Corrective Action Plan - Version 2

Wagner Creek/Seybold Canal

Volume 1 — Text and Appendices A through F

Submitted to

City of Miami

Project No. B-50643

August 2009

CH2MHILL
Constructors, Inc.

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Corrective Action Plan (Version 2)
Work Plan

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Acronyms and Abbreviations

ADEM	Alabama Department of Environmental Management
BMP	Best Management Practice
BOS	Bottom of sediment
CAP	Corrective Action Plan
CFR	Code of Federal Regulations
COPC	Chemical of Potential Concern
DERM	Department of Environmental Resources Management
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FFWCC	Florida Fish and Wildlife Conservation Commission
FIND	Florida Inland Water District
FLPRO	Florida Petroleum Range Organics
FLUCCS	Florida Land Use and Cover Classification System
GIS	Geographic Information System
GSA	General Services Administration
HDD	Horizontal directional drill
LDPE	Low density polyethylene
MLLW	Mean lower low water
MOT	Maintenance of traffic
NOAA	National Oceanic and Atmospheric Administration
n.o.s.	Not otherwise specified
NTU	Nephelometric turbidity unit
OFW	Outstanding Florida Water
OS	Operational Section
PAH	Polycyclic aromatic hydrocarbon
PBS&J	Post, Buckley, Schuh & Jernigan
PCB	Polychlorinated biphenyls
POTW	Publicly Owned Treatment Works
ppb	Part per billion
QC	Quality control
QCR	Quality Control Report
ROW	Right-of-way
RTK	Real-Time Kinematic
SAP	Sampling and Analysis Plan
SFWMD	South Florida Water Management District
SOP	Standard Operating Procedure
SVOCs	Semi-volatile organic compounds
T&D	Transportation and Disposal
TEQ	Toxicity Equivalent
TEW	TEW Cardenas, LLP
USACE	U.S. Army Corps of Engineers
TCLP	Toxicity characteristic leaching procedure

TOS	Top of sediment
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile organic compound
yd^3	Cubic yards
WRC	Water-tight roll-off container

1.0 Introduction

The purpose of the “Dredging Services for Wagner Creek and Seybold Canal” project is to perform maintenance dredging to remove accumulated sediment in both Wagner Creek and Seybold Canal waterways located in Miami, Florida. The overall project goal is to remove sediments to achieve the following objectives:

- Improve drainage and/or navigation.
- Reduce risk from contamination in the creek and canal.
- Focus on protecting public/worker safety and minimizing damage to existing structures, land, vegetation, and wildlife.

This project is being conducted in two phases, as follows:

- **Phase 1**—Development of a Corrective Action Plan (CAP) and permit applications, including necessary access plans, waterway survey, and sediment and water characterization. This Draft Final Work Plan (Work Plan) is the culmination of Phase 1 work.
- **Phase 2**—Implement the Work Plan and conduct the sediment removal.

This Corrective Action Plan version 2 (CAP2) Work Plan has been developed to describe requirements and procedures for the safe removal of sediments from Wagner Creek and Seybold Canal. It updates the Corrective Action Plan Version 1 (CAP1) submitted to the City of Miami, regulatory authorities, and other stakeholders in September 2008.

During the preparation of this Work Plan, the City of Miami and CH2M HILL have engaged project stakeholders to develop consensus regarding sediment removal requirements, constraints, and procedures. This Work Plan describes requirements that have been agreed upon during question and answer sessions on CAP1 between the City of Miami, Florida Department of Environmental Protection (FDEP), US Army Corps of Engineers (USACE), Miami-Dade Department of Environmental Resources Management (DERM), as well as other stakeholders in the project.

This Work Plan is intended to serve as the primary vehicle to communicate project information and specify project procedures to the project stakeholders. These stakeholders include, but are not limited to, the following:

- City of Miami and Project Contractors
- Miami-Dade County
- DERM
- USACE
- FDEP

- Miami River Commission
- Florida Inland Water District (FIND)
- South Florida Water Management District (SFWMD)
- Private property owners along Wagner Creek and Seybold Canal
- Businesses along Wagner Creek and Seybold Canal
- Community organizations representing the public along Wagner Creek and Seybold Canal
- Passers-by

CAP2 has been organized in three volumes. Volume 1 contains all of the changes resulting from discussions among the City and regulators. Volume 2 contains all unchanged appendices from CAP1, and Volume 3 contains the original drawings submitted with CAP1, with additional drawing formats suggested by the regulators.

2.0 Project Background

2.1 Project History

Sediment removal within Wagner Creek and Seybold Canal (Figure 2-1) has been the focus of the City of Miami (City) for several years. In 2003, the City submitted a request to perform maintenance dredging on portions of Wagner Creek (upstream of NW 11th St.). As part of the permitting process, sediment and water samples were collected and analyzed in preparation for sediment removal and disposal. The results of these investigations indicated that there are chemicals of potential concern (COPCs) in Wagner Creek and Seybold Canal and sediments that would require special techniques for removal, handling, and disposal.

Early plans for dredging of Wagner Creek included the operation of a staging/dewatering area similar to those which had been acceptable during the secondary canal dredging project performed in 2002 - 2004. These early plans submitted for review stimulated substantial stakeholder concern, particularly among agency officials and local residents, and activities conducted to permit the work were unsuccessful. A review of the historical communication between the City and the Miami-Dade County DERM indicates that permits were not granted because there was not enough engineering or “work plan” detail provided to allow for permit issuance.

In 2007, the City of Miami engaged CH2M HILL to perform the tasks necessary to restart the permitting process for removal of sediments from both Wagner Creek and Seybold Canal. CH2M HILL began CAP1 development work in April 2008, conducted surveying and sediment sampling in June and July 2008, conducted additional sediment thickness probing to refine sediment removal volume estimates in August 2008, and upon receipt of the resultant data, prepared the CAP1. Subsequent discussion with the stakeholders regarding removal procedures and data presented in CAP1 resulted in the necessity to conduct additional sampling in May 2009.

This Work Plan has been prepared to compile the data and finalize removal requirements and procedures. It describes procedures for removal of the sediment from Wagner Creek and Seybold Canal without the need for an intermediate staging/dewatering area. The construction operations described herein have been selected to excavate, remove, and transport dredged sediment from the project area on a daily basis so that the potential for the public to be exposed to the sediment is minimized. This Work Plan addresses the need to minimize water volume generated during dredging operations, the management of water collected during dredging, and water quality controls to be implemented during the dredging activities. Finally, it describes the procedures to be implemented for endangered species protection (manatees) and structure protection during the dredging activities.

2.2 Project Phasing

Prior work to complete the permitting for Wagner Creek sediment removal presented the project as series of permitting phases (Phases 1 through 4). Seybold Canal was not included in the prior permitting efforts, but was added in 2007.

This Work Plan separates the project into six Operational Sections (OSs) for Wagner Creek and Seybold Canal (Figure 2-2). These individual OSs were defined primarily to describe their area-specific sediment characteristics and the identified removal techniques. Other reasons for defining the individual OSs included co-application requirements, access planning, and physical project breakpoints (streets). CAP2 contains analytical data, volume calculations, as well as the characteristics and locations of the sediments to be removed by OS and (where appropriate) an OS has been subdivided to delineate areas with elevated levels of 2,3,7,8-TCDD = 2,3,7,8-tetrachlorodibenzo dioxin toxicity equivalents (TEQs).

Wagner Creek consists of five OSs and is separated as described below (Figure 2-2). Seybold Canal is OS-6:

1. The first OS (OS-1) begins just south of NW 20th Street and extends southeast to NW 14th Avenue. This area is surrounded by residential housing, commercial properties, and industrial properties. In a review of data from the various sampling events, it was determined that OS-1 contained volumes of sediment with elevated TEQ levels.
2. OS-2 begins just south of NW 14th Avenue and extends southeast to NW 15th Street. OS-2 is bounded by Miami-Dade County governmental properties on the east side and residential housing and commercial properties on the west side.
3. OS-3 begins just south of NW 15th Street and extends southeast to NW 14th Street. This section is bounded by Jackson Memorial Hospital and the University of Miami Hospital, where it is contained by 20-foot (ft)-high sheetpile walls.
4. OS-4 begins on the southeast side of the intersection of NW 14th Street and NW 12th Avenue, and continues southeast to State Road (SR) 836. OS-4 is bounded by Miami-Dade County governmental properties and institutional properties.
5. OS-5 begins on the south side of SR 836 and continues southeast to NW 11th Street. This section then continues southeast, past institutional properties and the Miami-Dade County Water and Sewer Department building on the west side, and a mix of residential housing and commercial properties, undeveloped parcels, and a Miami-Dade County governmental property on the east side. Wagner Creek then flows under NW 11th Street, where it connects with OS-6, Seybold Canal.

2.3 General Features of the Work

Flow from Wagner Creek and Seybold Canal represents a major tributary to the Miami River, providing drainage for a sizable portion of the City (Figure 2-1). The project area is located in the City of Miami, Miami-Dade County, Florida, and is situated along a 1.67-mile (8,850-ft) tributary to the Miami River, which includes Wagner Creek and Seybold Canal. Wagner Creek and the northern two-thirds of Seybold Canal are located in Section 35, Township 53, and Range 41 of Miami-Dade County, and the southern one-third of Seybold Canal is located in Section 2, Township 54, and Range 41 of Miami-Dade County.

The project area lies in a densely populated urban area, with land uses consisting mainly of institutional properties, governmental properties, and residential housing. Wagner Creek receives stormwater runoff from the surrounding C-6 Basin and merges into Seybold Canal. Seybold Canal connects to the Miami River approximately 2 miles northwest of Biscayne Bay. Both Wagner Creek and Seybold Canal are tidal.

Historically, Wagner Creek was a major tributary to the Miami River. It was fed by several fresh water springs, which have been eliminated due to urban development (Cantillo et al., 2000). Today, Wagner Creek is maintained by the City to provide stormwater conveyance for the C-6 Basin. Most areas of Wagner Creek are not accessible or navigable by boat due to shallow water depths and the presence of low-lying bridges. Wagner Creek is approximately 5,500 ft long and ranges from 22 ft to 40 ft wide, with a depth ranging between 3 and 6 ft.

The portion of Wagner Creek located south of NW 11th St was renamed Seybold Canal when John Seybold dredged it in the 1920s. Seybold Canal is approximately 2,350 ft long and ranges from 25 to 60 ft wide. A 100-ft-wide turning basin is located at Seybold Canal’s northernmost extent. Seybold Canal is within the geographic borders of the Biscayne Bay Aquatic Preserve and is classified by the FDEP as an Outstanding Florida Water.

At one time, Seybold Canal provided maritime facilities for commercial fishermen. Today, Seybold Canal and its turning basin are bordered by residential property and lined by seawalls, docks, and other types of revetment structures. Seybold Canal is a navigable waterway. The west side of Seybold Canal is bordered by residential housing, and the east is a mix of residential housing, commercial properties, industrial properties, and undeveloped parcels. Seybold Canal flows under the NW 7th Street Bridge (Humpback Bridge) and into the Miami River adjacent to NW 7th Avenue.

2.4 Land Use

A desktop investigation was performed to identify the land use types that are present along Wagner Creek and the Seybold Canal project area. The primary data sources included Miami-Dade County Geographic Information System (GIS) coverage of land parcels and land use, the County’s Property Tax Appraiser’s database, site observations, and the Florida Land Use and Cover Classification System (FLUCCS) manual. A map of land use patterns for the project area is presented as Figure 3-1.

Land uses in the project area, as defined by the FLUCCS manual, include Residential (110 to 130), Commercial and Industrial (140-150), Institutional (170), Governmental, including recreational and utilities (175), and Undeveloped Lands within Urban Areas (191). Table 2-1 provides a breakdown of each category for the OSs.

Residential land uses range from low to high density urban housing developments depending on the density of dwelling units per acre of land. Within the project area, there are a total of 63 residential land use parcels, which range from medium to high density.

Commercial areas are predominantly associated with the distribution of products and services. This category contains those land uses where manufacturing, assembly, or processing of materials and products is accomplished. Industrial areas include a wide array of industry types ranging from light manufacturing and industrial parks to heavy manufacturing plants. Within the project area, there are a total of 18 commercial and industrial land use parcels, which include warehouses, office buildings, shopping areas, and industrial fishing facilities.

TABLE 2-1
Land Use Categories for Each Operational Section

	OS Description	Residential	Institutional	Commercial and Industrial	Governmental	Undeveloped Lands	Totals
1	NW 20th Street – NW 14th Avenue	7		2		1	10
2	NW 14th Avenue – NW 15th Street	8	1	3	4		16
3	NW 15th Street – NW 14th Street		1		1		2
4	NW 14th Street – SR 836		1		2		3
5	SR 836 – NW 11th Street	6		2	3	2	13
6	NW 11th Street – Miami River (Seybold Canal)	42		11		4	57

Typical land uses include educational, religious, health, governmental, and military facilities. Within the project area, there are a total of eight institutional land use parcels that include Jackson Memorial Hospital and various educational facilities.

All buildings and facilities identified as non-military governmental are included as governmental. Within the project area, there are a total of 11 governmental land use parcels, which include Miami-Dade County government buildings, utilities, and various recreational facilities.

Undeveloped land within urban areas and inactive land without structures are another category. This category normally does not exhibit any structures or any indication of intended use. Within the project area, there are eight undeveloped land use parcels.

2.5 Climate Conditions

The climate of the project area is considered subtropical with distinct wet and dry seasons, and climactic extremes of floods, droughts, and hurricanes (SFWMD and USACE, 1999). Average temperatures within the project area range from 66°F in the winter months to 85°F in the summer months, with an annual average of 75°F (Intellicast.com, 2008). The project area has a hot and humid wet season (May to October) and a relatively mild dry season (November to April). See Table 2-2 for wet and dry season temperature averages.

TABLE 2-2
Average Temperatures in Miami, Florida

Time Period	Low Temperature (°F)	High Temperature(°F)
Monthly Average	71	80
Dry Season Monthly Average (November – April)	66	76
Wet Season Monthly Average (May – October)	77	85

Source: Intellicast.com, 2008

TABLE 2-3
Annual Precipitation in Miami, Florida

Time Period	Total Rainfall (in.)
Annual Average	60.1
Monthly Average	5.0
Dry Season Average	14.7
Wet Season Average	46.2
Dry Season Monthly Average	2.5
Wet Season Monthly Average	7.7

Source: Intellicast.com, 2008

The wet season is characterized by high humidity, intense solar radiation, and unstable atmospheric conditions that result in frequent thunderstorms, often accompanied by lightning and intense rainfall events of short duration. Severe tropical storms such as hurricanes and tropical depressions occur during the wet season. These storms can produce large amounts of rainfall over localized areas and cause extensive flooding. In contrast, the dry season is characterized by mild, dry weather. Frontal storms are dominant in the dry season, often bringing cool and occasionally freezing temperatures, and moderate amounts of low intensity rainfall (SFWMD, 2000). Such inter-annual extremes in rainfall result in frequent years of flood and drought (SFWMD, 1999). From February 1939 to December 2007, Miami received an annual rainfall average of 60.1 inches, 66 percent of which fell during the wet season (Intellicast.com, 2008). See Table 2-3 for information on wet and dry season rainfall averages.

2.6 Tidal Fluctuations

Verified tide level data were gathered from Virginia Key, which is located within Biscayne Bay at 25° 43.9'N, 80° 9.7'W. The station is situated at the outer end of a pier on the University of Miami, Rosenstiel School of Marine and Atmospheric Science campus. Data from this station indicate that the mean tide level is 1.15 ft above mean lower low water (MLLW). Mean tide level is defined as the arithmetic mean of mean high water and mean low water. MLLW is the average of the lower of the two low water heights of each tidal day observed over the U.S. National Tidal Datum Epoch. The U.S. National Tidal Datum Epoch is the specific 19-year period adopted by the National Oceanic and Atmospheric Administration (NOAA) National Ocean Service as the official time segment over which sea level observations are recorded and reduced to obtain mean values for datum definition. The mean tidal range at Virginia Key is 2.05 ft, with a diurnal range of 2.24 ft and a spring range of 2.44 ft (NOAA, 2008).

In addition to the Virginia Key data, tide data for the project area were collected from three tide gauges (Figure 3-2) placed within Wagner Creek/Seybold Canal during the sediment characterization and biological resource surveys. Figure 3-3 shows the correlation between the tide data from Virginia Key and tide measurements collected between June 27 and July 11, 2008 within the project area. Overall, there is very good agreement between the two locations. The data indicate that there is a direct tidal elevation change that compares very well between Virginia Key and the three tide gauges. The data also indicate a lag on incoming tides of approximately 30 to 45 minutes. This means that high tide at Virginia Key occurs 30 to 45 minutes before high tide in Seybold Canal and Wagner Creek. Conversely, low tide in Wagner Creek and Seybold Canal occurs approximately 15 to 20 minutes before low tide at Virginia Key.

The 2008 data indicate that the upper reaches of the project area are subject to tidal pooling. The 2008 data indicate that tide levels in the northern stretches of the project area are approximately 1.4 to 2.6 inches higher than those measured at Virginia Key. This information is important in defining the slope dredging limits for the project. Slope dredging limits for this project are recommended and the project drawings have been completed to show slope dredging limits at mean high water levels determined from the 2008 data.

2.7 Sediment / Water Characteristics

As part of the process of achieving the overall goal of this CAP2, it was necessary to obtain applicable permits and prepare a sediment removal plan (with appropriate dredge prisms) to perform maintenance dredging of sediments from Wagner Creek and Seybold Canal. Accordingly, the following were performed or obtained:

- Topographic and hydrographic survey information
- Establishment of vertical controls
- Sampling data for sediment chemical and physical characteristics
- Sampling data for water chemical characteristics
- Elutriate testing for identification of potential water quality issues
- Mapping of structures and significant debris
- Mapping of endangered plant species within the project area

This section summarizes sample collection, handling procedures, and analytical and testing methods, along with the resultant data for sediment and water characterization and sediment thickness performed in June and July 2008 and in May 2009. A report of the sampling procedures and results is presented in Appendix A-1.

2.7.1 Sediment Chemistry and Physical Characteristics

The 2008 study was performed to refine the existing dataset and define the geotechnical characteristics of the sediment. Based upon the results of the 2008 study, additional sampling was conducted in May 2009 in the upstream section of Wagner Creek to further define the location and estimated quantity of the impacted sediments. This information was useful for developing the appropriate sediment removal, containment, and control approaches.

Developing data of defined quality is important and requires an understanding of the actual sampling methodology, sample preparation, and decontamination procedures used. Given the high resolution procedures used in the analytical methodology for dioxins/furans, cross contamination is a possibility and the former reports did not include descriptions of the techniques used during sample collection, preparation, and handling. Analysis of the most recent round of data provides an updated picture of chemical distribution and physical characteristics, which has helped determine special handling and dredging procedures required for individual sections of the creek and canal.

The Sampling and Analysis Plan (SAP) was developed using the protocols and standard operating procedures (SOPs) provided in FDEP SOP 001/01 and implemented for both the June-July 2008 and May 2009 events (CH2M HILL, 2008). In addition, all applicable FDEP SOPs were followed, including:

- FS 4000 Sediment Sampling
- FD1000 Documentation Procedures
- FC1000 Cleaning/Decontamination Procedures

2.7.1.1 June and July 2008 Sampling Event

The June and July 2008 sediment samples for chemical analysis (for the sole purpose of determining waste classification for disposal) and physical characterization were collected at 45 locations (see Volume 3, Section 6) along the entire project length of Wagner Creek and Seybold Canal (8,850 ± ft), and distributed as follows:

- 33 sample transects spaced at 200-ft intervals along Wagner Creek
- 11 sample transects spaced at 200-ft intervals along Seybold Canal
- 1 additional sample taken north of the NW 15th St Bridge (Sample 45)

In addition to the 45 primary locations, 5 field duplicate (quality control) samples were collected for a total of 50 samples. Laboratory analysis was performed on 23 samples (odd numbered transects) to determine the disposal characteristics (using toxicity characteristic leaching procedure [TCLP] extraction) and on 22 samples (even numbered transects) for bulk chemistry (see Appendix A-1 and Volume 3, Section 1). TEQ analyses were performed only on samples collected from the even numbered transects. The quality control (QC) samples were submitted to the laboratory for analysis following the specific protocols for field QC samples as detailed in the FDEP SOP FQ1000 titled *Field Quality Control Requirements* and the CH2M HILL SAP.

All sediment samples were analyzed for chemical properties and physical characteristics as follows:

- Dioxins/Furans
- Metals
- Volatile organic compounds (VOCs)
- Semi-volatile organic compounds (SVOCs)
- Pesticides/Herbicides
- Polychlorinated biphenyls (PCBs)
- Florida Petroleum Range Organics (FLPRO)
- Ignitability
- Corrosivity
- Paint Filter

- Specific Gravity
- Grain Size
- Percent Solids

The chemical results of the 2008 sampling and analysis effort are summarized in Appendix A-1 (Tables 3 through 9), along with the final geographic coordinates for each transect. Table 1 provides the results for the physical analysis. Bulk chemistry concentrations within Wagner Creek and Seybold Canal during the June-July 2008 field event appear to have decreasing trends from the upstream sections (OSs-1 and -2) to the downstream section (OS-6). Concentrations of specific constituents (TEQs, total polycyclic aromatic hydrocarbons [PAHs]) and inorganic analytes (metals) were generally higher within sediment deposits from OSs-1 and -2, and then decreased moving downstream within the channel of Wagner Creek and Seybold Canal.

TEQs in sediments were reported at a maximum concentration of 5,700 picograms per gram (pg/g) at CH-8 (OS-1) and the concentrations of TEQs generally decreased in the downstream areas of the creek and canal to 54.9 pg/g at CH-44 (OS-6). Similar decreasing concentration trends were also noted for total PAHs, although high concentrations of total PAHs were reported within both OS-2 (163,000 micrograms per kilogram [μg/kg] at CH-12) and OS-5 (56,600 μg/kg at CH-28), possibly indicating independent sources or pieces of asphalt material in samples. In addition, lead concentrations were reported in sediment deposits with a maximum concentration of 3,610 milligrams per kilogram [mg/kg] at CH-2 (OS-1) and a minimum concentration of 70.7 mg/kg at CH-22 (OS-4). This decreasing trend from upstream to downstream sections is similar to the trend reported in the analytical results from the sediment sampling conducted in 2003.

In addition to sediment samples collected for physical and chemical analysis, four more sediment cores were collected during the June-July 2008 field investigation at existing sample locations (transects CH-10, CH-20, CH-30, and CH-39) for use in dredging elutriate simulation. Of the four elutriate samples collected, the agitation and mixing simulation performed in the lab simulation appears to increase the aqueous concentrations only in samples collected from the upstream section of Wagner Creek (CH-10). However, it should be noted that the sample agitation and mixing process conducted during the elutriate sample preparation in the laboratory tends to be much more aggressive than the mechanical dredging operation that will be conducted in the field during the corrective action.

