ChR00-09-B	8270C	ND	ug/Kg	4300
Carbazole	ChR00-09-C	8270C	ND	ug/Kg	7800
Carbazole	ChR00-09-D	8270C	ND	ug/Kg	8500
Chemical Oxygen Demand (COD)	ChR00-09-A	HACH 8000	312000	mg/Kg	10700
Chemical Oxygen Demand (COD)	ChR00-09-B	HACH 8000	193000	mg/Kg	11500

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
Chemical Oxygen Demand (COD)	ChR00-09-C	HACH 8000	266000	mg/Kg	17800
Chemical Oxygen Demand (COD)	ChR00-09-D	HACH 8000	682000	mg/Kg	24000
Chromium (Cr)	ChR00-09-A	6010B	77.7	mg/Kg	1.9
Chromium (Cr)	ChR00-09-B	6010B	71.5	mg/Kg	1.5
Chromium (Cr)	ChR00-09-C	6010B	508	mg/Kg	1.2
Chromium (Cr)	ChR00-09-D	6010B	1700	mg/Kg	1.5
Chrysene	ChR00-09-A	8270C	11000	ug/Kg	5600
Chrysene	ChR00-09-B	8270C	4500	ug/Kg	4300
Chrysene	ChR00-09-C	8270C	13000	ug/Kg	7800
Chrysene	ChR00-09-D	8270C	15000	ug/Kg	8500
Copper (Cu)	ChR00-09-A	6010B	188	mg/Kg	1.9
Copper (Cu)	ChR00-09-B	6010B	167	mg/Kg	1.5
Copper (Cu)	ChR00-09-C	6010B	405	mg/Kg	1.2
Copper (Cu)	ChR00-09-D	6010B	499	mg/Kg	1.5
Cyanide, Total	ChR00-09-A	9014/9010B	0.36 (<CRDL)	mg/Kg	0.52
Cyanide, Total	ChR00-09-B	9014/9010B	0.28 (<CRDL)	mg/Kg	0.43
Cyanide, Total	ChR00-09-C	9014/9010B	9.8	mg/Kg	0.34
Cyanide, Total	ChR00-09-D	9014/9010B	0.57	mg/Kg	0.36
Dibenzo(a,h)anthracene	ChR00-09-A	8270C	ND	ug/Kg	5600
Dibenzo(a,h)anthracene	ChR00-09-B	8270C	ND	ug/Kg	4300
Dibenzo(a,h)anthracene	ChR00-09-C	8270C	ND	ug/Kg	7800
Dibenzo(a,h)anthracene	ChR00-09-	8270C	ND	ug/Kg	8500

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	D				
Dibenzofuran	ChR00-09-A	8270C	ND	ug/Kg	5600
Dibenzofuran	ChR00-09-B	8270C	ND	ug/Kg	4300
Dibenzofuran	ChR00-09-C	8270C	ND	ug/Kg	7800
Dibenzofuran	ChR00-09-D	8270C	2600 (<RL)	ug/Kg	8500
Diethyl phthalate	ChR00-09-A	8270C	ND	ug/Kg	5600
Diethyl phthalate	ChR00-09-B	8270C	ND	ug/Kg	4300
Diethyl phthalate	ChR00-09-C	8270C	ND	ug/Kg	7800
Diethyl phthalate	ChR00-09-D	8270C	ND	ug/Kg	8500
Dimethyl phthalate	ChR00-09-A	8270C	ND	ug/Kg	5600
Dimethyl phthalate	ChR00-09-B	8270C	ND	ug/Kg	4300
Dimethyl phthalate	ChR00-09-C	8270C	ND	ug/Kg	7800
Dimethyl phthalate	ChR00-09-D	8270C	ND	ug/Kg	8500
Di-n-butyl phthalate	ChR00-09-A	8270C	ND	ug/Kg	5600
Di-n-butyl phthalate	ChR00-09-B	8270C	ND	ug/Kg	4300
Di-n-butyl phthalate	ChR00-09-C	8270C	ND	ug/Kg	7800
Di-n-butyl phthalate	ChR00-09-D	8270C	ND	ug/Kg	8500
Di-n-octyl phthalate	ChR00-09-A	8270C	ND	ug/Kg	5600
Di-n-octyl phthalate	ChR00-09-B	8270C	ND	ug/Kg	4300
Di-n-octyl phthalate	ChR00-09-C	8270C	ND	ug/Kg	7800
Di-n-octyl phthalate	ChR00-09-D	8270C	ND	ug/Kg	8500
Fluoranthene	ChR00-09-A	8270C	27000	ug/Kg	5600