OSs-1 and -2, both located in the upstream section of Wagner Creek, generally reported the highest concentrations of TEQs, total PAHs, and metals in sediment. TEQs have a very low water solubility and, due to their high affinity to adsorb to solid particles such as organic carbon, are likely to remain tightly sorbed to any fine grained deposits and organic matter in the sediments. The suspension of the fine grained sediment particles and colloidal materials in the water column as a result of the agitation and mixing process in the elutriate sample preparation would be expected. Due to their low water solubility, TEQs in the elutriate samples from location CH-10 could be from suspended particulates that pass through the 0.45-micron filter during the sample preparation. At the other locations within Wagner Creek and Seybold Canal where the elutriate samples were collected (transects CH-20, CH-30, and CH-39), only metals were reported, which are likely a result of the agitation and mixing simulation used during sampling.

2.7.1.2 May 2009 Sampling Event

The May 2009 sediment samples for chemical analysis and physical characterization were collected from 13 locations along an upstream section of Wagner Creek (2,250 ± ft). The sampling was completed to further define the area and the estimated quantity of sediments impacted by TEQs within OSs-1 and -2. Ten primary transects (CH-02-01 through CH-02-10) were sampled to assess the sediment quality of TEQs and three transects (E-01, E-02, and E-03) were sampled for the dredging elutriate simulation.

In addition to the 10 primary transect locations, 1 field duplicate (QC) sample was collected, for a total of 11 samples for sediment quality. Sediment samples from the 10 primary transects were analyzed for TEQs only. The QC samples were submitted to the laboratory for analysis following the specific protocols for field QC samples as detailed in the FDEP SOP FQ1000 titled *Field Quality Control Requirements* and the CH2M HILL SAP. The chemical results of the 2009 sampling and analysis effort are summarized in Appendix A-1 (Table 10), along with the final geographic coordinates for each transect.

In general, TEQ concentrations within the sediment materials during the May 2009 field event appear to have decreasing trends from upstream (OS-1) to downstream (OS-2). TEQs within sediments were reported with a maximum concentration of 4,980 pg/g at CH-02-01 (OS-1) and then generally decreased moving downstream along the investigation area of Wagner Creek to 193 pg/g at CH-02-10 (OS-2). Aside from the elevated reporting of TEQ from the upstream location CH-02-01, the other sampling locations within OS-1 reported TEQs from 1,880 pg/g (CH-02-02) down to 531 pg/g (CH-02-06), while the sampling locations from OS-2 reported TEQs from 496 pg/g (CH-02-09) down to 130 pg/g (CH-02-07). This decreasing trend from upstream sections to downstream sections is similar to the trend reported in the analytical results from the sediment sampling conducted in 2003.

In addition to sediment samples collected for physical and chemical analysis, three additional sediment cores were collected during the May 2009 field investigation at sample location transects E-01, E-02, and E-03 for use in dredging elutriate simulation. The Dredging Elutriate Testing (DRET) protocol was implemented by the lab since this method tends to represent the mechanical dredging operation that will be conducted in the field more closely than other elutriate simulation methods (USACE, 1995). Of the three elutriate samples that were collected, the agitation and mixing simulation performed by the DRET simulation in the lab appears to increase only slightly the aqueous concentrations of TEQs in samples collected from the upstream section of Wagner Creek. The highest TEQ concentration of the three elutriate samples was reported in E-03 at 4.73 pg/g (i.e., parts per trillion or ppt). The suspension of the fine grained sediment particles and colloidal materials (with sorbed TEQ compounds) into the water column as a result of the agitation and mixing process in the elutriate sample preparation would be expected.

In advance of conducting the May 2009 (current) investigation, the results of the 2008 and 2003 investigations were reviewed and incorporated into the design of the current investigation. Results of the 2003 study are provided in Appendix A-2. The data collection logs and supporting information from the 2008 study are provided in Appendix A-1.

2.7.2 Sediment Thickness

Wagner Creek and Seybold Canal were originally surveyed in 2002 in preparation for dredging. The existing bottom profile, including sediment thickness, was measured as part of the survey (CES, 2002).

In 2008, CH2M HILL performed another survey to determine the current sediment thickness within Wagner Creek and Seybold Canal. Survey personnel recorded the top of the sediment and the depth of the sediment to refusal, or hardpan, at ±90 cross-sections, with the resultant sediment thickness recorded. The approximate sediment depths from these selected cross-sections are summarized in Appendix A-1, Tables 3 through 9. These are shown on cross-section drawings in Volume 3, Section 5. The data collection logs and all supporting information are also provided in Appendix A-1. Cross-section drawings showing sediment thickness in Wagner Creek and Seybold Canal are presented in Volume 3, Section 5.

2.7.3 Water Chemistry

Water samples were collected for chemical analysis and evaluation of potential water quality impacts during dredging operations. Four ambient representative water samples and four representative elutriate samples were collected during the 2008 sediment sampling.

In 2009, three additional samples were obtained from sample points that showed elevated TEQ concentrations in the 2008 sample results. The testing method was also updated to better reflect actual conditions that would be encountered during mechanical dredging.

All applicable procedures for sample collection, handling, and decontamination were followed as detailed in these FDEP SOPs:

- FS 8200 Clean Sampling for Ultratrace Metals in Surface Waters
- FD1000 Documentation Procedures
- FC1000 Cleaning/Decontamination Procedures

The ambient water samples and elutriate preparation samples were collected at the same location as the four elutriate sediment samples. Ambient water and elutriate samples were analyzed for the same suite of chemical parameters (dioxins/furans, metals, VOCs, SVOCs, pesticides/herbicides, and PCBs) as the sediment samples minus the TCLP extraction.

The analytical results for the water and elutriate samples are provided in Appendix A-1, Tables 5A, 5B, 11A, and 11B, along with the final geographic coordinates for each sample (Appendix A-1, Table 1).

The results of the elutriate testing indicate that during the dredging, free dredge water will be collected that will require treatment and disposal. Procedures for this activity are discussed in Section 4.7.4.

2.7.4 COPC Distribution in Sediments and Recommendations for Disposal

2.7.4.1 Summary of Sampling Events

Sediments in Wagner Creek and Seybold Canal have been reported to contain a variety of organic and inorganic contaminants (see Appendices A-1 and A-2). The data were obtained during the following studies:

- In April-May 2003, Consulting Engineering and Science, Inc. (CES) of Miami, Florida collected sediment samples from 12 locations (CES-1 through CES-12) (2 from upstream of Wagner Creek, 8 from Wagner Creek, and 2 from Seybold Canal) to characterize the sediment quality. The CES investigation assessed both the lateral and vertical extent of chemical impacts to the sediments in the areas sampled. Based on that information, a removal program was developed and was designated Phases IV, V, and VI, which correspond to the sections of Wagner Creek between NW 14th Avenue and NW 11th Street.

- In December 2003, PHS Engineering Corporation (PHS) of Miami, Florida performed an additional assessment by collecting sediment samples for dioxin/furan congeners analysis from six locations (WC-1 through WC-6) along the upstream 2,500-ft section of Wagner Creek (NW 20th St to NW 14th Ave).

- Based upon the previous environmental results, the potential behavior of sediments in canals, and the fate of inorganic and relatively stable organic chemicals (such as dioxin TEQs) that could be persistent in the sediments, additional sediment sampling was performed in June-July 2008. During this event, sediment samples for physical characterization and chemical analysis were collected at 45 locations along the entire length, approximately 8,100 ft, of Wagner Creek and Seybold Canal.

- After regulatory review of the results, a follow-up to the June-July 2008 sampling event was performed in May 2009. During this event, additional sediment samples were collected for TEQ congener analysis along 10 transects from the upper 2,500 ft of Wagner Creek (from NW 20th Street to NW 15th Street).

The sampling transects chosen for the May 2009 sampling event were identified as CH-02-01 through CH-02-10 and were located relative to transects from the 2003 and 2008 sampling locations that reported elevated TEQ concentrations. This sampling was performed to further delineate sections of the elevated TEQ sediment within OS-1 and OS-2 of Wagner Creek.

2.7.4.2 COPC Distribution and Disposal Recommendations

After review of the TCLP analysis and total analysis for metals, VOC, SVOC, herbicide/pesticide, and PAHs, it was concluded that all sediments in Wagner Creek and Seybold Canal are classified as non-hazardous waste by characteristic under 40 CFR 261, Subpart C.

Based on historical information provided on the site and the surrounding area, TEQs contained in Wagner Creek and Seybold Canal sediments may have originated in surface runoff from the general vicinity or from a municipal trash incinerator which operated on NW 20th Street. Based on this information, the sediment is not contaminated with a listed waste as defined in 40 CFR Part 261 Subpart D and is classified as non-hazardous waste. However, the State of Florida has provided guidance that non-hazardous landfills in the state cannot accept materials with reported TEQ > 1 ppb.

Guidance requires that dioxins calculated as TEQs be within the target level of 1 ppb. The TEQs for this project are estimated by the summation of the dioxin or furan congener concentrations (reported in pg/g, i.e., ppt) multiplied by their respective Toxic Equivalency Factor (TEF). TEFs are multiplier values used to measure the relative toxicity of a specific dioxin or furan congener in terms of the most toxic dioxin congener (2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]). The World Health Organization (WHO), through the International Programme on Chemical Safety (IPCS), re-evaluated the risk-based TEF values for humans and mammals, birds, and fish in 2005. The TEQ values contained within this report have been calculated using the 2005 WHO-TEFs, and can be obtained from the following web site: http://www.who.int/ipcs/assessment/tef_update/en/). A graphic showing the TEQ levels in individual samples along Wagner Creek OS-1 and OS-2 is shown in Figure 3-4.

As shown in Figure 3-4, two reaches in Wagner Creek OS-1 exhibited TEQs above the FDEP guideline set for local Class 1 non-hazardous waste landfill disposal of > 1 ppb as follows:

1. The second sub-section of OS-1 (designated as Section 1-2) is approximately 588 ft in length and extends from sample location CES-3 (station 2+76) down to CH-02-04 (station 8+64)
2. The fourth sub-section of OS-1 (designated as Section 1-4) is approximately 178 ft in length and extends from sample location CH-02-06 (station 11+52) down to CH-08 (station 13+30).

Both sub-sections are located within the upstream section of Wagner Creek between the NW 20th Street bridge and the NW 14th Avenue bridge. Since these elevated TEQ sediments cannot be accepted by a local Class 1 landfill facility, it is recommended that they be segregated (as part of the CAP2) and transported to an approved and certified disposal facility (such as Chemical Waste Management's facility in Emelle, AL.

Other sub-section sediments removed from OS-1 of Wagner Creek will be disposed of in a local Class 1 landfill facility as follows:

1. Sub-section 1-1 beginning at Station 2+76 and ending at Station 8+64
2. Sub-section 1-3 beginning at Station and 11+52 and ending at Station 13+30

All other sediments removed from Wagner Creek and Seybold Canal will be disposed of in a local Class 1 landfill facility.

2.7.4.3 Other Considerations Related to TEQ

In order to assess the TEQ concentrations within Wagner Creek for removal and disposal purposes, the sediment quality data from the 2003 (CES and PHS), 2008 (CH2M HILL), and 2009 (CH2M HILL) sampling events were combined. Although the CES data from April-May 2003 reported TEQs at various depths within the sediment column (0.0-0.5, 0.5-2.0, 2.0-4.0, and 4.0-6.0 ft below sediment surface) at each of the sampling locations, the TEQ values were averaged to account for the sediment materials being mixed and composited during the excavation process. From the PHS sampling event in December 2003, TEQ values were calculated for each of the sampling locations based upon the concentrations of the reported dioxin and furan congeners. In addition, the TEQs for both the CES and PHS field events were calculated using the most recent 2005 WHO TEFs in order to compare with the TEQs reported during the 2008 and 2009 field events.

Figure 3-4 includes the TEQ values from the 2003 (CES and PHS), 2008 (CH2M HILL), and 2009 (CH2M HILL) sampling locations within the upstream 2,500 ft of Wagner Creek. Only the upstream section of Wagner Creek is shown on Figure 3-4 since this is the section with the highest concentrations of TEQs reported within the sediment materials. The FDEP target guideline (1.0 ppb [1,000 pg/g] TEQ) set for local Class 1 non-hazardous waste landfill disposal is also identified on the plot. Sediment materials with TEQs above the guideline of 1.0 ppb cannot be disposed of in local Class 1 landfills. As stated above, the two sections of Wagner Creek where the TEQ values exceed 1.0 ppb (1,000 pg/g) include: (1) CES-3 to CH-02-04 and (2) CH-02-06 to CH-08.

Finally, although sample CH-12 reported TEQ above the 1.0 ppb (1,000 pg/g), when composited and mixed with sediment materials from the adjacent locations of CH-02-09 (0.54 ppb) and CH-02-10 (0.21 ppb), the average TEQ of the sediment material between CH-02-09 to CH-02-10 (and including CH-12) is 0.94 ppb and is below the FDEP target guideline of 1.0 ppb.

2.8 Shoreline Features and Structures

Previous shoreline features and structures were observed and recorded during the 2002 survey event (CES, 2002). To assess the current conditions, survey coordinates were collected during the 2008 survey effort for all structures encountered, including bridges, culverts, fence lines, power poles and electrical lines, headwalls, docks, slips, utility crossings, and large debris. The results of 2008 Structures Survey are included in Volume 2, Appendix G.

After review of the structures information provided in CAP1, it was determined that inclusion of contingency procedures in the Work Plan was necessary. A contingency plan for structure protection was subsequently developed in 2009 and is presented in Appendix B. The identified contingency procedures are summarized as follows:

- Before dredging begins in each OS location and current integrity of structures will be reconfirmed by survey.
- Structures that are considered at risk (shown in Appendix B) will be repaired/reinforced before work begins.
- Failing structures will be removed and failed sections reinforced.

The results from the 2008 Structures Survey and Structures Contingency Plan have also been used to determine the appropriate sediment removal setbacks (see cross sections in Volume 3, Section 5) to maximize protection of existing the shoreline and structures.

Setbacks from structures in Wagner Creek have been generally set at 4 ft and have been planned so that sediment "slough" after dredging will ensure maximum removal while maximizing structure and shoreline protection. Seybold Canal is a navigable waterway and is bounded on both sides by docks, slips, headwalls, bulkheads, and a few areas of unimproved shoreline. For Seybold Canal dredging, the plan includes maintaining a setback of 10 ft from structures.

Even though significant planning has been done, caution will be exercised during sediment removal. To facilitate field decisions that protect structures to the greatest extent possible during the dredging, the following has been added to the survey notes on the drawings:

> ***"The proposed dredge cut lines and grades shown on these cross-sections are to be field verified in order to remove the maximum extent of sediment possible without compromising structures located adjacent to or within the designated work area."***

In summary, structure protection will be provided through the following activities:

- Field verification of structures (condition and position) before dredging of each OS begins
- Implementation of preemptive structure stabilization (when feasible) before dredging begins in each OS
- Use of CPS control to ensure setbacks are adhered to during dredging
- Verification of structure condition and position within 30 days of dredging
- Repair in kind of compromised structure on an as-needed basis

2.9 Sediment Removal Constraints

This Work Plan has been developed after reviewing results from the bathymetric survey and manual sediment probing to determine the top of sediment (TOS) and bottom of sediment (BOS) within Wagner Creek and Seybold Canal. In development of the dredge prism, consideration was given to the location of threatened and endangered plant and animal species, ecological habitats, other potential environmental concerns, as well as structures and shoreline features along the creek and canal. The resultant dredge prism was then interpolated along the entire waterway to produce an estimated volume of sediment targeted for removal.

Caution will be exercised during dredging to protect structures and habitats as follows:

- **Non-Engineered Structures**—Examples of non-engineered structures include headwalls fashioned of weathered concrete sacks or cement block. Many of these structures appear to be constructed on natural rock or soil and do not appear to be tied back or reinforced laterally in any way. Before dredging, these structures will be re-surveyed and preemptive structure stabilization activities will be performed as outlined in the Structure Contingency Plan (Appendix B). During dredging, caution will be exercised when dredging near these structures so that they are not undermined.

- **Aboveground Utilities Crossing Wagner Creek—**Aboveground utilities crossing Wagner Creek include water and sewer lines near the NW 14th Avenue bridge. These are supported by columns that extend into the creek, and the footer/embedment depth is unknown. Dredging will not be performed within 10 ft of these structures.
- **Underground Utilities Crossing or Adjacent to Wagner Creek/Seybold Canal—**Underground utilities crossing or adjacent to Wagner Creek and Seybold Canal include high and low voltage electric lines, gas, cable, and communications conduits, potable water lines, and sewer force mains. Some of these utility crossings may have been installed without consideration of future maintenance within Wagner Creek or Seybold Canal, so dredging in the area of utilities will not be performed. In addition, where utility clearance regulations will not allow excavation of sediments, the sediments must be left in place.
- **Bridge Revetments, Abutments, Headwalls, Culverts, and Subsurface Supports—**There are eight bridges/culverts along Wagner Creek/Seybold Canal waterways. Engineering detail regarding the design or installation of these structures is not available, so over-excavation will not be performed within 10 ft of these structures. This may result in some un-dredged sediment near these structures.
- **Miami Transit Authority Overhead Supports—**There are two locations within Wagner Creek where support columns for the elevated Miami Transit Authority people mover are within the dredging limits. Since as-builts of these structures are not currently available, excavation within 10 ft of them will not be performed.
- **Seybold Canal Docks—**There are many dock structures along Seybold Canal. Some of these structures could sustain damage during dredging activities. To minimize damage, a dredging buffer of 10 ft is included in the current dredge prism design.
- **Seybold Canal Boat Slips—**Slip dredging is not a requirement or included as part of this CAP2. There are a number of locations within Seybold Canal where structures have been constructed over existing boat slips and dredging under them will not be performed.

In consideration of the above, some of the sediment will remain (by design) after dredging is complete. Additionally, some of the sediment will also remain as a result of equipment limitations. Given these two factors, coupled with physical characteristics of the sediment and the fact that the dimensions of the existing channel must be maintained without expansion, not all sediments will be removed through dredging. Therefore, all dredging has been designed to a prism which will restore Wagner Creek and Seybold Canal to their original dimensions to the extent practicable within these constraints. Under this approach, all dredging is of a maintenance nature and the work product will be confirmed by post-dredging bathymetric surveys only.

Cross-sections for the design dredging prism are presented in Volume 3, Section 5. These cross-sections include 4-ft setbacks from shoreline structures and 10-ft setbacks from in-water structures in Wagner Creek. They also include a 10-ft setback from all structures in Seybold Canal. The means and methods for the dredging and the rationale used for the design are discussed throughout this CAP2.

2.10 Sediment Removal and Risk Considerations

The dredging of Wagner Creek and Seybold Canal is currently being planned for routine maintenance. Sampling investigations within the Wagner Creek and Seybold Canal channels conducted in 2003, 2008, and 2009 to determine the dredged sediment quality for disposal requirements indicated the presence of chemicals such as metals, SVOCs, and TEQs. Elutriate and leachate sampling conducted on the sediment and surface water did not indicate leaching as a concern; thus none of the detected chemicals would require disposal of sediments in a controlled landfill. However, TEQs do not have leaching based standards or methods to determine their disposal eligibility. The Wagner Creek/Seybold Canal sediments have been characterized as non-hazardous based on criteria defined in 40 CFR Part 261 Subpart C and as determined by disposal facilities' acceptance criteria for TEQs and other contaminants. However, because there are no leachate standards for TEQs, a risk-based evaluation was conducted for dredged material disposal eligibility.

The dredged sediments from portions of the canal with TEQ levels ≤ 1 part per billion (ppb) will be sent to the closest Subtitle D non-hazardous landfills. The dredged material from "hot" areas will be segregated for disposal at a designated disposal facility outside the State of Florida when estimated TEQ concentrations are above 1 ppb ("hot"). These dredged sediments will be sent to a designated landfill in Emelle, Alabama.

In the entire planned dredging area, sediments with TEQs above 1 ppb are present only in OS-1 and OS-2 of Wagner Creek. Sediments that will be removed from all OSs with TEQs less than or equal to 1 ppb will be disposed of in a local Subtitle D landfills.

The sediments dredged from OS-1 and -2 will be grouped into wastes with TEQs > 1 ppb ("hot") and ≤ 1 ppb ("cold") based on the dredged material concentration levels above the target criteria. The residual concentrations in portions of the canal that cannot be dredged due to the access limitations do not pose significant risks to human health, as documented in Appendix F. No significant ecological risks are identified, based on the previously completed biological assessment report included in Appendix I.

The TEQ-contaminated sediments are present only in OS-1 and -2 of Wagner Creek/Seybold Canal. The risk-based evaluation in Appendix F addresses the following aspects of this dredging project:

1) **Land Use**: Wagner Creek and Seybold Canal are not used for swimming or other activities involving direct contact with canal sediments. Signs are posted indicating no fishing or swimming. The Wagner Creek does not provide suitable recreational features. Though Seybold Canal is large enough for recreational swimming or fishing, it is not suitable due to physical hazards presented by boat traffic and it is not used for these purposes. Thus these pathways are incomplete under current use.

2) **Exposures and Risks to Human Receptors**: Potential risks from residual concentrations from sediment TEQ levels have been reviewed under two scenarios: (a) risks from concentrations of TEQs in sediments prior to excavation, and (b) risks from sediment concentrations after excavations are completed – where some of the areas cannot be excavated due to the access limitations – these are the residual risks.

3) The **fate and transport** properties influence the TEQs' behavior over time. They degrade slowly, and thus are persistent, are not very soluble, bind to solid particles, and migrate in the form of suspended solids. TEQs likely reach water bodies on suspended particles from surface runoff, and TEQs occur commonly in urban background environments (see Appendix F).
4) **Waste Disposal Considerations**: Based on estimated TEQ distributions in shallow depths, most are at < 2 ft below surface in sediments, as well as concentration averages among adjacent lateral samples, the majority of the TEQs are in top layers of the sediments, possibly due to TEQs partitioning to organic carbons in sediments. Thus, while the top 2 ft of sediments can be categorized into the "hot' group and deeper sediments can be disposed as "cold" in the interest of conservatism, hot areas are extended to depths beyond 2 ft (see Appendix A1 and A2) during the planned dredged material disposal.
5) **Turbidity During Excavation**: Potential risks from turbidity during dredging activities were evaluated Under the worst-case scenario, approximately 0.1parts per trillion (ppt) (nanograms per liter [ng/L]) of TEQs may be present in surface water during the excavation (see Appendix F). The suspended particulates are estimated to settle to the bottom of the canal within a day after excavation activities cease, based on the studies conducted on suspended sediments simulating excavation activities. During the excavation, all of the sediment materials starting at a location with historical TEQ concentrations above 1 ppb down to the next known <1 ppb samples on either side of the exceeding sample will be evaluated for grouping as either "hot" or "cold." The grouping will be based on the averages of the concentrations from these excavated areas. Sediments resulting in an average TEQ concentration above 1 ppb will be grouped as "hot" and when average concentrations are below 1 ppb, sediments will be grouped as "cold." These sediment groups will be sent to the respective landfills, as described above.