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
Fluoranthene	ChR00-09-B	8270C	10000	ug/Kg	4300
Fluoranthene	ChR00-09-C	8270C	22000	ug/Kg	7800
Fluoranthene	ChR00-09-D	8270C	27000	ug/Kg	8500
Fluorene	ChR00-09-A	8270C	2000 (<RL)	ug/Kg	5600
Fluorene	ChR00-09-B	8270C	ND	ug/Kg	4300
Fluorene	ChR00-09-C	8270C	3900 (<RL)	ug/Kg	7800
Fluorene	ChR00-09-D	8270C	5200 (<RL)	ug/Kg	8500
Hexachlorobenzene	ChR00-09-A	8270C	ND	ug/Kg	5600
Hexachlorobenzene	ChR00-09-B	8270C	ND	ug/Kg	4300
Hexachlorobenzene	ChR00-09-C	8270C	ND	ug/Kg	7800
Hexachlorobenzene	ChR00-09-D	8270C	ND	ug/Kg	8500
Hexachlorobutadiene	ChR00-09-A	8270C	ND	ug/Kg	5600
Hexachlorobutadiene	ChR00-09-B	8270C	ND	ug/Kg	4300
Hexachlorobutadiene	ChR00-09-C	8270C	ND	ug/Kg	7800
Hexachlorobutadiene	ChR00-09-D	8270C	ND	ug/Kg	8500
Hexachlorocyclopentadiene	ChR00-09-A	8270C	ND	ug/Kg	5600
Hexachlorocyclopentadiene	ChR00-09-B	8270C	ND	ug/Kg	4300
Hexachlorocyclopentadiene	ChR00-09-C	8270C	ND	ug/Kg	7800
Hexachlorocyclopentadiene	ChR00-09-D	8270C	ND	ug/Kg	8500
Hexachloroethane	ChR00-09-A	8270C	ND	ug/Kg	5600
Hexachloroethane	ChR00-09-B	8270C	ND	ug/Kg	4300
Hexachloroethane	ChR00-09-	8270C	ND	ug/Kg	7800

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	C				
Hexachloroethane	ChR00-09-D	8270C	ND	ug/Kg	8500
Indeno(1,2,3-cd)pyrene	ChR00-09-A	8270C	3700 (<RL)	ug/Kg	5600
Indeno(1,2,3-cd)pyrene	ChR00-09-B	8270C	1700 (<RL)	ug/Kg	4300
Indeno(1,2,3-cd)pyrene	ChR00-09-C	8270C	5500 (<RL)	ug/Kg	7800
Indeno(1,2,3-cd)pyrene	ChR00-09-D	8270C	6000 (<RL)	ug/Kg	8500
Iron (Fe)	ChR00-09-A	6010B	17600	mg/Kg	9.4
Iron (Fe)	ChR00-09-B	6010B	15600	mg/Kg	7.3
Iron (Fe)	ChR00-09-C	6010B	22300	mg/Kg	6.2
Iron (Fe)	ChR00-09-D	6010B	30100	mg/Kg	7.6
Isophorone	ChR00-09-A	8270C	ND	ug/Kg	5600
Isophorone	ChR00-09-B	8270C	ND	ug/Kg	4300
Isophorone	ChR00-09-C	8270C	ND	ug/Kg	7800
Isophorone	ChR00-09-D	8270C	ND	ug/Kg	8500
Lead (Pb)	ChR00-09-A	6010B	384	mg/Kg	0.94
Lead (Pb)	ChR00-09-B	6010B	418	mg/Kg	0.73
Lead (Pb)	ChR00-09-C	6010B	2080	mg/Kg	0.62
Lead (Pb)	ChR00-09-D	6010B	1820	mg/Kg	0.76
Manganese (Mn)	ChR00-09-A	6010B	243	mg/Kg	1.9
Manganese (Mn)	ChR00-09-B	6010B	244	mg/Kg	1.5
Manganese (Mn)	ChR00-09-C	6010B	278	mg/Kg	1.2
Manganese (Mn)	ChR00-09-D	6010B	203	mg/Kg	1.5