2.10.1 Risk Assessment Summary

Appendix F includes a more detailed presentation of risk calculations, and assumptions used for the risk estimations for the Wagner Creek and the Seybold Canal sediments before and after dredging.

A small portion of the OS-1 in Wagner Creek with underground and above ground utilities and other structures are not accessible for dredging. Access limitations are associated with only one area east of sample CH-08 and include the sample WC-6 location extending to the area under the NW 14th Avenue Bridge. However, WC-6 and the sample immediately east of the bridge CH-02-07 are well below 1 ppb ("cold") levels for TEQs. Thus majority of the sediments that are inaccessible for dredging are likely to have the TEQ values below the 1 ppb target level, with only areas around CH-08 being above 1 ppb. A risk evaluation estimated risks from residual sediments assuming samples CH-08 and WC-6 will not be excavated.

The data set used for exposure point concentration or EPC for each OS section were divided into OS-1 group, OS-2 group, OS-3 to -5 group and OS-6 group, and EPCs for these groups are included in Appendix F. The concentration assumed for the sediments after dredging are assumed to be the background levels measured in the surface water bodies in the northwest Florida of 78 ppt (nanograms per kilogram [ng/kg]) by U. S. Fish and Wildlife Service (USFWS, 2002).

A risk summary table is included in Appendix F. The human exposure to Wagner Creek and Seybold Canal sediments was quantified for an adult and a youth receptor. The overall risks to human receptors under both pre- and post-excavation scenario risks are lower than the target levels set by EPA at 1.0E-5 for remediation target levels of 1 ppb. Overall, estimated risks for pre-excavation sediment TEQs in OS-1 were slightly above the FDEP target *de minimus* risk level of 1 in a million (1.0E-6), but below this risk levels in OS-2 through OS-6. All non-cancer hazards were below the target Hazard Index (HI) value of 1.0, before and after the excavation. The risks estimated for post-excavation were below 1.0E-6 for all OSs, including OS-1. Thus residual concentrations resulting from CH-08 and WC-6 area TEQs left behind due to the access limitations do not present an exposure concern to human receptors from short-term or long-term exposures to human receptors.

2.10.2 Fate and Transport Properties of Sediment TEQs

The chemical properties of TEQs indicate that they are persistent, have low solubility, thus are not likely to be present in the environment for a long time, and are not likely to be in surface water in dissolved form. TEQs have high lipophilicity (lipid-binding affinity), and thus are expected to partition into the organic carbon layer of the sediment and remain bound to solid particulates. They are likely to move with suspended particles, in the form of stormwater flow in Wagner Creek and Seybold Canal. The turbid water with rain events and other industrial discharges is expected to flow and reach downstream areas, eventually reaching larger water bodies, with settling of suspended particles to the bottom under low flow and less turbid conditions.

After dredging is completed, most parts of Wagner Creek and Seybold Canal are likely to include 6-ft bottom depths. Tidal influence is likely to cause limited disturbance to the sediments in the Seybold Canal section, whereas sediments in Wagner Creek OS-1 and OS-2 are likely to move with storm events. The areas that could not be dredged due to access limitations will remain shallow and will not provide a uniform flow or access throughout the channel. Additionally, with time fresh runoff from the land surface is likely to resettle new sediments from overland flow and bring with them new contamination.

2.10.3 TEQ Background Levels

The background dioxin TEQs were characterized in various types of urban backgrounds across the United States and other developed countries (ATSDR, 1998). The Florida specific sediment background levels were published for the northwest region (FWS, 2002), as discussed below.

Several states have published background levels for dioxin congeners in soils. For example, Michigan indicates background soil TEQ levels ranging between 6 to 35 ppt (ng/kg). The ATSDR toxicity profile reported higher concentrations and more frequent occurrence of soil TEQs in urban soils than in rural soils, mostly due to air-borne emissions from nearby sources such as incinerators. There is wide variation in the TEQ levels reported between various sites. Contaminated sites typically have TEQ levels well above the 1 ug/kg (ppb) level (ATSDR, 1995). The ambient sediment investigations conducted by the USFWS in the northwest Florida region reported TEQs ranging between 1 and 78 ppt in various regional estuarine systems. Various water bodies across the United States and Canada reported TEQ levels ranging between 1 and 7,600 ppt (ATSDR 1995; FWS, 2002).

2.10.4 Excavation and Disposal Considerations

TEQs tend to partition to solid particles and organic carbon layers of the sediment deposits. Thus the uppermost layer of sediments, where much of the humus material is present, is likely to contain most of the sediment TEQs. Because of this partitioning tendency, TEQs are not expected to occur as a contiguous area of contamination in sediments. This is indicated by the sampling results from the Wagner Creek Sections OS-1 and OS-2. For example, in a sample at CH-08 the highest TEQ level was detected, but an adjacent sample at WC-6 within a few ft had a concentration 4 times less than the CH-08 sample.

The 2003 sampling conducted by CES involved sampling 12 locations within the creek channel, and each location was sampled at 2 to 4 different depths. Except for the anomalous detection in one sample of the 12 sample locations, all other 11 samples had TEQs with highest levels in the upper 2 ft of sediment deposits. None of the other sediment samples collected by CES exceeded the removal action level of 1,000 ppt (i.e., 1 ppb). Thus, while excavation will be conducted to remove all the sediments up to 6 ft, the upper 2 ft should be disposed at the Emelle, Alabama landfill, as most of the TEQs are likely in the organic carbon-rich top layer of sediments, which is corroborated by the only study (see Appendix A2) conducted on vertical concentration profiling during the 2003 CES sampling. A limited number of samples will be collected across OS-1 and OS-2 to determine the depth profile of the TEQs for disposal considerations.

Additionally, excavation and loading of sediments to trucks are likely to mix surface and deep sediment, resulting in TEQ concentrations of the composited materials that are closer to the average concentrations for the excavated material in a section. Therefore, the concentrations in an OS should be averaged. When the average concentration is >1 ppb for TEQ, that section sediments will be sent to a designated landfill as “hot” waste to the designated landfill located in Emelle, Alabama. All other sediments will be sent to the closest Subtitle D non-hazardous landfills at one of the two available facilities: Waste Management’s Central and Medley Landfills.

Additional sampling should be conducted to provide data on the depth profile of TEQ distributions in the sediments. A limited number of 4 to 5 locations at 3 depths should be sampled to establish the TEQ distribution profile in the canal to optimize the volume of the sediment disposal volumes as ‘hot’ or ‘cold.’ Thus, additional samples should be collected across OS-1 and OS-2 to determine the depth profile of the TEQs for disposal considerations.

2.10.5 Turbidity During Excavation

Mechanical disturbance of sediments under water is likely to make the water more turbid during the dredging process. A simulation of sediment suspension was conducted and particulate levels were measured from the field sample. The physical observation of the simulated sample illustrated that the sediments settled within minutes after mechanical disturbance ceased. It is anticipated that colloidal particles will settle within a day or two after dredging is completed.

As previously discussed, the elutriate samples collected did not have any organic chemicals (based on filtration through a 0.45-micron filter). The total suspended solids (TSS) were measured in a total of 9 samples from three discrete samples from each of three transect samples. The TSS levels ranged between 7 milligrams per liter (mg/L) and 20 mg/L, with an average concentration of 12 mg/L. The expected suspended TEQ is estimated using the maximum TSS value, at the maximum detected TEQ sediment location at CH-02-01 of 5,140 ng/kg (i.e., pg/g). The estimated surface water concentration of TEQ is 0.1 ng/L. This is derived based on the maximum measured TSS value of 20 mg/L multiplied by the 0.00514 ng/mg of TEQ (where 5140 pg/g of sediment = 5.14 pg/mg of sediment = 20 mg/L x 5.14 pg/mg in every liter of water = 102.8 pg/L or 0.103 ng/L or ppt). Thus under the worst-case scenario, 0.1 ng/L of TEQs is estimated. This is a short-term worst-case turbidity-based exposure scenario limited to areas with high TEQ levels, and the majority of the canal will have much lower concentrations. These suspended particulate bound TEQs are not considered a significant issue during the dredging.

Alternative measures to control turbidity were considered. For example, turbidity control devices could be installed, but could present a safety risk to manatees. As outlined in the Manatee Protection Plan (Appendix D), this risk will be mitigated through use of one or more staff members trained to perform Manatee Watch and removal of installed turbidity barriers when manatees are detected within 100 ft of the work area. The presence of physical barriers to control turbidity could trap manatees, presenting higher potential risk to these animals; as a result, installation of barriers to control turbidity is not recommended at this time.

2.11 Sediment Removal Volumes

As discussed in the preceding sections, final quantities of sediment to be removed are dependent upon the following factors:

1. COPC distribution
2. Sediment depth
3. Location of structures and required setbacks
4. Risk considerations

Consideration has been given to all of the above through development of the project drawings (Volume 3) and the construction Work Plan as a whole (CAP2).

Table 2-4 provides preliminary estimates of sediment volume and mass to be transported and disposed from Wagner Creek and Seybold Canal. These estimates have been developed considering all of the above.

TABLE 2-4
Preliminary Estimates of Sediment Volume and Mass to be Removed

Area	Begin	End	Length (ft)	Vol (cy)	Mass (tons)	Disposal Mass (< 1 ppb) (tons)	Disposal Mass (≥ 1 ppb) (tons)	Est. to Remain (tons)
OS-1 Detail								
OS-1-1	NW 20th St	CES 3	262	1,198	1,665	1,665	-	-
OS-1-2	CES 3	CH-02-04	600	2,097	2,914	-	2,914	-
OS-1-3	CH-02-04	CH-02-06	295	704	978	978	-	-
OS-1-4	CH-02-06	WC-6	155	348	484	-	344	140
OS-1 (total)	NW 20th Ave	NW 14 Ave	1,312	4,347	6,042	2,643	3,258	140
OS-2	NW 14th St	NW 15th St	1,219	5,481	7,619	7,147	-	471
OS-3	NW 15th St	NW 14th St	922	4,577	6,362	6,362	-	-
OS-4	NW 14th St	NW 11th St	831	3,060	4,253	2,916	-	1,338
OS-5	NW 11th St	Miami River	1,506	4,778	6,641	6,641	-	-
Total Wagner Creek		5,790	22,242	30,917	25,709	3,258	1,949	
OS-6 (Seybold Canal)		2,259	23,799	33,080	31,399	-	1,681	
Total Wagner/Seybold		8,049	46,041	63,997	57,109	3,258	3,630	

Notes: Disposal Mass < 1 ppb - Medley Landfill; Disposal Mass ≥ 1 ppb - Emelle, AL, Indicates Elevated TEQ Areas

Additional estimate details are presented in Volume 3, Section 7.

3.0 Construction Work Plan

A variety of sediment removal approaches are available (such as mechanical dredging using excavation buckets, environmental buckets, clamshell, and sealed shell). However, there are many site and equipment constraints that will ultimately determine the best methodology for sediment removal in any given location. In all probability, a combination of excavation/dredging approaches will be employed to meet the sediment removal objectives in Wagner Creek and Seybold Canal.

Sediment removal within Wagner Creek and Seybold Canal will require careful logistical coordination, particularly with regard to work on private property with limited access, maintenance of traffic (MOT), tree protection, and structure protection. The selection of the proper removal and material handling methodologies is critical to the effectiveness and efficiency of the operation and protection of human health and the environment.

3.1 Project Drawings

Project plan view and cross-section drawings were initially provided as full size format in CAP1. During discussions of the project with regulators, several updates and formats were requested. Following is a list of drawings included as Volume 3 of this Work Plan.

Plan Name	Plan Description	Volume 3 Section
Full-Size Project Drawings	Full-size drawings submitted with CAP1	1
8 ½” x 11,” No Background	8 ½” x 11” no background	2
8 ½” x 11,” Hatched Aerial Limits	Plan view in 8 ½” x 11” format with hatching to indicate aerial limits of dredging	3
8 ½” x 11,” Aerial Background	Plan view in 8 ½” x 11” format with backgrounds	4
8 ½” x 11,” Cross-sections	Plan view in 8 ½” x 11” format without backgrounds and including crosshatched dredging limits	5
Full-size with COPC Callouts	Full-size drawings with COPC callouts	6
Volume Calculation Details	Volume calculations presented by OS and elevated dioxin TEQ areas	7
MOT and Access Sketches	Aerials showing MOT and access sketches	8

3.2 Access to the Work

Access to the project work areas within Wagner Creek and Seybold Canal is limited by high density housing, single family residences, overhead utilities, and trees. Other access considerations include street access for trucks and other equipment, avoidance of natural habitats, aboveground and belowground utilities, and structures along Wagner Creek and Seybold Canal.

3.2.1 Adjacent Properties

Table 3-1 presents a summary of all properties adjacent to Wagner Creek and Seybold Canal by OS.

TABLE 3-1
Summary of Properties Adjacent to Wagner Creek and Seybold Canal

	OS Description	Residential	Institutional	Commercial and Industrial	Governmental	Undeveloped Lands	Totals
1	NW 20th St – NW 14th Ave	7		2		1	10
2	NW 14th Ave – NW 15th St	8	1	3	4		16
3	NW 15th St – NW 14th St		1		1		2
4	NW 14th St – SR 836		1		2		3
5	SR 836 - NW 11th St	6		2	3	2	13
6	NW 11th St – Miami River (Seybold Canal)	42		11		4	57
Totals		**63**	**3**	**18**	**10**	**7**	**101**

Current maps and a database containing names and addresses of all adjacent property owners and the ownership of each are presented in Appendix H.

The requirement for property access agreements is predicated on the following:

1. Access agreements for the purposes of surveying and sampling should not be needed, as long as work is performed from the water-side. However, notices for surveying and sampling should be issued prior to commencement of sampling and surveying activities.
2. Regulations allow for dredging from the water-side without the need for land access. This is applicable to portions of Wagner Creek that will be dredged from the water-side and the entirety of Seybold Canal.
3. Access agreements have been obtained or are will be obtained when necessary:
   - To perform dredging from the land.
   - To use land for offload and manipulation of Watertight Roll-off Containers (WRCs)
   - For the co-applicant property (University of Miami, OS-3).

4. Easements and rights-of-way (ROWs) are shown on the property plats. In these cases, access agreements are not needed as long as work is performed within the easement or ROW.
5. Access agreements for Seybold Canal should not be necessary since it is anticipated that all work will be performed from the water except in the following circumstances:
    - Access to adjacent lands for the purposes of off-loading dredging equipment. Access from the City of Miami is not required.
    - Access for turbidity barrier anchoring.
    - Boat relocation during dredging.

Co-applicants were identified after review of the property plats. In some cases the deed information indicates that all or a portion of Wagner Creek or the canal was conveyed to the property owner. Under current determinations by the State of Florida, property lines end at Mean High Water in accordance with the State of Florida's submerged land determinations. In cases where plat information was unclear or general in nature, ground surveying was conducted to confirm that the property owner is or is not a co-applicant. After consideration of the above, it was determined that the University of Miami is the only co-applicant to the Class 1 permit.

3.2.2 Dredging Access

A copy of a standard access agreement is presented in Appendix H. The standard access agreement is not required until dredging begins and is necessary only for those properties that will be accessed for dredging.

Table 3-2 presents a proposed list of access agreements required before dredging begins, as well as their current status.

TABLE 3-2
Summary of Proposed Access Agreements Required

OS	Affected Property	Property Owner	Status
1	1500 NW 20th Street	Tiger Investments LLC	Access agreement obtained. Easement 30 ft from creek centerline applies.
1	1600 NW 20th Street	1600 NW 20th Street Inc.	Owner has submitted a letter stating that access on the east side of his property is public access and agreement is not required.
1	1919 NW 15th Avenue	Peninsula Housing Development Inc.	Access agreement under review by owner. Access from rear of property required. Easement 25 ft from top of bank applies. Requesting 50 ft.
1	1855 NW 15th Avenue	Maderos Civic Acquisitions LLC	Access agreement under review by owner. Access from rear of property required. Easement 25 ft from top of bank applies. Requesting 50 ft.
1	1700 NW 14th Avenue	Wagner Square LLC	Access agreement under review by owner. Access to property adjacent to Wagner Creek required. Easement 25 ft from top of bank applies. Requesting 50 ft.

TABLE 3-2
Summary of Proposed Access Agreements Required

OS	Affected Property	Property Owner	Status
2	1201 NW 16TH St.	U.S. General Services Administration (USGSA)	USGSA is reviewing.
2	1310 NW 16TH St.	Miami-Dade County General Services Administration (GSA)	Miami-Dade County has signed agreement.
3	1400 NW 12th Avenue	University of Miami (UM) Hospital	Agreement finished and being distributed for signature.
4	1265 NW 12 Ave	Miami Dade County GSA	Miami-Dade County has signed agreement.
4	1500 NW 12th Ave	Miami-Dade County Public Health Trust	Miami-Dade County has signed agreement.
5	Spring Garden Rd and NW 8th Street Road	Tawib Zaidi	Access agreement signed.
5	1140 NW 8th Street Road	Miami-Dade County Housing Authority	Miami-Dade County has signed agreement.
6	Boat Relocations	Various	Affected boat owners will be identified 30 days before dredging begins.

3.3 Sediment Removal Approaches

3.3.1 Potential Dredging Approaches

Stakeholder concerns, as well as the data obtained from the sediment and shoreline survey, were evaluated to determine the most appropriate means for removal, material handling, and disposal. Both mechanical and hydraulic dredging approaches were considered, and hydraulic dredging was determined to be impractical and unlikely to be permitted in either Wagner Creek or Seybold Canal for the following reasons:

- Hydraulic dredging requires at minimum a 4:1 water cut to efficiently convey sediments in a pipeline and can require up to 10 times the water volume necessary to successfully achieve dredging efficiency. Based on this condition, in order to remove 44,000 cubic yards (yd^3) (8,000,000 gallons) of sediment from Wagner Creek and Seybold Canal, an estimated 80 to 110 million gallons of water and sediment would need to be pumped, separated, and treated.
- Insufficient water exists in many areas of Wagner Creek to support hydraulic dredging requirements or even float a small hydraulic dredge.
- Hydraulic dredging requires a dewatering and staging area. No suitable area adjacent to Wagner Creek and Seybold Canal is available.

- Due to the nature of the various chemical compounds contained in the sediments, treatment of water could include oxidation/reduction, filtration, activated carbon treatment, as well as treatment for biological hazards before discharge.
- Discharge of treated water back to Wagner Creek and Seybold Canal has been considered only on a batch basis by the agencies and would severely hamper production rates of a hydraulic dredge; such discharges are normally permitted on a continuous basis.

Based upon the rationale presented above, it was determined that mechanical sediment removal and handling methodologies are most appropriate for both Wagner Creek and Seybold Canal. An analysis of project site conditions indicates that there are several distinct mechanical sediment removal/dredge approaches that are potentially applicable due to the various conditions within the OSs.

Mechanical dredging using an open bucket, clamshell, or environmental bucket as practical is the best method for dredging the reaches of Wagner Creek and Seybold Canal. Mechanical dredging will be performed from the land as well as from the water-side. The selection of the appropriate mechanical sediment removal techniques will take into consideration a number of factors, including public safety, sediment type, access, disposal criteria, permit requirements, debris, utilities, structures, dredge prisms, and contractor equipment capabilities.

Horizontal directional drill (HDD) excavation techniques or jetting and vacuuming (using divers) may be utilized for sediment removal under roadway bridges and in culverts where conventional removal is not possible. The goal will be to select dredging methods that minimize turbidity, allow “one-pass” dredging (minimizing the need to return to dredge areas for further removal), produce high percent solids, minimize material handling, and provide maximum protection to the workers, public, and environment.

An overview of the potential sediment removal approaches for both Wagner Creek and Seybold Canal is presented in the following sections.

3.3.2 Watertight Roll-Off Containers (WRCs)

Due to the nature of the sediments in Wagner Creek and Seybold Canal, sediments must be handled so that they do not touch the ground after dredging until they arrive at the disposal site(s). Therefore, no staging areas to “stockpile and dewater” the dredged sediments will be established. Also, access to sections of Wagner Creek and Seybold Canal is limited by roads, structures, utilities, trees, businesses, residents, and passers-by. For these reasons, dredging of the sediments from Wagner Creek and Seybold Canal will require careful planning and use of unique dredging configurations to complete the sediment removal.

A primary objective of this project is to dredge the sediments to sealed containers and immediately prepare them for shipment to the approved disposal facilities. For all loads moving to nearby approved disposal facilities, this objective will be achieved using a specialized WRC to collect dredged sediments at the dredging area and contain them until arrival at the disposal site.

Two different WRC configurations will be used, as shown in Figure 3-5. WRCs will have approximate dimensions of 8 ft x 22 ft x 5 ft high and will be constructed to contain a 21-ton maximum load. WRCs used for removal of sediment from the creek and canal will have no rear door and will be constructed to contain their load while suspended from four/six-point rigging as shown in Figure 3-5. In use, the WRCs will be loaded with approximately 12 to 15 yd^3 of sediment (17 to 21 tons).

3.3.3 Wagner Creek

This section describes the potential approaches that can be used to dredge the sediments from Wagner Creek. Wagner Creek has been divided into five OSs, as shown in Figure 2-2. Establishing these five different OSs aided in the review and assessment of site access, logistics, dredging approaches, and handling procedures.

The sections shown in Figure 2-2 are not associated with the permit requirements, but represent Wagner Creek sections that are defined by either a significant structure or an operational change. In addition to the five OSs, there are eight culverts/bridges along Wagner Creek as described in Table 3-3.

TABLE 3-3
Culverts and Bridges

Culvert	Location	Description
1	NW 14th Avenue	Under 14th Avenue Bridge
2	NW 17th Street	Under 17th Street Bridge
3	NW 15th Street	Under 15th Street Bridge
4	NW 15th Street	Man-Bridge at University of Miami Hospital
5	NW 15th Street	Vehicle Bridge at University of Miami Hospital
6	NW 12th Avenue	Box Culvert under the Intersection of 12th Avenue and 14th Street
7	SR 836	Dual 6-ft reinforced concrete pipe under SR 836
8	NW 11th Street	Under 11th Street Bridge

As indicated in Table 3-3, access to sections of Wagner Creek is severely limited by roads, structures, and other manmade structures. For this reason, dredging of the sediments from Wagner Creek will require many different equipment configurations to access all required dredging areas. Table 3-4 summarizes the potential equipment sets for the work.