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
Mercury (Hg)	ChR00-09-A	7471A	1.2	mg/Kg	0.11
Mercury (Hg)	ChR00-09-B	7471A	4.9	mg/Kg	0.44
Mercury (Hg)	ChR00-09-C	7471A	6.9	mg/Kg	0.39
Mercury (Hg)	ChR00-09-D	7471A	6.4	mg/Kg	0.42
Naphthalene	ChR00-09-A	8270C	3200 (<RL)	ug/Kg	5600
Naphthalene	ChR00-09-B	8270C	ND	ug/Kg	4300
Naphthalene	ChR00-09-C	8270C	ND	ug/Kg	7800
Naphthalene	ChR00-09-D	8270C	1800 (<RL)	ug/Kg	8500
Nickel (Ni)	ChR00-09-A	6010B	33.8	mg/Kg	1.9
Nickel (Ni)	ChR00-09-B	6010B	30.9	mg/Kg	1.5
Nickel (Ni)	ChR00-09-C	6010B	153	mg/Kg	1.2
Nickel (Ni)	ChR00-09-D	6010B	267	mg/Kg	1.5
Nitrobenzene	ChR00-09-A	8270C	ND	ug/Kg	5600
Nitrobenzene	ChR00-09-B	8270C	ND	ug/Kg	4300
Nitrobenzene	ChR00-09-C	8270C	ND	ug/Kg	7800
Nitrobenzene	ChR00-09-D	8270C	ND	ug/Kg	8500
Nitrogen, Total Kjeldahl as N	ChR00-09-A	351.3	6650	mg/Kg	388
Nitrogen, Total Kjeldahl as N	ChR00-09-B	351.3	4570	mg/Kg	340
Nitrogen, Total Kjeldahl as N	ChR00-09-C	351.3	14600	mg/Kg	1030
Nitrogen, Total Kjeldahl as N	ChR00-09-D	351.3	18900	mg/Kg	1700
n-Nitroso-di-n-propylamine	ChR00-09-A	8270C	ND	ug/Kg	5600
n-Nitroso-di-n-propylamine	ChR00-09-	8270C	ND	ug/Kg	4300