Figure 3-6 presents all potential access points. The following subsections present a summary of the six OSs, including access restrictions and potential equipment configurations/methodologies to be used to remove the sediment from Wagner Creek. Appropriate access agreements will need to be obtained prior to site work as summarized in Table 3-2.

TABLE 3-4
Summary of Potential Equipment Sets for Wagner Creek Sediment Removal

Equipment Set #	Summary Description
1	Dredging from bank to WRC located in temporary Load Relay Area
2	Dredging with amphibious or walking excavator to floating WRC
3	Dredging from bank to floating WRC
4	Dredging with barge-mounted excavator to floating WRC
5	Culvert cleaning set (HDD with push/pull implement)

OS-1 – 20th Street to 14th Avenue

An aerial view of OS-1 is presented in Figure 3-7.

OS-1 is bounded by businesses and high density housing. Physical features of this section are as follows:

1. There is a 60-ft section from the centerline easement shown on the plats continuing throughout this section of Wagner Creek.
2. There is a 25-ft section from the top of bank easement on properties south of 19th Court on the west side of Wagner Creek.
3. Overhead electrical lines originate at 19th Court on the west side of Wagner Creek and cross Wagner Creek to the east side at NW 19th Court. Electrical lines extend down the east side of Wagner Creek.
4. Wagner Creek is fenced on both sides for the entire length of this section.
5. There is a 15-inch aboveground water line crossing Wagner Creek at the 14th Avenue Bridge.
6. There is a 30-inch force main crossing under Wagner Creek adjacent to the 14th Avenue Bridge.
7. There is a man-bridge located approximately 300 ft upstream of the 14th Avenue Bridge.

These structures limit access to the work site and restrict excavation activities in the following areas:

- Excavation of the sediments adjacent to the 20th Street culvert can occur from the bridge and from 1600 NW 20th Street, Inc. located on the west side of Wagner Creek. There is a billboard on this property that will have to be avoided.
- Excavation of the sediments adjacent to the Francis Brown property will need to be done from the east side of Wagner Creek at NW 19th Terrace. This is due to a power line and trees on the west side of Wagner Creek. Excavation will occur from the back parking lot of Tiger Investments, LLC and from the dead end of NW 19th Terrace.
- Excavation from the southern limits of NW 19th Terrace on the east side of Wagner Creek to the NW 19th Terrace extension on the west side of Wagner Creek is restricted

by trees, fencing, and overhead power lines. This section of Wagner Creek will be excavated using either walking excavator or swamp excavator.

- Excavation of Wagner Creek from NW 19th Terrace to NW 14th Avenue will be completed with a long stick backhoe located on the 25-ft easement behind Peninsula Housing Development, Inc., Maderos Civic Acquisitions, Inc., and Wagner Square, LLC on the west side of Wagner Creek.

There are several areas on the east side of Wagner Creek that could serve as access; however, these areas are bounded by high density housing and crowded parking areas and are in the direct vicinity of overhead power lines, so use of these areas is not recommended.

Based on the site access issues and an assessment of equipment operational constraints, a series of dredge options have been developed for each station within OS-1 (Table 3-5).

TABLE 3-5
Summary of Excavation Areas and Access—OS-1

OS/Station	Location Description	Dredging Limitations/Access	Pot. Equip Sets	Work Description
OS-1 STA 0+00 – 1+50	Adjacent to 1500 NW 20th Street, Inc. on the west side of building	Area bounded on east side by Tiger Investments, Inc. Access only from west of NW 20th Avenue Bridge.	1, 2, 3, 4	Dredge from bank on concrete area east of building on west side of Wagner Creek.
OS- 1 STA 1+50 – 3+00	Adjacent to Tiger Investments Storage Yard and NW 19th Terrace on the east side	West side bounded by trees and high voltage power line.	1, 2,3,4	Dredge from bank on concrete parking area behind building and from end of NW 19th Court on east side of Wagner Creek.
OS-1 STA 3+00 – 4+25	Adjacent to NW 19th Terrace on the west side	West side bounded by trees and high voltage power line. East side bounded by trees and overhead power lines crossing Wagner Creek.	2,4	Dredge with walking excavator to WRC on floats. Offload with crane at NW 19th Court on east side of Wagner Creek.
OS-1 STA 4+25 – 13+50	Behind Peninsula Development, Inc., Maderos Properties, LLC and Wagner Square, LLC	East side bounded by trees, apartments, and overhead power lines parallel Wagner Creek.	1, 2,3,4	Dredge to WRC (either barge-mounted or in temporary Load Relay Area).
OS-1 STA 13+50 – 14+00	NW 14th Avenue Bridge	Access from either east or west side of bridge.	5	Utilize appropriate culvert cleaning equipment set based on existing sediment and water level conditions. Confined space entry may be required.

OS-2 – 14th Avenue to 15th Street

An aerial view of OS-2 is presented in Figure 3-8.

OS-2 is bounded by Miami-Dade County owned land and 13 privately owned parcels along NW 13th Court. Features of this section are as follows:

- County-owned easements are shown on the drawings (Volume 3).
- Plats indicate that the 13 private landowners' properties extend halfway into Wagner Creek, but ground surveys have confirmed that these properties terminate at the "top of bank" on the east side of Wagner Creek.

Structures limit access to the work site and restrict excavation activities to the following areas:

- Access to the NW 17th Street (triangular parcel owned by Miami-Dade County GSA) will be from NW 17th Street.
- Access to the eastern bank from Miami-Dade County Public Health Trust owned property.
- Access to Wagner Creek located immediately behind the Miami-Dade County Public Health Trust building is blocked on both sides. Access to this area will be from the water-side only, most likely at high tide only.

Based on site access issues and an assessment of equipment operational constraints, a series of dredge options have been developed for each station within OS-2 (Table 3-6).

TABLE 3-6
Summary of Excavation Areas and Access—OS-2

Section/ Station	Location Description	Dredging Limitations/Access	Pot. Equip Sets	Work Description
OS-2 STA 14+00 – 16+00	Adjacent to GSA property and NW 17th Street	North side bounded by GSA parking lot and a tree.	1, 2	Dredge from south bank to barge-mounted or land based WRCs.
OS-2 STA 16+00 – 17+50	NW 17th Street Culvert	Access from either north or south side of bridge.	5	Utilize appropriate culvert cleaning equipment set based on existing sediment and water level conditions. WRC confined space entry may be required.
OS-2 STA 17+50 – 21+00	Adjacent to NW 13th Court properties	West side bounded by trees, houses, and businesses. Access from east side between these stations.	1, 3, 4	Dredge to WRC (either barge-mounted or in temporary Load Relay Area).
OS-2 STA 21+00 – 24+00	Adjacent to NW 13th Court properties	West side bounded by trees, houses, and businesses. East side bounded by trees and Public Health Trust parking lot.	2	Dredge with walking excavator to WRC on barge. Offload with crane at STA 18+00 on east side of Wagner.

TABLE 3-6
Summary of Excavation Areas and Access—OS-2

Section/ Station	Location Description	Dredging Limitations/Access	Pot. Equip Sets	Work Description
OS-2 STA 24+00 – 25+50	Adjacent to NW 13th Court properties	West side bounded by trees, houses, and businesses. East side accessible from Public Health Trust land.	1, 3, 4	Dredge to WRC (either barge-mounted or in temporary Load Relay Area).
OS-2 STA 25+50 – 26+00	NW 15th St bridge	Access from north side of bridge only.	5	Utilize appropriate culvert cleaning equipment set based on existing sediment and water level conditions. Confined space entry may be required.

OS-3 – 15th Street to Intersection of NW 12th Avenue / NW 14th Street

An aerial view of OS-3 is presented in Figure 3-9.

OS-3 is bounded by the University of Miami Hospital to the south and west and by NW 15th Street and NW 12th Avenue to the north and east. This section of Wagner Creek is improved with steel piling/concrete pile caps. Piling was installed in 1974 and embedded to approximately 10 - 15 ft according to the installer (Bunnell Foundation, Inc.). The University of Miami owns this section of Wagner Creek and is a co-applicant to the project permit. Features of this OS are as follows:

- Easements extend adjacent to Wagner Creek to the north and east.
- There are mature palm trees evenly spaced along the north and east sides Wagner Creek and must not be disturbed. These trees will limit access.

Structures limit access to the worksite and restrict excavation activities to the following areas:

- Clear-span man-bridge from NW 15th Street to hospital on north side.
- Clear-span vehicle access bridges from NW 15th Street to the hospital. One bridge is the entrance to maintenance areas and the other provides access to emergency areas and cannot be blocked or used for project activities.
- Access to Wagner Creek is feasible at the NW 15th Street Bridge and from the intersection of NW 12th Avenue and NW 14th Street. Therefore, floating equipment will be used for completion of this section with loading relay at these locations.

Based on the site access issues and an assessment of equipment operational constraints, a series of dredge options have been developed for each station within OS-3 (Table 3-7).

TABLE 3-7
Summary of Excavation Areas and Access—OS-3

OS/ Station	Location Description	Dredging Limitations/Access	Pot. Equip Sets	Work Description
OS-3 STA 26+00 – 28+75	Improved creek section on north side of University of Miami Hospital	Access from NW 15th Street bridge only for offloading boxes Access from north side of Wagner Creek for dredging from land	3,4	Dredge from bank between palm trees to barge-mounted WRC. Dredge from barge-mounted excavator to floating WRCs. Offload at NW 15th Street bridge. Night work only. Bridge closure required. Pedestrian protection required. Emergency vehicle route changes required.
OS-3 STA 28+75 – 29+00	Hospital man-bridge	Access from east side of structures available only	4, 5	Dredge underneath bridge from barge-mounted dredge or with HDD with push/pull implement. Confined space entry may be required.
OS-3 STA 29+00 – 29+50	Between hospital man-bridge and vehicle access bridges	Access from east side from under man-bridge available only	3, 4	Dredge from bank between palm trees to barge-mounted WRC. Offload WRCs at bridge to Load Relay Area. Night work only. Bridge closure required.
OS-3 STA 29+50 – 30+00	Hospital vehicle access bridges	Access from east side and west side of structures available.	4, 5	Dredge underneath bridge from barge-mounted dredge or with HDD with push/pull implement. Confined space entry may be required.
OS-3 STA 30+00 – 36+00	Improved creek section on east side of University of Miami Hospital	Access from intersection of NW 14th Street and NW 12th Avenue only for offloading boxes Access from east side of Wagner Creek for dredging from land	3, 4	Dredge from bank between palm trees to barge-mounted WRC. Offload WRCs at intersection of NW 14th Street and NW 12th Avenue to Load Relay Area. Night work only. Right-hand turn lane closure required. Pedestrian protection required. Emergency vehicle route changes required. Dredge from barge-mounted excavator to barge-mounted WRCs. Offload WRCs at intersection of NW 14th Street and NW 12th Avenue to Load Relay Area. Night work only. Right-hand turn lane closure required. Pedestrian protection required. Emergency vehicle route changes required.
OS-3 STA 36+00 – 37+50	NW 14th Street/NW 12th Avenue Culvert	Access from north and south side of culvert available	5	HDD with push/pull implement. Confined space entry may be required.

OS-4 – 14th Street to SR 836

An aerial view of OS-4 is presented in Figure 3-10.

OS-4 is bounded by the Miami-Dade County GSA to the west and a bank parking garage to the east. The area is clear on the west side. Access to the work area is best accomplished from the GSA property. Work will need to be performed after normal work hours due to high parking lot usage during those hours. Features of this section are as follows:

- The GSA property is traversed by the elevated Miami Transit Authority people mover. While this should not affect equipment access, care must be taken when dredging near the elevated people mover structure and sheet piling located adjacent to the NW 14th Street culvert.
- Access to Wagner Creek in this area will be through the GSA parking lot from NW 12th Avenue. Work in this area will be at night-time only, and security will need to be provided at the parking lot entrance during work hours. All land-side equipment will need to be relocated off the parking lot at the completion of each work period.

Structures limit access to the worksite and restrict excavation activities to the following areas:

- Headwall adjacent to bank parking garage.

Based on the site access issues and an assessment of equipment operational constraints, a series of dredge options have been developed for each station within OS-4 (Table 3-8).

TABLE 3-8
Summary of Excavation Areas and Access—OS-4

Section/ Station	Location Description	Dredging Limitations/Access	Pot. Equip sets	Work Description
OS-4 STA 37+50 – 43+50	Behind GSA building	East side bounded by bank parking garage and west side accessible from GSA land	1, 2, 4	Dredge to WRC, in Load Relay Area or barge-mounted.
OS-4 STA 43+50 – 46+00	SR 836 Culvert	Access from north and south side of culvert available. Culvert is flooded	5	Recommend using camera to see if sediment is an issue in this culvert. Utilize appropriate culvert cleaning equipment set based on existing sediment and water level conditions. Confined space entry may be required. Diver assistance may be required.

OS-5 – SR 836 to NW 11th Street

An aerial view of OS-5 is presented in Figure 3-11.

OS-5 is bounded by City of Miami and Miami-Dade County Water and Sewer property to the west and private residences, high density housing, vacant lands, and Miami-Dade Housing Authority land to the east. Five properties owned by Tawib Zaidi are located on the east side of Wagner Creek. Features of this section are as follows:

- Access to the southern outlet of the SR 836 culvert can be accomplished from the City of Miami property located behind Winn Dixie. Access to this area will include truck access through the Winn Dixie parking lot located east of the City of Miami property.
- Access to the center of OS-5 can be accomplished from vacant land located on Spring Garden Road.

Structures limit access to the worksite and restrict excavation activities. Miami Transit Authority overhead structures traverse the Miami-Dade Housing Authority property and one support structure is located in the waterway.

Based on the site access issues and an assessment of equipment operational constraints, a series of dredge options have been developed for each station within OS-5 (Table 3-9).

TABLE 3-9
Summary of Excavation Areas and Access—OS-5

Section/ Station	Location Description	Dredging Limitations/Access	Pot. Equip Sets	Work Description
OS-5 STA 46+00 – 57+50	Section of Wagner Creek along Spring Garden Road and NW 8th Street Road	Access to outlet of SR 836 culvert from NW 11th Street through Winn Dixie parking lot to City of Miami land. Access not available from Miami-Dade County Water and Sewer land on west side of creek. Access from east side of Wagner Creek for dredging from land owned by Tawib Zaidi (1000, 1008, 1010, 1150 and 1180 Spring Garden Road)	1, 2, 3, 4	Relocate telephone overhead line on Tawib Zaidi property at 1010 Spring Garden Road. Load barge-mounted WRCs with barge-mounted excavator or walking excavator and move WRCs to Tawib Zaidi land for offloading.
OS-5 STA 57+50 – 57+ 80	NW 11th Street Bridge	Access from north and south side of bridge available.	5	Utilize appropriate culvert cleaning equipment set based on existing sediment and water level conditions. Confined space entry may be required.

3.3.4 OS-6 - Seybold Canal

An aerial view of OS-6 is presented in Figure 3-12.

OS-6 includes the entirety of Seybold Canal. Mechanical dredging is the optimal approach for sediment removal in Seybold Canal. Under this approach, sediments in Seybold Canal will be dredged to barge-mounted WRCs and moved to the park owned by the City of Miami located at the confluence of Seybold Canal and the Miami River for offloading. As an alternative, vacant lands near the mouth of Seybold Canal could also be used. It is believed that two flat deck barges carrying four WRCs would be efficient and allow for dredging approximately 100 to 200 yd^3 per day. The size of the flat deck barges (and the production rate) will be limited by the canal and NW 7th Street bridge geometry.

WRCs will be offloaded with a crane from the barge to the land-side Load Relay Area in the same manner as described for Wagner Creek. Free dredge water contained in the WRCs will be collected and then transported to a commercial disposal facility. The sediment will then be solidified and the WRCs will be moved to the landfill. Table 3-10 lists the potential equipment sets and dredging limitations for OS-6.

TABLE 3-10
Potential Equipment Sets and Dredging Limitations for OS-6

Section/ Station	Location Description	Dredging Limitations/Access	Pot. Equip Sets	Work Description
OS-6 STA 57+50 - 88+50	Seybold Canal	Access from water over entire length of Seybold Canal. Access from park at mouth of Seybold Canal Boat relocations are required	4	Dredge from barge-mounted excavator to floating WRCs. Move WRCs to vacant land located on the Miami River and/or park for offloading to Load Relay Area.

3.4 Disposal Preparation

3.4.1 Potential Absorbents

Requirements at the disposal site stipulate that all materials must pass the Paint Filter Test. Because of the nature of the sediments (wet, thixotropic), it will be necessary to add a chemically inert absorbent to the dredged sediments before transport to the approved disposal facility. Absorbent addition and mixing will occur directly in the WRCs using a small excavator before the crane places the box onto the transport vehicle. Potential absorbents to be used are as follows:

1. Super-Absorbent Polymer (SAP)
2. Combinations of SAP/Bentonite and Portland Cement
3. Sawdust
4. Cement Kiln Dust
5. Portland Cement
6. Coal Derived Fly Ash (if derived from Class C coal)

The effectiveness of the absorbent used will depend on a variety of factors. To minimize the weight of material shipped to the landfill, a SAP is the most likely material to be used. However, a bench-scale evaluation of each of the potential absorbents will be performed before dredging begins to determine the effectiveness on the sediment, the potential for dust dispersion during mixing, and the estimated cost for each.

The proposed absorbents will be analyzed to ensure that they would not contribute different or additional contamination to the sediments.

3.4.2 Temporary Load Relay Areas

Temporary Load Relay Areas are necessary to prepare each load for immediate disposal while still maintaining the dredged sediment in a container. These areas will be set up onshore in the area where WRC loading/offloading will occur. Load Relays Areas will be temporary areas and will be constructed approximately 20 ft x 40 ft with timber berms overlain with 30-mil low-density polyethylene (LDPE) liner.

It should be noted that Load Relay Areas must be portable because the operation will move many times as the project is traversed. Sketches depicting several configurations for temporary land-side Load Relay Areas are presented in Figure 3-13.

Operation of temporary Load Relay Areas will involve WRCs being placed on an oversized 30-mil LDPE liner which will overlap a berm on all four sides to prevent any sediment or liquids from coming in contact with the underlying soils and to allow for collection of water used for decontamination/wheel wash.

Absorbent addition to the containerized dredged sediment will be performed either "water-side" or "land-side" depending on the physical constraints of the project area:

Water-side Load Relay—If possible, absorbent will be added into the WRC while it is still positioned on a sectional barge. This will be performed after free dredge water is removed with a vacuum pump, and will include direct addition of absorbent to the WRC and mixing with on-shore (or floating) excavator. After mixing, the WRC will be transferred to an onshore Load Relay Area for cleaning of exterior surfaces and tarping using the onsite hydraulic crane.

Land-side Load Relay Areas—In cases where absorbent addition cannot be feasibly performed on the water-side, temporary Load Relay Areas will be set up land-side. After each box is loaded, the onsite hydraulic crane will be used to shift the WRC to the Load Relay Area. Free dredge water will be removed from the WRC for offsite disposal, absorbent will be added to the WRC, and the onshore excavator will blend the absorbent in the WRC.

After mixing is complete, one of the following will occur:

- The WRC will be tarpaulin-covered and shifted to the transport vehicle using a hydraulic crane.
- The solidified contents of the WRC will be transferred to a second WRC or dumptruck to be positioned alongside it within the Load Relay Area.

All transport vehicles will be covered and wheels and outside surfaces inspected/cleaned before leaving the Load Relay Area. All loads will be manifested before leaving the work area.

3.4.3 Free Dredge Water Handling and Disposal

Elutriate testing from sediment samples was performed in 2008 and 2009 to evaluate the potential quality of the free dredge water and to plan for its handling and disposal. A discussion of elutriate testing results is presented in Appendix A-1.

Due to project logistics and access restrictions, lag time in receipt of treated water analytical results, and potential project downtime, onsite treatment of “free dredge water” and subsequent discharge back to Wagner Creek or Seybold Canal is not feasible. Therefore, free dredge water collected during dredging will be handled as follows:

- Free dredge water contained in the dredge bucket during excavation will be drained at the water surface. Water quality will be controlled and monitored as explained in Section 4.8.3 to minimize turbidity and comply with permit requirements. It is important to note that dredging will occur in a “wet” environment and mixing of sediment with the water is inevitable. Under these conditions, turbidity monitoring is the best control of water quality.
- Free dredge water is expected to collect on the surface of the dredged sediment within the WRCs; this will be handled via collection and transport to a facility permitted to treat and discharge the water. Potential facilities are:
- FCC Environmental – Hydrocarbon Recovery Services – Pompano Beach, FL
- Vickery Environmental Inc – Vickery, OH
- AquaClean Environmental Company – Lakeland, FL
- Industrial Water Services – Jacksonville, FL

The free dredge water that is collected from the WRCs will be transported via vacuum truck to the approved disposal facility. Elutriate test results indicate that pretreatment at the approved disposal facility may include flocculation, clarification, and physical and activated carbon filtration before discharge. Solids collected at the water disposal facility will be dewatered and transported for disposal in compliance with the regulations.

3.5 Engineering Controls and Environmental Protection

3.5.1 Dredging Limit Controls

Cross-sections showing the lines and grades recommended for dredging are included in Volume 3, Section 5. Final grades will be confirmed through bathymetric survey to confirm that sediments have been removed to planned lines and grades, thus eliminating the need for post-excavation sampling.

In addition, the excavator and/or dredge will employ a suitable method to continuously locate, control, monitor, and continuously record the horizontal and vertical position of the cutting face or bucket. A Real-Time Kinematic Positioning System (RTK) will be used to provide the horizontal and vertical positioning for the dredge systems. A "heads up" computer display will be used to provide the operator with real time horizontal and vertical dredge head or bucket position when removing sediment.

Excavators used to remove sediments from Wagner Creek and Seybold Canal will be equipped with Dredgepack® (or equivalent) software and all hardware necessary to provide XYZ spatial control over the excavation. This will allow the dredge to maintain grade in Wagner Creek and Seybold Canal to within ± 6 inches during dredging.

3.5.2 Re-suspension and Residual Management

Re-suspension management will include the use of multiple engineering controls to minimize the re-suspension of sediment (turbidity) within Wagner Creek and Seybold Canal. Engineering controls used during dredging will be in accordance with Best Management Practices (BMPs) and include, but are not limited to, the following:

- Selecting appropriate dredging equipment for each OS
- Limiting the number of passes performed by the dredge
- Controlling the height and slope of the working face (dredge cut) and performing checks on the slope of sediment adjacent to the working face
- Limiting power to propellers, using caution when moving floating vessels and anchors, carefully placing equipment and anchoring systems, and using above-water anchor points when feasible
- Using turbidity barriers
- Using pumps and filtration systems to reduce turbidity at the compliance point

Prior to the initiation of dredging operations, surface water grab samples will be collected from several locations along the midpoint of Seybold Canal and Wagner Creek to determine background turbidity for comparison to data already collected by DERM. Other parameters to be analyzed will be based upon permit requirements. Surface water samples will be collected in accordance with FDEP SOP FS2100.
During dredging operations, field turbidity monitoring will be ongoing and water quality sampling will proceed as required by the final permits for the work.