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	B				
n-Nitroso-di-n-propylamine	ChR00-09-C	8270C	ND	ug/Kg	7800
n-Nitroso-di-n-propylamine	ChR00-09-D	8270C	ND	ug/Kg	8500
n-Nitrosodiphenylamine	ChR00-09-A	8270C	ND	ug/Kg	5600
n-Nitrosodiphenylamine	ChR00-09-B	8270C	ND	ug/Kg	4300
n-Nitrosodiphenylamine	ChR00-09-C	8270C	ND	ug/Kg	7800
n-Nitrosodiphenylamine	ChR00-09-D	8270C	ND	ug/Kg	8500
Oil and Grease (HEM)	ChR00-09-A	9071B	25800	mg/Kg	1720
Oil and Grease (HEM)	ChR00-09-B	9071B	11100	mg/Kg	1330
Oil and Grease (HEM)	ChR00-09-C	9071B	26600	mg/Kg	1160
Oil and Grease (HEM)	ChR00-09-D	9071B	6900	mg/Kg	1280
Pentachlorophenol	ChR00-09-A	8270C	ND	ug/Kg	29000
Pentachlorophenol	ChR00-09-B	8270C	ND	ug/Kg	22000
Pentachlorophenol	ChR00-09-C	8270C	ND	ug/Kg	40000
Pentachlorophenol	ChR00-09-D	8270C	ND	ug/Kg	44000
Phenanthrene	ChR00-09-A	8270C	22000	ug/Kg	5600
Phenanthrene	ChR00-09-B	8270C	6100	ug/Kg	4300
Phenanthrene	ChR00-09-C	8270C	20000	ug/Kg	7800
Phenanthrene	ChR00-09-D	8270C	25000	ug/Kg	8500
Phenol	ChR00-09-A	8270C	ND	ug/Kg	5600
Phenol	ChR00-09-B	8270C	ND	ug/Kg	4300
Phenol	ChR00-09-C	8270C	ND	ug/Kg	7800

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
Phenol	ChR00-09-D	8270C	ND	ug/Kg	8500
Phosphorous, Total as P	ChR00-09-A	365.2	17.5	mg/Kg	12.2
Phosphorous, Total as P	ChR00-09-B	365.2	71.7	mg/Kg	11.9
Phosphorous, Total as P	ChR00-09-C	365.2	46.0	mg/Kg	9.0
Phosphorous, Total as P	ChR00-09-D	365.2	69.9	mg/Kg	11.7
Pyrene	ChR00-09-A	8270C	25000	ug/Kg	5600
Pyrene	ChR00-09-B	8270C	9900	ug/Kg	4300
Pyrene	ChR00-09-C	8270C	23000	ug/Kg	7800
Pyrene	ChR00-09-D	8270C	28000	ug/Kg	8500
Selenium (Se)	ChR00-09-A	6010B	ND	mg/Kg	0.94
Selenium (Se)	ChR00-09-B	6010B	0.77	mg/Kg	0.73
Selenium (Se)	ChR00-09-C	6010B	2.2	mg/Kg	0.62
Selenium (Se)	ChR00-09-D	6010B	3.6	mg/Kg	0.76
Silver (Ag)	ChR00-09-A	6010B	6.8	mg/Kg	0.94
Silver (Ag)	ChR00-09-B	6010B	8.0	mg/Kg	0.73
Silver (Ag)	ChR00-09-C	6010B	31.8	mg/Kg	0.62
Silver (Ag)	ChR00-09-D	6010B	25.4	mg/Kg	0.76
TOC Average Duplicates	ChR00-09-A	LLOYD Kahn	101000	mg/Kg	33500
TOC Average Duplicates	ChR00-09-B	LLOYD Kahn	87100	mg/Kg	34200
TOC Average Duplicates	ChR00-09-C	LLOYD Kahn	139000	mg/Kg	21200
TOC Average Duplicates	ChR00-09-D	LLOYD Kahn	188000	mg/Kg	30500
Zinc (Zn)	ChR00-09-	6010B	665	mg/Kg	1.9

Analyte	Client ID	Analytical Meth	Result	Units	Det Limit
	A				
Zinc (Zn)	ChR00-09-B	6010B	601	mg/Kg	1.5
Zinc (Zn)	ChR00-09-C	6010B	3210	mg/Kg	12.5
Zinc (Zn)	ChR00-09-D	6010B	5470	mg/Kg	15.2

Notes:
ND = Not Detected

C-2 CHEMICAL DATA FOR SEDIMENT SAMPLES COLLECTED BY MWRD IN JAN 1995.