Use of turbidity barriers has been designated a BMP by the USACE, other federal agencies, and state regulatory authorities. Turbidity barriers are devices that control suspended solids (turbidity) in the water column generated by dredging operations. Consequently, turbidity barriers are considered an integral and necessary part of the water quality control strategy for this dredging project.

In slow-moving water bodies such as Wagner Creek and Seybold Canal, re-suspension of sediments is generally localized. Multiple turbidity barriers will be used and will be designed to contain or deflect suspended sediments in the water column within a limited area. Turbidity barriers will be designed to provide sufficient residence time to allow the re-suspended particles to settle and reduce solids movement to other areas where negative impacts could occur. If turbidity becomes a problem at the compliance point, pumps and filtering system can be used to capture turbid water, filter it, and return it to the active dredging area.

Most areas of Wagner Creek and Seybold Canal are frequented by manatees (Section 3.5.8). A Manatee Watch will therefore be onsite at all times during the work. As discussed in the following sections, turbidity barrier design will account for turbidity control while generally allowing access for manatee movement.

3.5.2.1 Wagner Creek Turbidity Controls

The primary water quality controls to be implemented during Wagner Creek dredging will be turbidity barriers and monitoring. Turbidity barriers will be installed and maintained both upstream and downstream of the active dredging area. Turbidity barriers for Wagner Creek will be solid construction and will be designed to minimize the potential for manatee entanglement. Figure 3-14 shows a typical barrier design.

Wagner Creek is narrow (20 ft to 35 ft) and shallow (2 ft to 4 ft deep in un-dredged areas). Turbidity barriers used in Wagner Creek will be designed to extend side to side and to the surface of underlying material. It is envisioned that a typical downstream barrier will be 25 ft wide x 4 ft deep. A typical upstream barrier will be 25 ft wide x 8 ft deep.

Turbidity barrier configuration for Wagner Creek dredging will depend on the following factors:

1. **Dredging Configuration** – Turbidity barrier configurations will be different when dredging to land based containers (WRCs) than when dredging to floating containers. An example of each configuration is shown in Figures 3-15 and 3-16.
2. **COPC Concentrations** – Portions of OS-1 exhibit elevated concentrations of TEQ (> 1 ppb). Monitoring, dredging production, and turbidity barriers will be configured to maintain turbidity levels at the compliance point stipulated by the permits.
3. **Manatee Movement –** Areas upstream of the active dredging area will be checked for manatees before barriers are deployed. A Manatee Watch will be stationed at least 100 ft downstream of the last downstream turbidity barrier. Dredging will cease and barriers will be removed when manatees are within 50 ft of a barrier.
4. **Turbidity Monitoring Results** – A Hach® 2100P (or equivalent) Portable Turbidity Meter will be utilized onsite to constantly check turbidity levels. These measurements will be used in the field to aid in selecting the number and proper placement of turbidity barriers.

Dredging in Wagner Creek will progress slowly (30 to 50 ft/day). Wagner Creek is tidal, so both upstream and downstream barriers will be required.

<u>Wagner Creek Dredging Configurations</u>

As shown in Figure 3-15 and 3-16, turbidity barrier configurations will be different for loading WRCs land-side vs. water-side. If water-side, upstream barriers will be attached to the floating dredge equipment. If land-side loading is utilized, upstream turbidity barriers may be anchored to the shoreline or attached to floating dredge equipment.

<u>Dredging in Areas with Low TEQ Levels</u>

Primary turbidity barriers will be placed relatively close to the active dredging area (approximately 50 ft downstream/upstream). A secondary turbidity barrier can be installed to further limit turbidity movement from the active dredging area. If needed, the secondary barrier will be placed approximately 50 ft downstream/upstream of the primary barrier. Another turbidity barrier will be installed at the compliance point stipulated by the final permits. The upstream and downstream primary/secondary and compliance point turbidity barriers will be moved periodically downstream as excavation progresses.

Dredging in Areas with Elevated TEQ Levels

In areas where TEQ is elevated (Areas 1-2 and 1-4 of OS-1) three barriers will be used at a minimum. The compliance barrier will be placed at the endpoint of the section. In addition, a pump and filter system will be onsite to collect, filter, and return highly turbid water to the active dredging area as shown in Figures 3-15 and 3-16.

If turbidity levels cannot be maintained at background at the compliance point turbidity barrier, dredging will cease until turbidity returns to an acceptable level.

Presence of Manatees

As discussed in the Manatee Protection Plan (see Appendix D), a Manatee Watch will be located onshore approximately 100 ft downstream of the farthest downstream barrier. Operations will cease and barriers will be removed when manatees are sighted within 50 ft of the farthest downstream barrier. Barriers will not be deployed if manatees are sighted upstream of the active dredging area. All barriers will be removed at the end of each work day.

3.5.2.2 Seybold Canal Turbidity Controls

The primary water quality controls to be implemented during Seybold Canal dredging will be turbidity barriers, bubble curtains, and monitoring. Seybold Canal is designated as an Outstanding Florida Water (OSF) and, therefore, turbidity levels must be maintained at 0 Nephelometric Turbidity Units (NTUs) above background at the compliance points.

Turbidity barrier configurations for Seybold Canal dredging will depend on the following factors:

1. **Dredging configuration** – Turbidity barrier configurations for Seybold Canal will be installed to control turbidity while dredging to floating containers.
2. **COPC Concentrations** – There are no elevated TEQ areas in Seybold Canal. Monitoring, dredging production, and turbidity barriers will be configured to maintain turbidity levels at the compliance point stipulated by the permits.
3. **Manatee Movement –** Areas upstream of the active dredging area will be checked for manatees before barriers are deployed. A Manatee Watch will be stationed at approximately 50 ft downstream and upstream of the turbidity barrier. Dredging will cease when manatees are within 50 ft of a barrier. Barriers will be opened if manatees become entrapped or entangled.
4. **Boat Access** – Seybold Canal connects to the Miami River and therefore allows water access for small craft. There are many pleasure craft and small fishing vessels that use Seybold Canal for mooring. Boats will be moved to allow access to the immediate dredging areas. Access to upstream areas of the dredging will be allowed during non-work hours.

5. **Turbidity Monitoring Results** – A Hach® 2100P (or equivalent) Portable Turbidity Meter will be utilized onsite to constantly check turbidity levels. These measurements will be used in the field to aid in selecting the number and proper placement of turbidity barriers/bubble curtains.

Flow in Seybold Canal is intermittent and tidal. Because of this, it is likely that elevated turbidity levels will not extend beyond the dredging area except during inclement weather. Seybold Canal varies from approximately 60 ft to 90 ft wide. Seybold Canal is navigable and must remain at least partially open during the dredging process. For this reason, installation of turbidity controls spanning the canal width will not be possible.

Current water freeboard ranges from 1 ft to 3 ft in depth in un-dredged areas and will be 6 ft to 7 ft in depth after dredging is complete. Turbidity barriers utilized in Seybold Canal will be designed to extend partially across the canal and will be staggered. It is envisioned that a typical downstream barrier will be 40 ft wide x 4 ft deep. A typical upstream barrier will be 40 ft wide x 8 ft deep.

Dredging in Seybold Canal will progress at approximately 20 - 30 ft/day. As the dredging progresses toward the mouth of Seybold Canal, turbidity controls will become critical. For this reason, turbidity barriers will be installed and maintained both upstream and downstream of the active dredging area. Turbidity barriers for Seybold Canal will be solid construction and will be designed to minimize the potential for manatee entanglement.

<u>Seybold Canal Dredging Configurations</u>

Figure 3-17 shows an example turbidity barrier configuration for Seybold Canal dredging.

Primary barriers will be placed relatively close to the active dredging area (approximately 50 ft downstream/upstream). A secondary turbidity barrier will be installed to further limit elevated turbidity levels beyond the active dredging area. If needed, the secondary barrier will be placed approximately 150 ft downstream/upstream of the active dredging area. Another turbidity barrier will be installed if necessary. The upstream and downstream primary and compliance barriers will be moved periodically downstream as dredging progresses.

For dredging at the mouth of Seybold Canal, installation of additional turbidity controls will be required. Due to cross-currents that exist at the confluence of Seybold Canal with the Miami River, a "bubble curtain" will be utilized to control turbidity at the mouth of Seybold Canal. Bubble curtain technology has been and is currently being utilized by the USACE and EPA to control turbidity during dredging at other sites.

As shown in Figures 3-18 and 3-19, the bubble curtain acts as a wall for movement of turbidity and creates a barrier which prevents solids from spreading. The current is generated by compressed air flowing through a thick walled pipe placed on the bottom of the canal. The air escapes through special nozzles incorporated into the pipe and rises to the surface, forming a vertical current in the water column that acts as a barrier to turbidity movement. When reaching the surface, the vertical current is transformed into a horizontal current. This horizontal current acts as barrier for floating materials.

As discussed above, the bubble curtain will be installed at the mouth of Seybold Canal. A sketch of the dredging configuration to be used at the mouth of Seybold Canal is shown in Figure 3-19.

Protection of Manatees

As discussed in the Manatee Protection Plan (see Appendix D), a Manatee Watch will be located onshore approximately 50 ft downstream of the farthest downstream barrier. In Seybold Canal, operations will cease when manatees are sighted within 50 ft of the farthest downstream curtain. Curtains will not be deployed if manatees are sighted upstream of the active dredging area. All curtains will be retracted at the end of each work day.

Boat Access

Figures 3-17 and 3-19 show that small craft may be able to access areas upstream of the dredge during work hours (Mon – Sat, 7:00 AM to 7:00 PM), but this will not be encouraged. Seybold Canal will be opened by pulling back the turbidity barriers during non-work-hours to allow for boat access. However, boat access will not be allowed in the active dredge areas during work hours. As discussed in the Public Involvement Plan (Appendix E) residents and businesses that operate boats in Seybold Canal will be notified in advance of start of work and daily work schedules.

3.5.3 Water Quality Monitoring

During the dredging of Wagner Creek and Seybold Canal, turbidity will be monitored during removal operations and surface water samples will be collected in accordance with the DERM Class 1 and Environmental Resources Permit requirements to confirm that dredging operations are not affecting water quality. Sampling will be performed by personnel trained in SOPs for surface water sampling (FS2100).

3.5.3.1 Turbidity Compliance Monitoring in Wagner Creek

Wagner Creek is not an OFS and therefore national turbidity control standards may apply. Turbidity monitoring will be performed every 4 hours (or more frequently if necessary) behind the primary, secondary, and compliance barriers. All monitoring results will be logged and will be available onsite for review.

When dredging in low-TEQ areas, dredging operations will be shut down if turbidity outside the compliance turbidity barrier exceeds 29 NTUs above background at the compliance point stipulated by the final permits. Dredging operations will be shut down if turbidity outside the compliance turbidity barrier exceeds 0 NTU above background at the compliance point when dredging in elevated TEQ areas.

3.5.3.2 Turbidity Compliance Monitoring in Seybold Canal

Seybold Canal is and Outstanding Florida Water (OFW) and therefore the OFW turbidity control standard of 0 NTU above background at the compliance point will apply. Turbidity monitoring will be performed every 4 hours (or more frequently if necessary) behind both the primary and compliance barriers. All monitoring results will be logged and will be available onsite for review.

Dredging operations will be shut down if turbidity outside the compliance turbidity barrier exceeds 0 NTU above background at the compliance point stipulated by the final permits.

At the mouth of Seybold Canal, use of a reconfigurable turbidity barrier may become impractical due to river flow velocities, and therefore a “mixing zone” should be established in the river for monitoring purposes. A similar situation existed for the Miami River dredging, where a turbidity permit compliance point was established downstream of the dredge. At this point, turbidity cannot exceed background levels, thereby protecting Biscayne Bay resources. As a result, it is recommended that the permit for dredging within Seybold Canal include a similar provision to allow for dredging to continue when the use of a turbidity barrier is impractical.

During the dredging of Wagner Creek and Seybold Canal, turbidity will be monitored during removal operations and surface water samples will be collected in accordance with the permit requirements to confirm that dredging operations are not affecting water quality. Sampling will be performed by personnel trained in SOPs for surface water sampling (FS2100).

3.5.4 Air Quality Monitoring

Potential dust sources from the operations include (1) handling and mixing of absorbents and (2) movement of trucks on temporary haul roads. Since the excavated sediments will be wet, it is not expected that dust will occur from this source. To ensure that the public in the immediate vicinity of the work is protected, air samples will be obtained twice daily and records kept of all monitoring results. Samples will be taken using a Mini-ram PDM 3 aerosol monitor (or equivalent).

Before work begins, background samples will be taken and recorded. Measurements taken during operations will be closely monitored and adjustments to operational procedures will be made if any readings exceed 1 milligram per cubic meter.

3.5.5 Noise Control

Work will occur during normal working hours with the exception of proposed nighttime work while dredging near the University of Miami Hospital. Onsite equipment is not expected to exceed limits in the Miami-Dade County or City of Miami noise regulations. Noise levels will be monitored every time the operation changes to evaluate noise generated during dredging operations. If noise levels of the operations exceed regulatory levels, operations will be suspended until the issue is resolved.

3.5.6 Ground Protection

As described above, sediments will be excavated and placed directly into the WRCs. The exposed creek bank located within the excavator/crane swing radii will be lined with Visqueen (plastic) sheeting to protect against dripping. Spillage will be contained on the sheeting for disposal. Visqueen sheeting will be removed, placed in the last container of the day, and disposed of at the end of each day or when the operation shifts.

Equipment used on this project will come in contact with sediments and will need to be cleaned before movement or removal from the work site. In most cases, contact will be limited to excavator buckets, WRC internal surfaces, and internal pump surfaces. To the extent possible, the equipment cleaning will consist of dry wiping surfaces with a broom, rags, and paper towels until no visible residues remain on the surface. All materials generated by this process will be placed in a WRC for shipment and disposal at the landfill.

3.5.7 Spill Protection

Spills could potentially occur during manipulation of the WRCs. Due to the design of the WRCs, it is not expected that any spills will occur during transport of the wastes to the disposal site.

Exposed banks will be protected by lining them with Visqueen. Visqueen sheeting will be removed, placed in the last container of the day, and disposed of at the end of each day or when the operation shifts.

If a spill occurs during transport, it will be managed immediately by the contracted waste transporter. The transporter will immediately contact the CH2M HILL Construction Manager, who will immediately contact the CH2M HILL Environmental Manager to determine if State and/or Federal spill reporting is required.

Before any work begins, the transporter will develop a written spill plan discussing the requirements for communication in case of a spill on the road. The transporter will also designate and contract with emergency response contractors capable of responding quickly to control and remove the spilled material.

3.5.8 Manatee Protection

Manatee protection will be a daily concern during the dredging of Wagner Creek and Seybold Canal. A Manatee Protection Plan is presented in Appendix D. The following are key issues to Manatee protection during the work:

- Mechanical dredging will be utilized to remove the sediments. A Manatee Watch will be required to minimize the possibility of manatee contact with the dredge.
- Control of water quality (turbidity) may require the use of multiple turbidity barriers (up to three upstream and downstream) during dredging. A Manatee Watch will be required to monitor upstream and downstream of the turbidity barriers.
- Solid turbidity barriers will be utilized (no netted barriers). This will minimize the potential for manatees to become entangled. Barrier designs will be selected to minimize the possibility of entanglement with bottom chains or flotation systems.
- Turbidity barriers for Wagner Creek dredging will be small (approximately 25 ft wide x 5 ft deep) and will be removed when manatees are present within 50 ft of the downstream barrier. Barriers will not be deployed if manatees are sighted within 50 ft of upstream barriers.
- Wagner Creek tidal activity is approximately 1.5 ft (high tide to low tide). Sediment can become exposed at low tide between NW 20th St and NW 15th St. Dredging in these areas will begin at NW 20th St and progress downstream. Because of this, there is a possibility that manatees could become stranded in dredged areas at low tide. If this occurs, the Manatee Watch will remain onsite to monitor the manatees until they leave. If this proves problematic to dredging progress, a manatee barrier such as an

AquaBarrier™ will be installed at the NW 15th St. bridge to limit manatee movement into the work areas and to maintain an upstream water level for manatee movement.

- Turbidity barriers for Seybold Canal will be staggered and oriented to allow for manatee movement through the work areas. Work will cease when manatees are sighted within 50 ft of the upstream or downstream barriers.

3.6 Waste Management

3.6.1 Waste Storage Time Limit

All generated soil, debris, and liquids will be non-hazardous based on the waste characterization analysis performed. There is a 90-day time limit for temporary storage of non-hazardous wastes required by Miami-Dade County regulations; however, contaminated sediments will be removed daily and other wastes, including contaminated water, will be removed from the site as soon as possible.

3.6.2 Labels

If non-conforming materials (e.g., old paint cans, compressed gas cylinders) are encountered in the field, they will be containerized or otherwise protected labeled as described below. Labels will be placed on waste containers as soon as waste is placed in them. The labeling of waste containers will be in accordance with 49 CFR 172, 173, and 178. Labels will indicate the type of waste, location from which the waste was generated, and accumulation start date. Containers and tanks used to store/accumulate waste will include one of the following labels:

- "Analysis Pending" or "Waste Material" - Temporary or handwritten label until analytical results are received and reviewed. This label will include the generator information and accumulation start date.
- "Hazardous Waste" - Pre-printed hazardous waste labels with the following information:
  - Accumulation start date
  - Generator Name
  - EPA ID number
  - Waste codes
  - Prior to transport, the manifest number must be added (for containers of less than 110-gallon capacity)
- "Non-Hazardous Waste" – Pre-printed labels with the following information:
  - Accumulation start date
  - Generator name:
  - EPA ID number
  - Waste-specific information (e.g., old paint cans, compressed gas cylinders)

It is expected that the required labels will include "Analysis Pending" and/or "Non-Hazardous Waste." Labels must be legible and replaced as needed (for example, if the ink becomes faded by sunlight).

3.6.3 General Waste Management Requirements

Contaminated sediments and any debris found will be contained in WRCs as described above. Liquid wastes collected from the WRCs will be removed with a vacuum pump and stored in a portable water storage tank for offsite transport and disposal at an approved wastewater treatment facility. Wastes of the same matrix, contamination, and source may be aggregated to facilitate storage and disposal.

Wastes will be temporarily stored, if necessary, in an area identified or approved by the City of Miami. If a temporary storage area is not designated, the contractor will temporarily store wastes in an area that is not accessible by the general public and that can be secured.

Spill control equipment (e.g., absorbent pads) will be available in the waste accumulation areas and where liquids are transferred from one vessel to another.

All containers will be inspected upon arrival at the site. Any unacceptable equipment will be rejected and documented.

3.6.3.1 WRCs

- WRCs will be inspected upon arrival onsite.
- When WRCs are not in use, securely fastened tarpaulin covers will be installed on each.
- Old labels will be removed and a new, appropriate label applied.
- WRCs will be inspected by the transporter after removal of the waste and decontaminated as needed prior to return to the site.

3.6.3.2 Portable Tanks (includes Vacuum Trucks)

- Portable tanks will be inspected upon arrival onsite for signs of deterioration and contamination.
- Only non-stationary tanks (such as a cargo tank or other wheeled tank) will be used to accumulate hazardous waste.
- Each tank will be labeled as discussed above.

3.6.3.3 Inspection of Waste Storage Areas

If any waste must be temporarily stored, the area will be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release. The following inspection schedule will be followed:

- Daily (or at a minimum, weekly) inspection of containers and tanks (for leaks and signs of corrosion or general deterioration).

Any deficiencies observed or noted during inspection will be rectified immediately. Appropriate measures may include transfer of waste from leaking container to new container, replacement of liner or cover, or repair of containment berm.

Inspections will be recorded in the daily Quality Control Report and will include any deficiencies and how the issue was rectified. Copies of the report will be maintained onsite and available for review.

If operations are suspended for more than 7 days and wastes must be temporarily stored, the Regulatory Compliance Manager will be contacted and alternate inspection arrangements will be made. Prior to demobilization, all wastes will be removed from the site.

3.7 Transportation and Disposal

3.7.1 Transportation

A Final Sediment and Free Dredge Water Transportation Plan will be developed before work begins in each OS based upon the dredging approach for removal operations. The plan will include truck routes (see Figures 3-21 and 3-22) from the dredging areas to the approved disposal facility that will minimize transport through residential areas to the extent practicable. The plan will also address the following:

- Advance planning with the appropriate City departments (police, fire, emergency services, transportation) prior to the start of work
- Equipment and roadway cleaning criteria
- Approved designated truck hauling routes
- Noise control and specified operating times
- Type and size of truck fleet
- Traffic control permit requirements and contacts
- Barricades, signage, and flagmen
- Public safety involvement
- Manifests/bills of lading/weight tickets
- Restoration

The Final Sediment and Free Dredge Water Transportation Plan will also stipulate engineering controls necessary for temporary staging, loading, and unloading of transport vehicles, as well as emergency response personnel/equipment and procedures in case of a spill.

Due to logistics, it is envisioned that production from Wagner Creek/Seybold Canal dredging may range from approximately 8 to 25 truckloads per day traveling from the dredging location to the disposal sites.

Load estimates are based on 12 - 15 tons/load of sediment from Wagner Creek and Seybold Canal, assuming that sediments are loaded into WRCs. Due to the nature of the material, load tracking will be closely monitored. Loads will be tracked as follows:

- Each load will be manifested, as necessary.
- Manifests will be pre-printed and contain at a minimum: generator name and address, transporter name, disposal facility name, proper shipping name, quantity and type of container, and date. The generator and transporter will add their signatures prior to leaving the site with the wastes. A copy of the manifest will be removed for receipt and tracking purposes.
- All loads will be recorded in an electronic database.
- The database will be used to confirm that loads arrived at the landfill and that duplicate loads did not occur.
- The disposal facility representative will sign each manifest upon receipt of the waste at the disposal facility and provide a copy to the onsite contractor representative for verification.
- The landfill will report loads received on a daily basis (electronic format). Weight tickets will be submitted by the landfill to document the mass of waste received at the landfill.

Each transportation vehicle and load of waste will be inspected and documented before leaving the site. The quantities of waste leaving the site will be recorded and, at a minimum, documented on the Transportation and Disposal (T&D) Log. A contractor licensed for commercial transportation will transport non-hazardous wastes. In the event that wastes are hazardous, the transporter will have an EPA ID number, and will comply with transportation requirements outlined in 49 CFR 171-179 (USDOT) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation). A copy of the documentation indicating that the selected transporter has appropriate licenses will be received and approved by the contractor prior to transport of any waste.

The transporter will be responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container, dumptruck, or tanker truck. Disposal quantities will be based on the difference in weight measurements between the full and empty container or dumptruck. Weights will be recorded on the waste manifest. The transporter will provide copies of weight tickets to the contractor.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to general public traffic.
- Repair road damage caused by construction and/or hauling traffic.
- Clean up waste if any is spilled in transit.
- Line and cover trucks/trailers used for hauling contaminated waste to prevent releases and contamination.
- Decontaminate vehicles prior to re-use, other than hauling more contaminated waste.
- Seal trucks transporting liquids.

- Follow safety and spill response procedures outlined in the Health and Safety Plan (Appendix C); this applies to all personnel involved in offsite disposal activities.
- Do not combine any materials from other projects with materials from this site.

3.7.2 Wide Area Transportation Routes

Two potential transportation routes to the Waste Management Medley Landfill will be used, as shown in Figure 3-20.

3.7.3 Local Area Transportation Routes

Local transportation routes will vary slightly depending upon the section being dredged and the wide area route to be taken by each truck. Use of the wide area routes will be at the discretion of the drivers and will primarily depend upon traffic.

Local routes shown in Figures 3-21 and 3-22 have been designated to eliminate unprotected left-hand turns and avoid residential areas to the extent practicable.

3.7.4 Maintenance of Traffic (MOT)

MOT required to complete the project will consist of lane closures, flagmen, and setting of traffic control equipment and signage. Critical areas where this will occur are described in Table 3-11. Drawings identifying these areas are presented in Volume 3, Section 8.

TABLE 3-11
Maintenance of Traffic (MOT) Areas

OS	Location	Traffic Controls Required
1	Transition curve at NW 15th Street and NW 19th Terrace	Road closure. Control equipment, signage, and flagmen required.
2	Transition curve from 17th Street to 16th Street	Single lane closure to accommodate equipment and transport vehicles working near the 17th Street culvert. Control equipment, signage, and flagmen required.
3	NW 15th Street Bridge	This area will be used for manipulating WRCs and placement/removal of equipment in the waterway. Work will occur at night and complete closure of NW 15th Street at the bridge will be required during work hours. Traffic control equipment, signage, and flagmen required. All land-side equipment to be removed at the end of each work shift.
3	Right turn lane at intersection of NW 12th Ave/NW 14th Street	Single lane closure to accommodate equipment and transport vehicles working at the corner of NW 12th Avenue and NW 14th Street. Control equipment, signage, pedestrian walkway, and flagmen required.
3	NW 12th Avenue Culvert	Street access may be required while cleaning the north half of the box culvert underneath 12th Avenue/NW 14th Street. Will require single lane closure. Equipment, signage, and flagmen required. Night work likely required.

Lane and street closures must be coordinated with the Florida Department of Transportation (FDOT) for work on NW 12th Ave. and will require Miami-Dade County/City of Miami approval for other areas. In addition, prior notification of adjacent landowners will occur. Closure plans will be developed and submitted well in advance of anticipated closure dates.

Work around the University of Miami Hospital will be carefully planned to ensure that emergency vehicle/pedestrian access to the hospital is maintained at all times during dredging hours. Daytime pedestrian traffic is very heavy, so work will occur after hours only when dredging OS-3.

In order to accommodate WRC and dredging equipment manipulation, the NW 15th Street bridge will be closed each night while the northern leg of OS-3 is dredged. Loading of WRCs in OS-3 may also require closure of portions of the south lane of NW 15th Street during dredging hours. Likewise, right lane closure (NE 12th Avenue/NW 14th Street) and right hand turn lane MOT (NW 12th Avenue) will be required while the eastern leg of OS-3 is dredged (Volume 3, Section 8).

In addition to MOT permits summarized in Table 3-11, other traffic control measures may be necessary during the project, as outlined in Table 3-12.

TABLE 3-12
Other Potential MOT Areas

OS	Location	Potential Traffic Controls Required
1	Temporary entrance/exit at Wagner Square, LLC property and NW 14th Avenue	Provide flagman, if necessary.
2	NW 17th Street at triangular property	Provide flagman, if necessary
2	NW 15th Street Access	Trucks will be entering and leaving the Miami-Dade County Public Health Trust land behind the hospital parking garage. Provide flagman, if necessary.
3	NW 15th Street	It is feasible to dredge the northern section of Wagner Creek from the bank to floating boxes. If this occurs, one lane street closure and flagman in the vicinity of the excavator will be required along NW 15th St. Excavator to work between the palm trees in this situation. Night work only.
3	NW 12th Avenue	Street access may be required while cleaning the north half of the culvert underneath NW 12th Avenue/. Will require single lane closure. Equipment, signage, and flagmen required. Night work likely required.
3	NW 12th Avenue	It is feasible to dredge the eastern section of Wagner Creek from the bank to floating boxes. If this occurs, one lane street closure and flagman in the vicinity of the excavator will be required along NW 12th Avenue. Excavator to work between the palm trees in this situation. Night work only.
3	Intersection of NW 12th Avenue/NW 14th Street	This area will be used for manipulating boxes and placement/removal of equipment in the waterway. Work will occur at night and closure of the right-turn lane and northern through lane at the intersection will be required during work hours. Traffic controls, signage, prior closure notice, and flagmen required. All land-side equipment to be removed at the end of work shift.
5	NW 11th Street Bridge	Work may require single lane closure of NW 11th Street during work hours for manipulating WRCs and placement/removal of equipment in the waterway. Traffic controls, signage and flagmen required.

OS-6 – Maintenance of Traffic (MOT)

No road closures are anticipated for work in OS-6.

3.7.5 Sediment and Free dredge water Disposal

Based on historical information provided, TEQs in Wagner Creek and Seybold Canal sediments appear to have originated in runoff from a municipal trash incinerator ash staging area which operated on NW 20th Street. Based on this information, the sediment is not contaminated with a listed waste as defined in 40 CFR Part 261 Subpart D. Therefore, the Wagner Creek/Seybold Canal sediments have been characterized as non-hazardous based on 40 CFR Part 261 Subpart C and compared to the disposal facilities' acceptance criteria for TEQ and other contaminants.

Currently, the closest Subtitle D non-hazardous landfills are Waste Management's Central and Medley Landfills. Both of these landfills can accept TEQ-containing waste with TEQ concentrations ≤ 1 part per billion (ppb). The closest Subtitle C hazardous waste landfill is Chemical Waste Management's facility in Emelle, Alabama, which can accept higher concentrations of TEQ on a case-by-case basis.

Results of the waste characterization analysis of sediment samples collected during the sampling event are summarized in Appendix A-1. These results indicate that all of the Wagner Creek and Seybold Canal sediments are classified as non-hazardous waste as defined in 40 CFR Part 261 Subpart C. However, three of the samples collected (CH-4, CH-8, and CH-12) exhibited TEQ concentrations above 1 ppb.

Since sediments with TEQ concentrations above 1 ppb cannot be accepted by any Subtitle D non-hazardous facilities in the State of Florida, it is recommended that the sediments dredged from the areas around CH-4 and CH-8 be transported to Chemical Waste Management's Emelle, Alabama Subtitle C hazardous waste disposal facility.

Handling methods for these "hot spots" will be as described previously in this CAP2: the sediments will be dredged to WRCs and absorbent added immediately before offsite transport. It is recommended that dredging be performed in these areas first to minimize the potential for exposure of the public. Since sample transects were spaced approximately 200 ft apart and these areas are not contiguous, it is recommended that (1) 100 ft on either side of CH-4, CH-8, and CH-12 be dredged and the sediment transported for disposal at the Chemical Waste Management Emelle, Alabama facility and (2) all other sediment (with TEQ concentrations ≤ 1 ppb) dredged from Wagner Creek and Seybold Canal be disposed of at one of the local Waste Management Subtitle D non-hazardous landfills.

Waste characterization information for sediments and free dredge water will be documented on a waste profile form provided by the disposal facility as part of the waste acceptance process. The contractor will use analytical data from the 2008 characterization sampling and analysis event in development of the waste profile. The profile will be reviewed and approved prior to submission to the City of Miami for generator signature. City of Miami personnel will provide any required generator certification and/or signatures. Signed profile(s) will then be submitted to the appropriate Waste Management facility for acceptance and approval. Note that wastes destined for Chemical Waste

Management's Emelle, Alabama facility must also be approved by the Alabama Department of Environmental Management (ADEM).

The profile typically requires, at a minimum, the following information:

- Generator (City of Miami) information including name, mailing address, contact, and phone number
- Site name including street address
- Process generating waste (sediment dredging from Wagner Creek/Seybold Canal)
- Source of contamination
- Waste composition (e.g., 95 percent sediment, 5 percent debris)
- Physical state of waste (solid, liquid, etc.)
- Applicable waste codes

A facility-approved copy of the waste profile or approval letter will be received prior to scheduling of offsite transportation of the waste.

During project execution, the disposal facility will be responsible for acceptance of each load that is within accepted profile parameters and has a valid manifest. The disposal facility will sign each manifest and record each load, return signed facility-executed manifest copies to the contractor, and provide gross, net, and tare weights for each load on hard copy weight tickets and electronically.

The landfill will provide a level, solid area for trucks to dump, assist trucks with dumping stuck loads, provide a decontamination area for tire cleaning and removal of gross contamination from WRC external surfaces, and inspect all trucks before releasing them to confirm that the WRC internal is empty and external surfaces are clean and free of gross contamination.

3.8 Shipping Documentation

Prior to offsite disposal of any waste, the contractor will provide the City of Miami with a waste approval package for each waste stream. This package will include a waste profile naming the City of Miami as the generator of the waste, analytical summary table(s) applicable to the waste, a completed waste manifest, and any other applicable information necessary for the City to complete its review of the disposal package and sign as the generator.

Each load of waste material will be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information including name, address, contact, phone number, and EPA and/or state permit ID number
- Transporter information including name, address, contact and phone number, valid DOT number, and EPA ID number (only if transporting hazardous waste)

- Facility information including name, address, phone number, and EPA and/or state permit ID number
- Site name, including street/mailing address
- U.S. DOT Proper Shipping Name (e.g., Hazardous Waste Solid, n.o.s. [not otherwise specified], 9, UN 3077, PG III [D008])
- Type and number of container
- Quantity of waste (volumetric estimate)
- Project or job number
- Profile number
- 24-hour Emergency phone number

Each shipment of waste will also have a weight ticket once the load is weighed at the disposal facility.

The generator (City of Miami) and the transporter must sign the manifest prior to the load of waste leaving the site. A copy of this manifest will be retained onsite and included with the daily Quality Control Report (QCR). The original signed manifest will be returned to the address of the generator via a form of traceable mail (Federal Express, UPS, etc.). The facility will provide a copy of the facility-signed manifest to the contractor for the final report. The final report will include copies of the facility-signed manifests, weight tickets, and Certificates of Disposal/Destruction as necessary.

3.9 Restoration

Access to the Wagner Creek dredging areas will require entry into some of the adjacent landowners' properties (see Section 4.4). In these cases, temporary property modifications may be made to allow equipment/vehicle access to sediment removal areas; these areas will be restored to pre-dredging conditions by the contractor immediately after work is complete. Planned restoration activities may include, but are not limited to, fence repairs/ replacement, replacement of ground cover, and re-installation of any land-based physical structures or utilities and repair of parking areas and curbs. The appropriate level of planning and record-keeping will be used during construction to minimize the need for restoration activities. A preliminary list of planned restoration activities required for access is presented in Table 3-13.

Planned restoration activities within the scope of this project do not include repairs or replacement of structures compromised due to removal of sediments from the waterways. To avoid disturbance of in-water structures due to dredging, the proposed dredge cut lines and grades shown on the cross-sections in Volume 3, Section 5 will be field-verified in order to remove the maximum extent of sediment possible without compromising structures located adjacent to or within the designated dredging area. These restoration activities will be evaluated on a case-by-case basis and addressed under separate contracting procedures.

TABLE 3-13
Anticipated Property Restoration Activities

OS	Property Description	Modification	Restoration
1	1600 NW 20th Street, Inc.	• Remove fence adjacent to Wagner Creek • Parking areas/curbs • Clear parking area behind building	• Replace fence after work is complete • Repair if damaged • Assist in protecting items stored in yard
1	Tiger Investments, Inc.	• Fence on west side of property • Parking areas/curbs	• Replace fence after work is complete • Repair if damaged
1	Peninsula Housing Development, Inc. Maderos Civic Acquisitions, LLC Wagner Square, LLC	• Equipment and vehicle access to grassed areas • Fence on east side of properties • Parking areas/curbs/bollards/brick walkways • Area lighting behind buildings	• Re-establish grass in disturbed areas • Replace fence after work is complete • Repair if damaged • Replace disturbed area lighting after work is complete
2	Miami-Dade County GSA 1310 NW 16th Street	• Equipment and vehicle access to grassed areas	• Re-establish grass in disturbed areas
2	Miami-Dade County Public Health Trust 1500 NW 12th Avenue (Land adjacent to NW 16th Street and behind hospital parking garage)	• Equipment and vehicle access to grassed areas adjacent to NW 16th Street and behind hospital parking garage • Park benches • Parking areas/curbs	• Re-establish grass in disturbed areas • Re-install park benches • Repair if damaged
3	University of Miami Hospital	• Equipment and vehicle access to grassed areas adjacent to NW 15th Street and NW 12th Ave • Parking areas/curbs adjacent to NW 15th Street and NW 12th Ave	• Re-establish grass in disturbed areas • Repair if damaged
4	Miami-Dade County GSA (Behind Christy House)	• Fence on east side of parking lot • Equipment and vehicle access to grassed areas adjacent to Wagner Creek	• Replace fence after work is complete • Re-establish grass in disturbed areas
5	City of Miami (Behind Winn Dixie)	• Equipment and vehicle access to grassed areas adjacent to Wagner Creek • Fence	• Re-establish grass in disturbed areas • Replace fence after work is complete
5	Winn Dixie Parking Lot	• Parking areas/curbs	• Repair if damaged
5	Tawib Zaidi Spring Garden Road	• Parking areas/curbs • Fence • Equipment and vehicle access to grassed areas adjacent to Wagner Creek • Overhead phone/cable	• Repair if damaged • Replace fence after work is complete • Re-establish grass in disturbed areas • Bury before work begins and leave in place

TABLE 3-13 CONT.
Anticipated Property Restoration Activities

OS	Property Description	Modification	Restoration
5	Miami-Dade County Housing Authority (Adjacent to NW 11th Street Bridge)	• Equipment and vehicle access to grassed areas adjacent to Wagner Creek • Curbs	• Re-establish grass in disturbed areas • Repair if damaged
6	City of Miami land: park	• Equipment and vehicle access to improved areas adjacent to Wagner Creek/Miami River	• Re-establish grass/walkways/benches/etc. after work is complete

4.0 Biological Assessment of Wagner Creek and Seybold Canal

A biological assessment was performed to characterize the natural resources along Wagner Creek and Seybold Canal. This assessment documented the biological resources as they were encountered along, and atop, each bank of Wagner Creek and included general observations regarding conditions within Seybold Canal.

The following summarizes the biological assessment findings:

- 238 instances of flora and fauna were observed along Wagner Creek and Seybold Canal.
- 39 species of trees, plants, and vines were observer, none of which are federally Listed as Threatened or Endangered Species.
- 15 wildlife species were observed. Two are considered Species of Special Concern by the Florida Fish and Wildlife Conservation Commission (FFWCC) and one is listed as Endangered by the USFWS.

  Species of Special Concern:

    - Tricolored Heron (*Egretta tricolor*)
    - White Ibis (*Eudocimus albus*)

  Endangered Species:

    - West Indian Manatee (*Trichechus manatus*)

This investigation revealed that the project area consists only of disturbed lands and urban areas. It does not offer a high quality habitat to floral or faunal species. Standard precautionary measures will be employed during the construction phase of the project to protect the tricolored heron, white ibis, and West Indian manatee (Manatee Watch). Therefore, no significant impacts to federal, state, or locally listed species are anticipated as a result of this project.

5.0 Public Involvement

Due to the location of this project, its execution will involve the interests of many stakeholders as follows:

- **City of Miami** – Project Owner
- **PBS&J** – Owner's Representative
- **CH2M HILL Constructors, Inc.** – Phase 1 Contractor
- **Miami-Dade County DERM** – County Permitting Agency
- **USACE/FDEP** – Federal/State Permitting Agencies
- **SFWMD/FIND** – Local Waterway Regulation
- **Wildlife and Fisheries** – Endangered Species Regulation
- **Miami River Commission** – Project Advocate
- **Project Co-applicants** – University of Miami Hospital
- **Power U** – Project Area Organization
- **Friends of Spring Garden –** Small group of homeowners in Spring Garden area
- **Spring Garden Homeowners Association –** Project Area Organization
- **Adjacent Residents**
- **Adjacent Businesses**
- **Governmental Operations** – Miami-Dade GSA, Housing Authority, Public Health Trust, Water and Sewer Authority, and City of Miami Asset Management
- **Passers-by**

During development of this Final Work Plan, the needs of each of these stakeholders have been considered and the construction work means and methods have been developed to minimize disruption. As part of this process, the project goals and approaches have been discussed with the parties who would be affected to arrive at a plan that will protect public and worker safety as well as area resources.

During the CAP2 development, the services of TEW Cardenas, LLP (TEW) were used to make sure that the community was involved in each step of the process. TEW maintained communication with the public, businesses, media (when appropriate), civic groups, government officials, residents, as well as others possibly affected by the project, on an "as needed" basis.

The following procedures have been developed through the permitting process to ensure that good communication is maintained throughout the project.

1. A notice of proposed work and announcement of public information meeting will be advertized in periodicals, posted on bulletin boards, etc., at least 60 days before the start of work in each area.
2. At least 30 days before the start of work in each OS. a public information meeting will be held for the residents/businesses in the area where work will occur to discuss issues specific to those areas.
3. Ongoing meetings will be held to discuss and resolve issues encountered during the work.

For further information, a copy of the Public Involvement Plan for the project is presented in Appendix E.

6.0 Health and Safety

A Health and Safety Plan has been developed (see Appendix C) to provide adequate protection for onsite workers and the public throughout the Wagner Creek/Seybold Canal project. construction work.

7.0 Schedule

Under development and dependent upon funding availability.

8.0 Permits

- DERM Class 1
- FDEP ERP
- USACE permit

9.0 References

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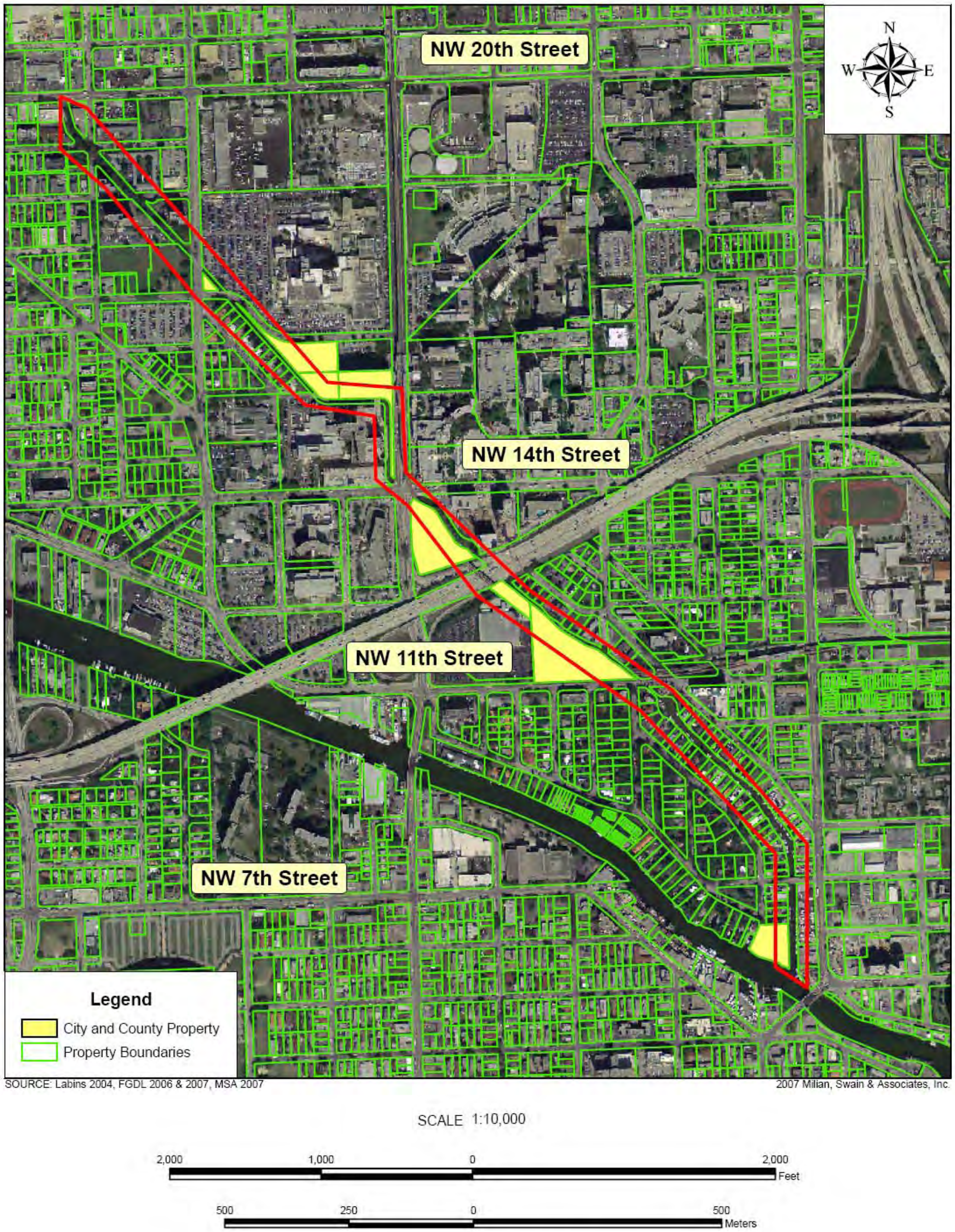
Figures