Analyte	Station 1 Result	Station 2 Result	Station 3 Result
2-Butanone	0.005	0.005	0.374
4,4'-DDD	0.002	0.002	0.002
4-Methylphenol	0.16	22.56	33.66
Acenaphthene	0.16	0.16	0.16
Acetone	0.005	0.668	0.968
Ag	0.05	3	5
Amm.-N	25	642	177
As	29	74	73
Benzo(A)anthracene	3.42	0.16	0.16
Benzo(A)pyrene	3.54	0.16	0.16
Benzo(B)fluoranthene	3.77	0.16	6.11
Benzo(GHI)perylene	2.03	0.16	0.16
Benzo(K)fluoranthene	3.7	0.16	0.16
Bis(2-ethylhexyl)phthalate	0.16	48.4	58.7
Cd	1	2	5
Chrysene	3.84	0.16	5.53
COD, %	2.389	136.6	34.48
Cr	36	46	106
Cu	142	207	174
Cyanide	0.28	0.26	1.2
Fe	7800	11800	14700
Fluoranthene	7.78	7.58	7.67
Fluorene	0.16	0.16	0.16
FOG	2800	5034	7856
Hg	0.33	2.6	1.4
Ideno(1,2,3-CD)pyrene	2.2	0.16	0.16
Mn	154	179	220
Ni	18	35	41
Pb	186	8	363
PCB-1248	0.016	0.016	1.02
PCB-1260	0.721	1.72	3.39
Phenanthrene	6.12	0.16	4.93
Phenols	0.07	1.08	1.07
Pyrene	10.9	13.7	15.1
Toluene	0.005	0.005	3.87
TS,% WetWt.	70.1	14.5	36.3
TVS,%	3.2	43.7	23.1
Zn	381	618	750

Notes:
All values reported in mg/dry kg
For averaging and other data analysis purposes, one half the method detection limit is reported for levels found below such detection limit.
= Tentatively identified.
* = Approximately quantified

C-3 CHEMICAL DATA FOR SEDIMENT SAMPLES COLLECTED BY IEPA IN SEPTEMBER 1994.

Analyte	Result Station 2	Result Station 3
2-Methylnaphthalene	0.8	0.8
4-Methylphenol	2.2	55.3
Acenaphthene	0.8	0.8
Acenaphthylene	1.6	0.8
Ag	3.9	8.3
Anthracene	2.1	0.8
As	2.4	6.0
Ba	93.7	187
Benzo(A)anthracene	7.1	0.8
Benzo(A)pyrene	4.9	0.8
Benzo(B)fluoranthene	5.3	0.8
Benzo(GHI)perylene	1.5	0.8
Benzo(K)fluoranthene	5.3	0.8
Bis(2-ethylhexyl)phthalate	19.3	73.0
Carbazole	1.9	0.8
Cd	2.2	4.3
Chrysene	9.2	0.8
Cr	54.3	82.0
Cu	180	200
Cyanide	0.49	1.13
Dibenzofuran	0.8	0.8
Dimethylnaphthalene*	0.8	0.8
Ethylidene indene*#	0.8	0.8
Fe	7600	15633
Fluoranthene	16.7	8.9
Fluorene	1.8	0.8
Hg	0.84	1.27
Ideno(1,2,3-CD)pyrene	2.3	0.8
K	203	753
Misc. PNAs*	10.1	0.8
Mn	150	250
Naphthalene	0.8	0.8
Ni	22.3	36.3
Pb	810	513
Phenanthrene	15.5	6.3
Phenols	0.48	4.39
Phenylnaphthalene*#	0.8	0.8
Phos	662	3948
Pyrene	13.1	6.9

Se	0.75	0.75
Tetramethylbutyl phenol*#	3.9	0.8
TKN	1287	8710
Trimethylnaphthalene*	0.8	0.8
TS,% WetWt.	69.4	23.2
TVS,% DryWt.	3.9	28.4
Zn	460	840

Notes:
All values reported in mg/dry kg
For averaging and other data analysis purposes, one half the method detection limit is reported for levels found below such detection limit.
= Tentatively identified.
* = Approximately quantified