FIGURE 2-1
Wagner Creek and Seybold Canal Site Map
Corrective Action Plan



SOURCE: Labins 2004, FGDL 2006 & 2007, MSA 2007

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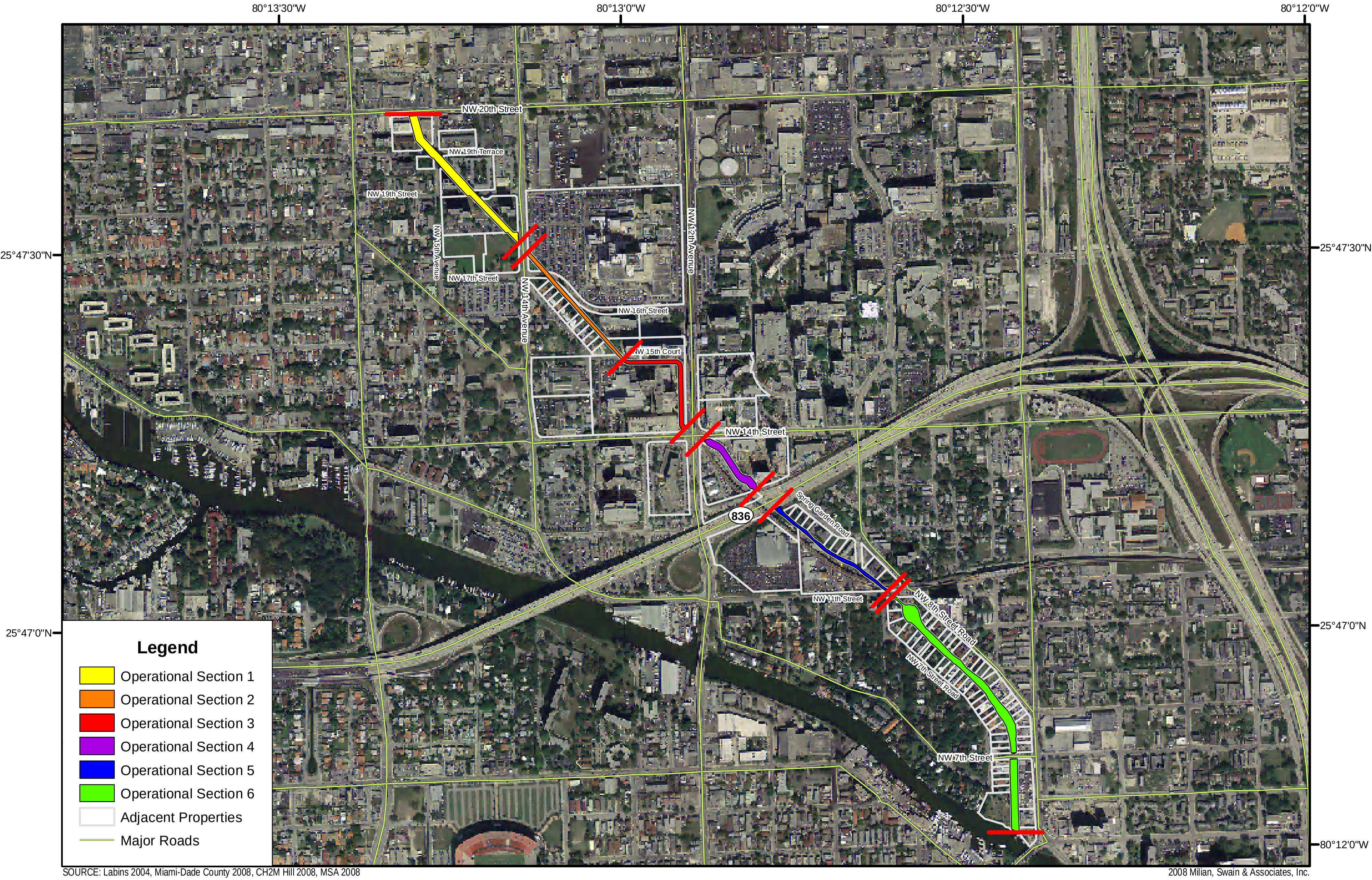
Wagner Creek & Seybold Canal
Maintenance Dredging Project



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, MSA 2008

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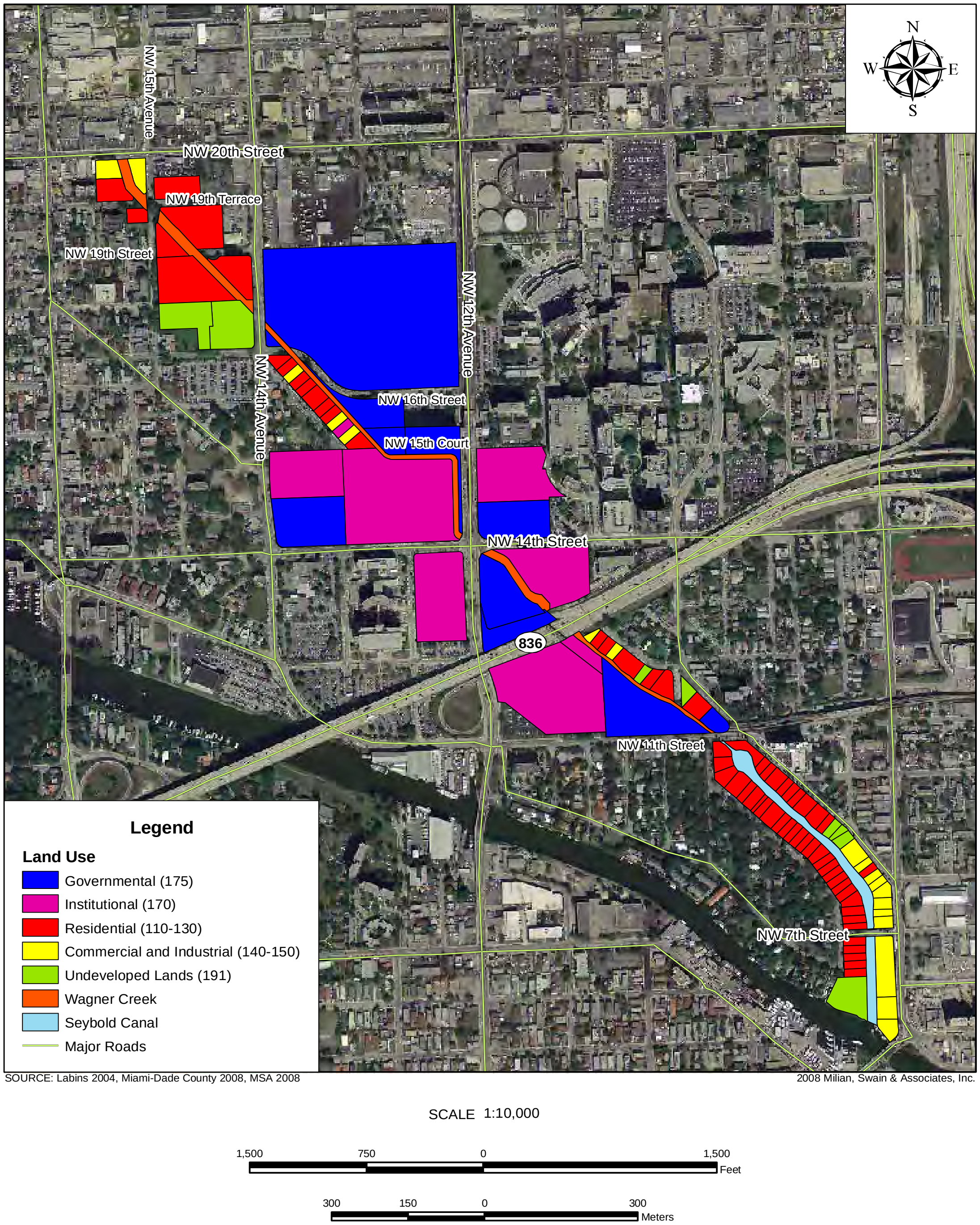
Figure 2-2
Operational Sections
Corrective Action Plan

FIGURE 3-1

Wagner Creek and Seybold Canal Land Use

Corrective Action Plan



SOURCE: Labins 2004, Miami-Dade County 2008, MSA 2008

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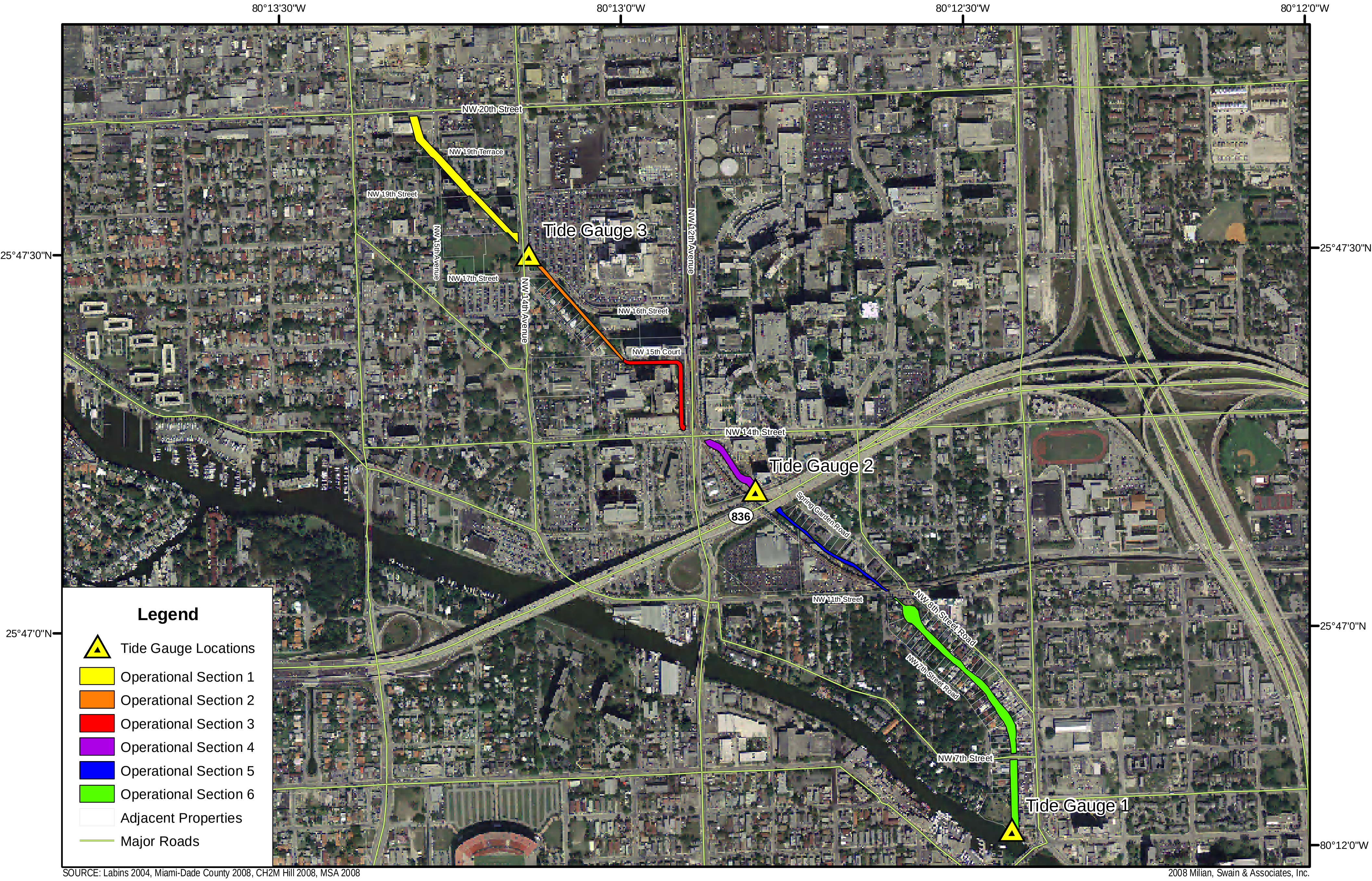
Wagner Creek & Seybold Canal
Land Use



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, MSA 2008

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Figure 3-2
Locations of Tide Gauges
Corrective Action Plan

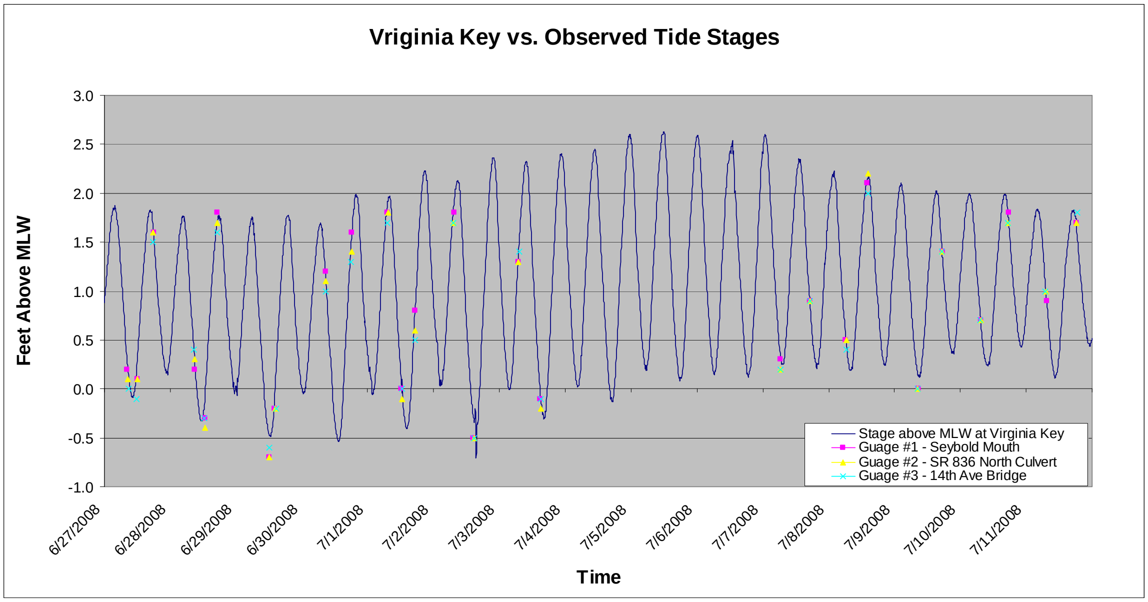


FIGURE 3-3
Projected Tide Cycle in Wagner Creek and Seybold Canal
Corrective Action Plan

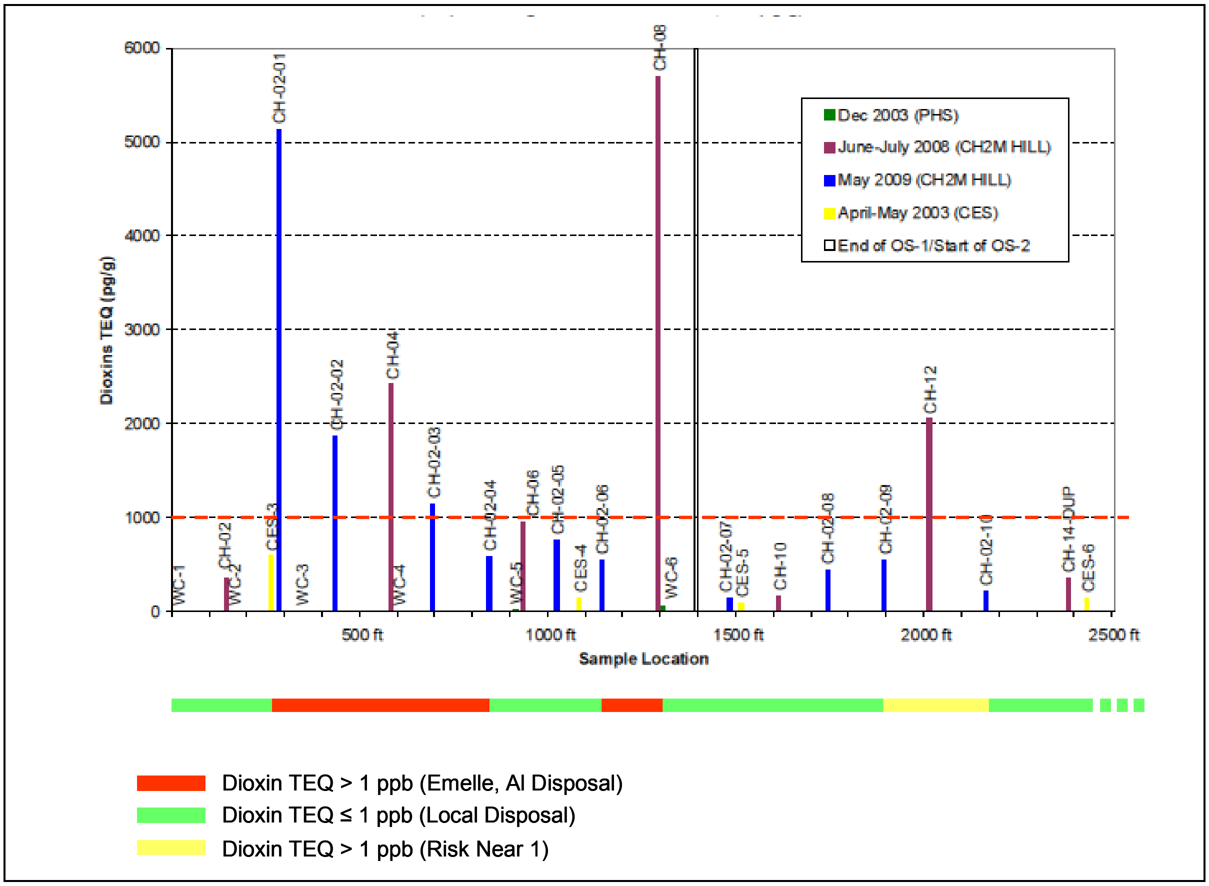


FIGURE 3-4
TEQ Levels in Individual Samples along Wagner Creek OS-1 and OS-2

Wagner Creek Sediment Removal

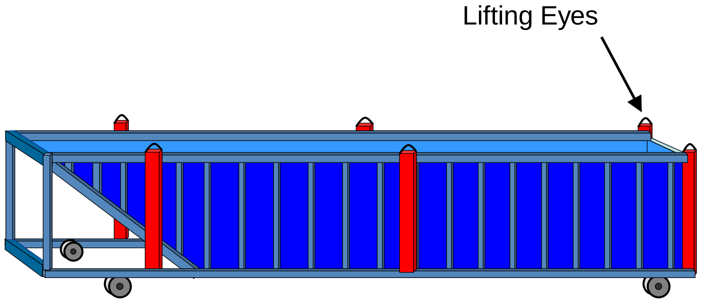
Figure 3-5
WATERTIGHT ROLL-OFF CONTAINERS (WRCs)

Potential Configurations

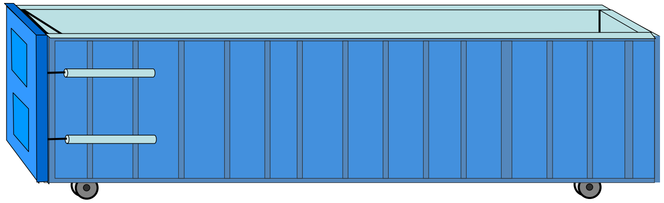
1. Constructed containers with no back door and 50º angle back end
2. Standard Watertight Roll-off Container

Benefits

- ❖ No Staging Areas Required
- ❖ No airborne releases (wet materials)
- ❖ Allows sediment to dump when in dump mode
- ❖ WRCs will be approximately ½ full
- ❖ Approximately 10 needed for Wagner Creek local loads
- ❖ Free water removed and disposed off-site before addition of absorbent
- ❖ Absorbent added before leaving dredging site in Load Relay Area
- ❖ Emelle loads transferred to standard roll-offs in temp areas after addition of absorbent
- ❖ WRCs can be lined with poly liners
- ❖ WRCs will be tarpaulin covered before leaving the work site

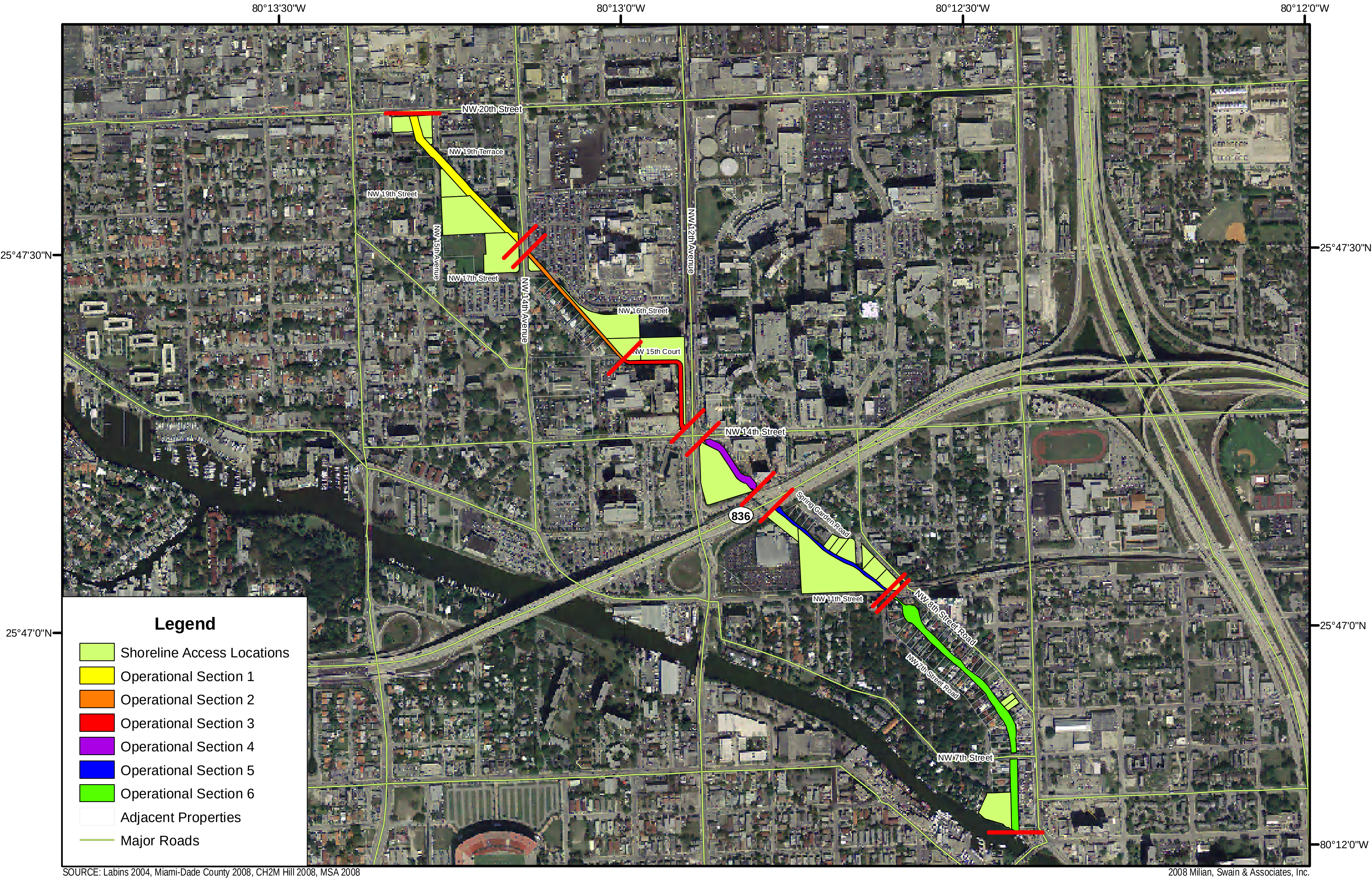


Constructed Roll-off Container with No Back Door and Angled Rear End



Standard 25 cy Sealed Door Roll-off (closed top or tarp top)

CH2MHILL



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, MSA 2008

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Figure 3-6

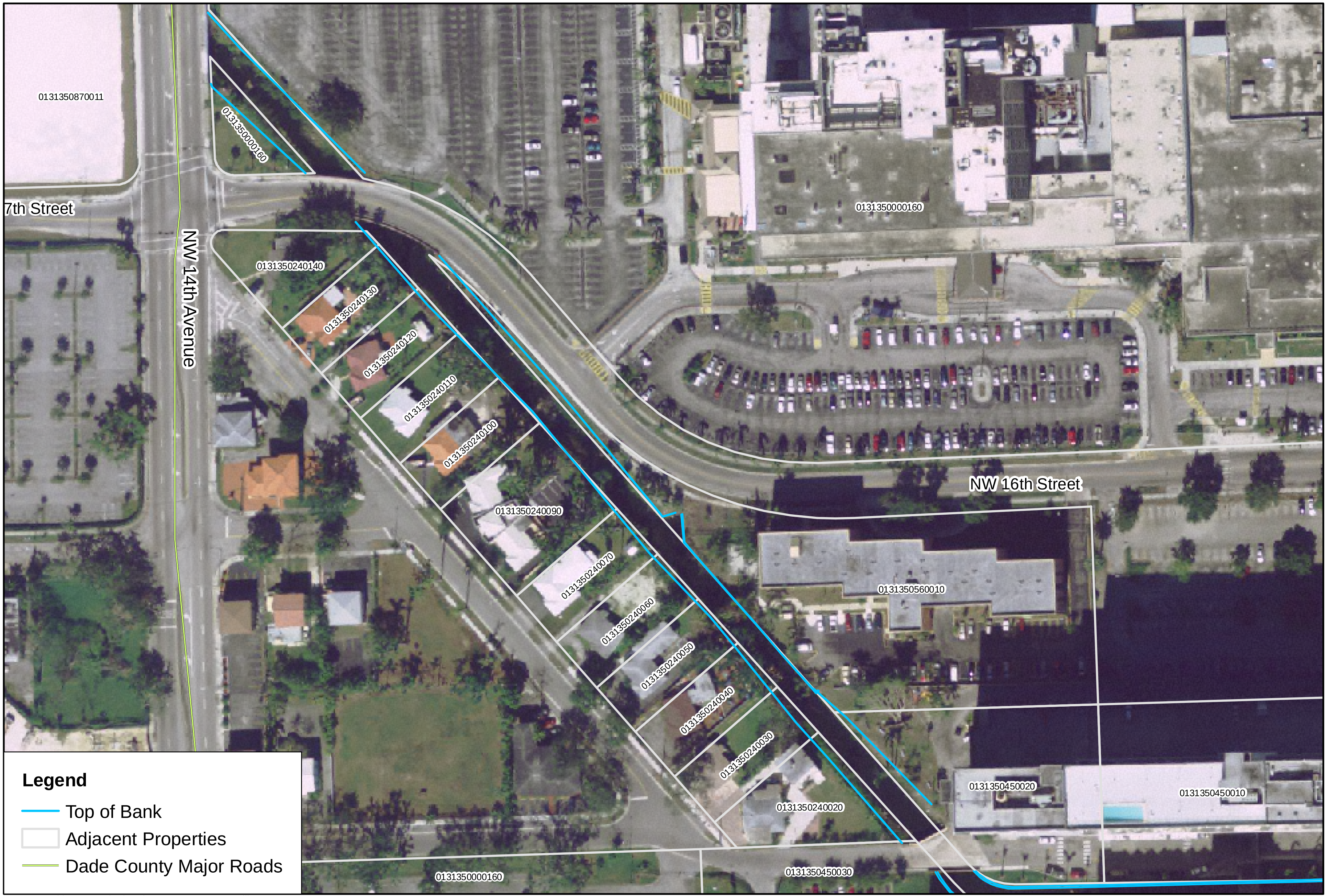
Potential Shoreline Access Locations

Corrective Action Plan

SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

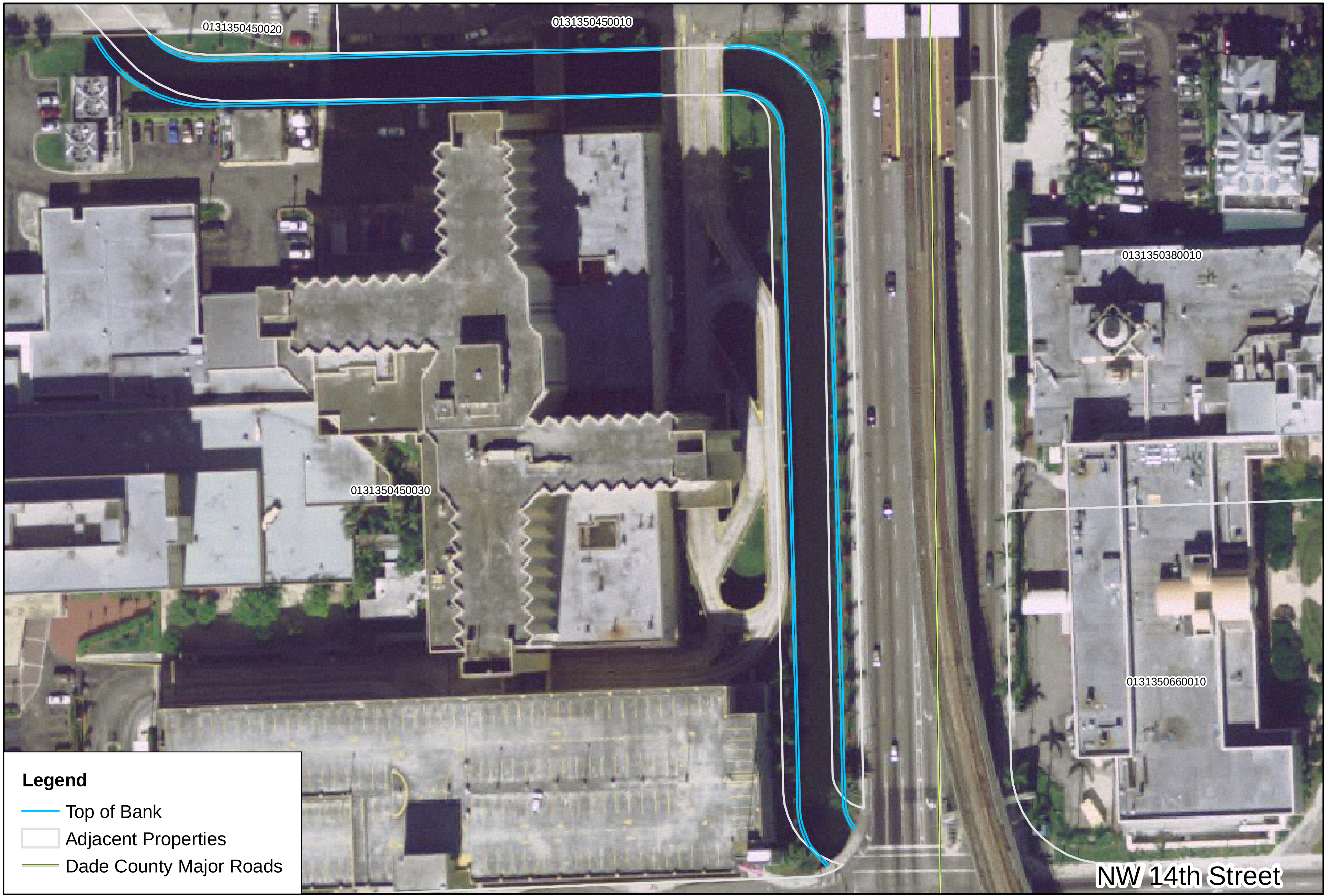
CH2MHILL MSA Milian, Swain & Associates, Inc. Arc

Figure 3-7
Aerial View Section 1
Corrective Action Plan



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

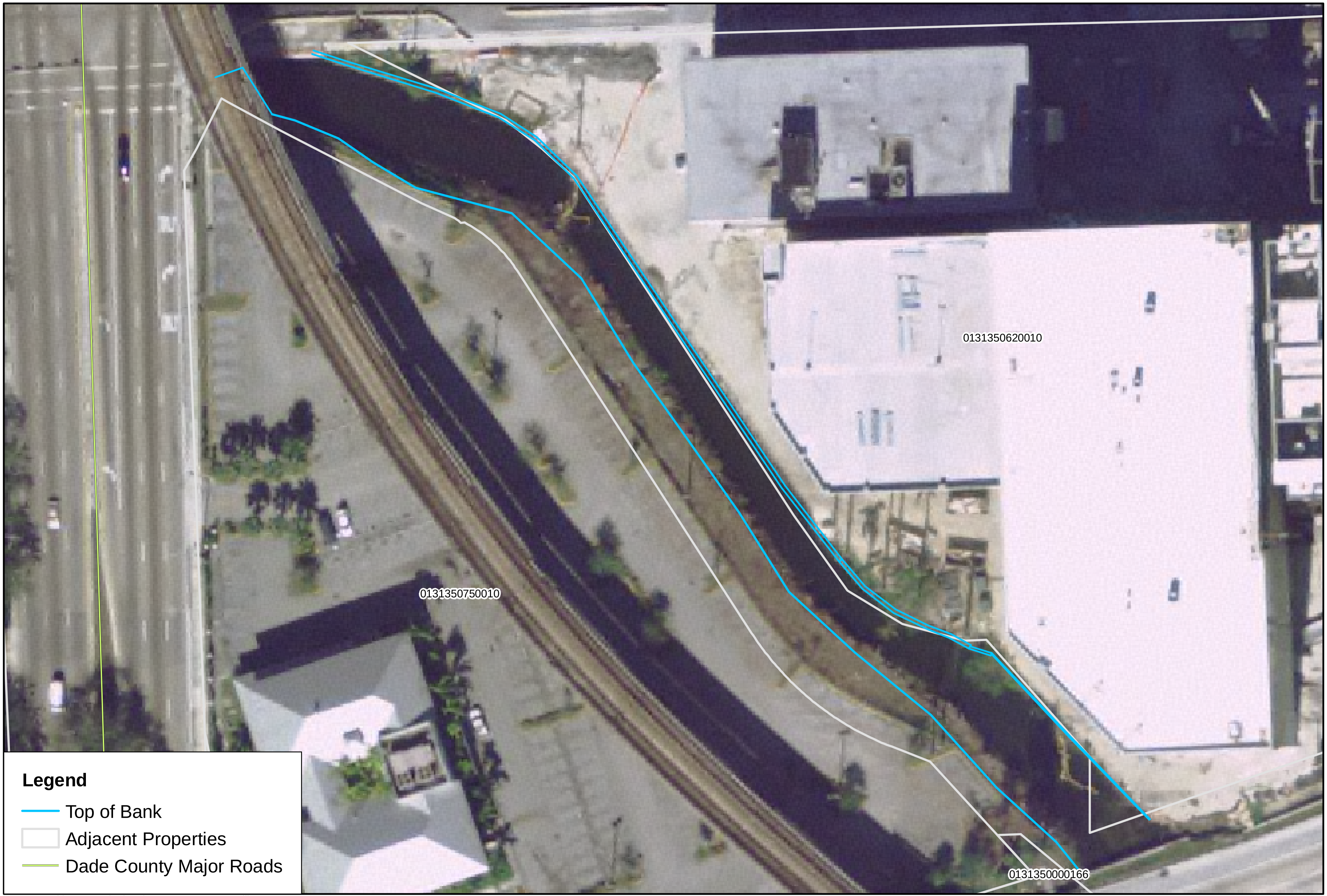
Figure 3-8
Aerial View Section 2
Corrective Action Plan



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

CH2MHILL MSA Milian, Swain & Associates, Inc. Arc

Figure 3-9
Aerial View Section 3
Corrective Action Plan



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

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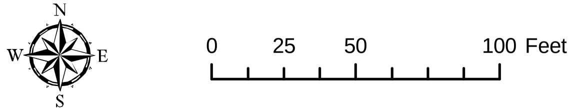
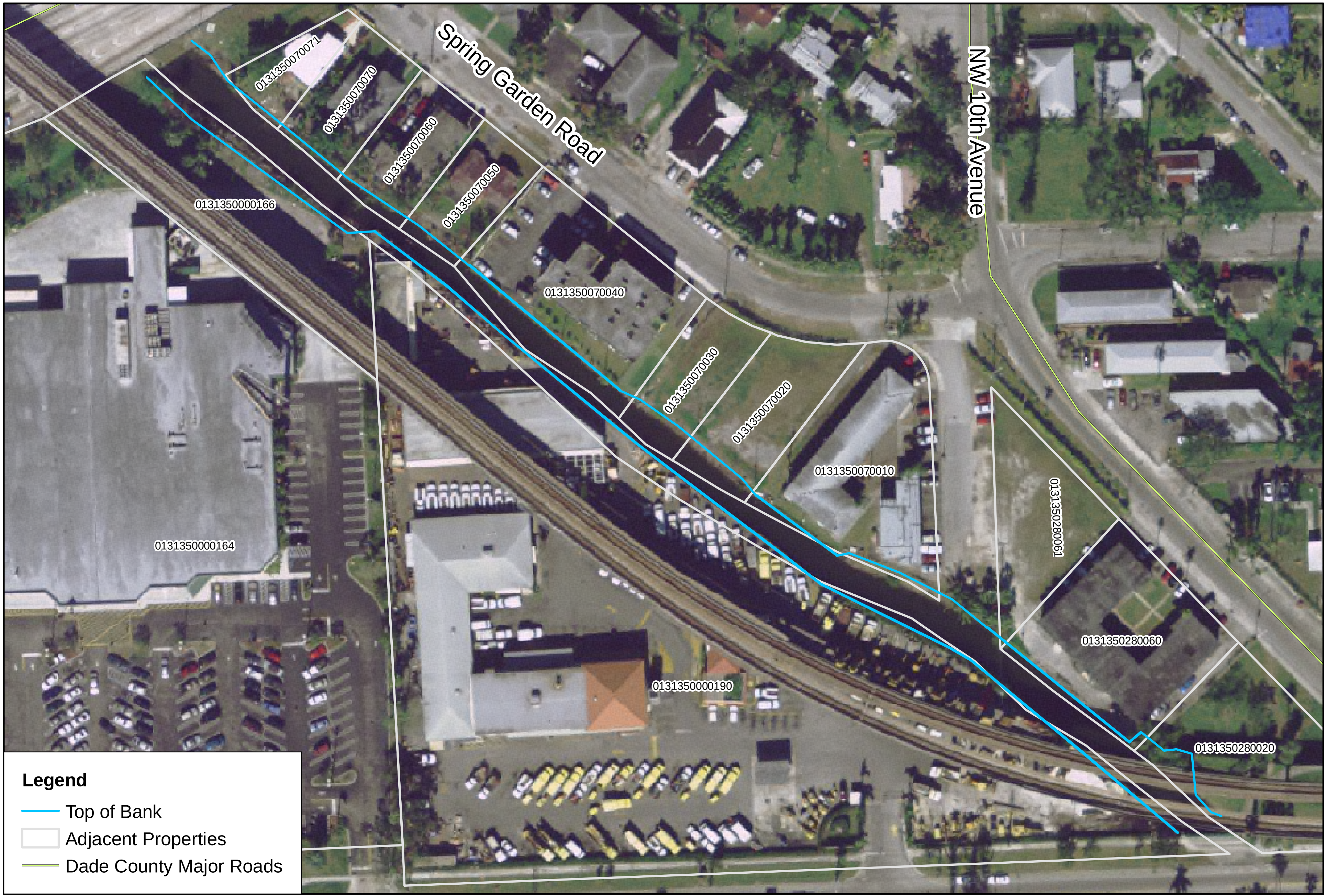
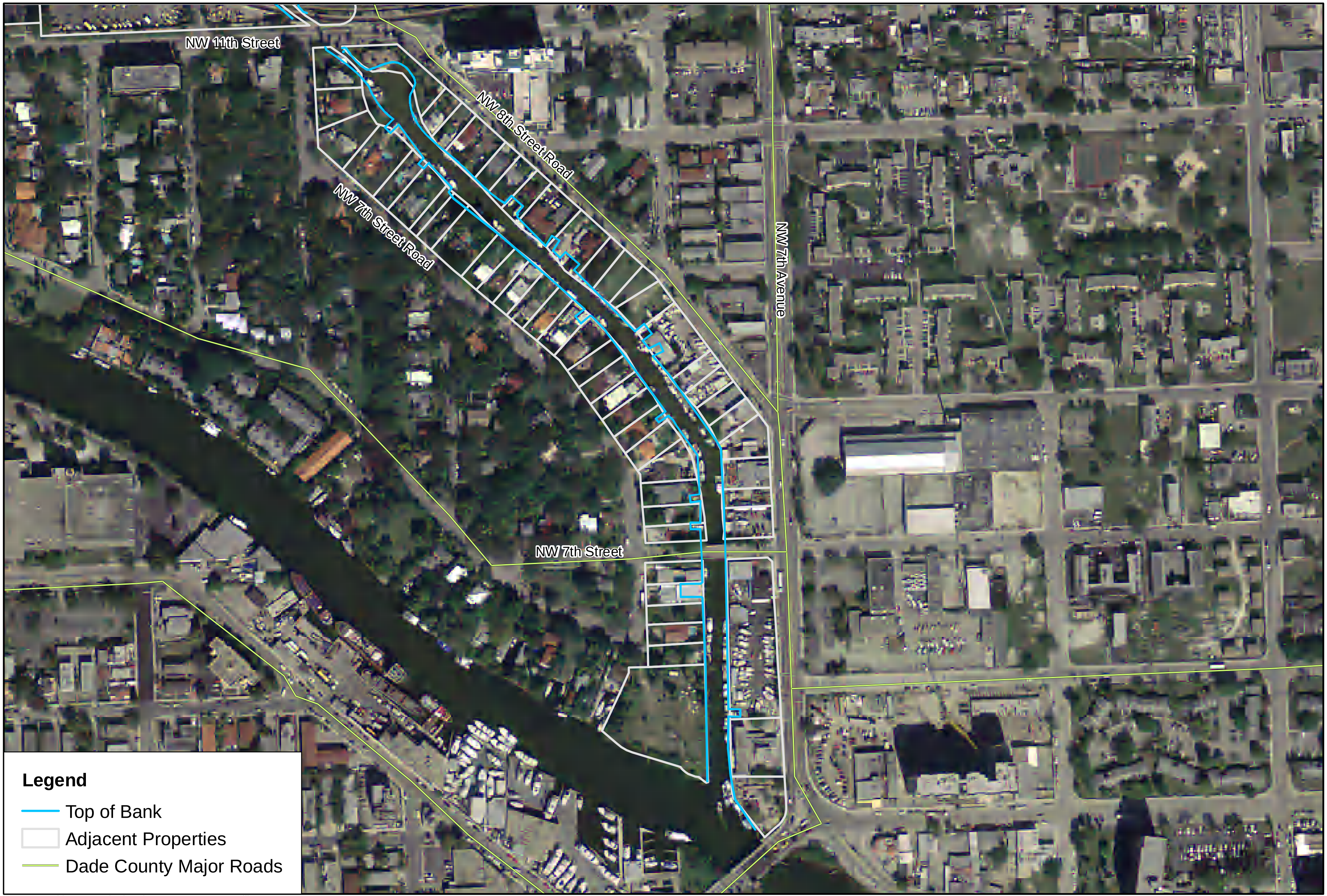


Figure 3-10
Aerial View Section 4
Corrective Action Plan



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

Figure 3-11
Aerial View Section 5
Corrective Action Plan



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

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Figure 3-12
Aerial View Section 6
Corrective Action Plan

Wagner Creek Sediment Removal

Figure 3-13
LOAD RELAY AREA

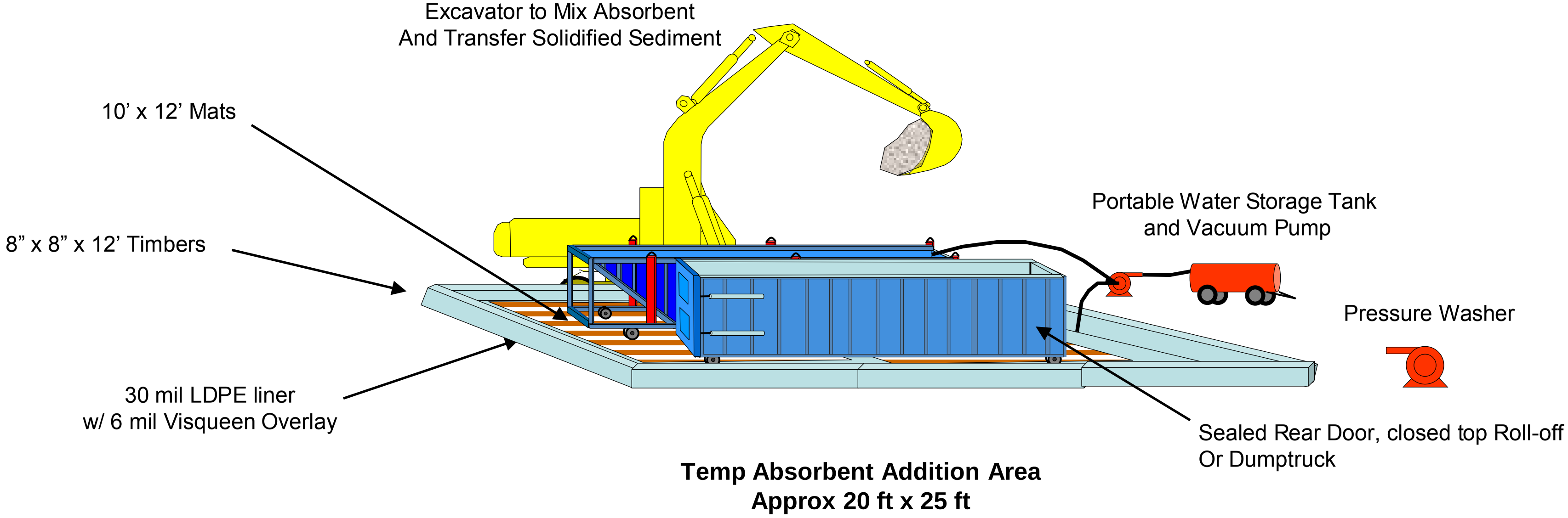


FIGURE 3-14
Typical Turbidity Barrier

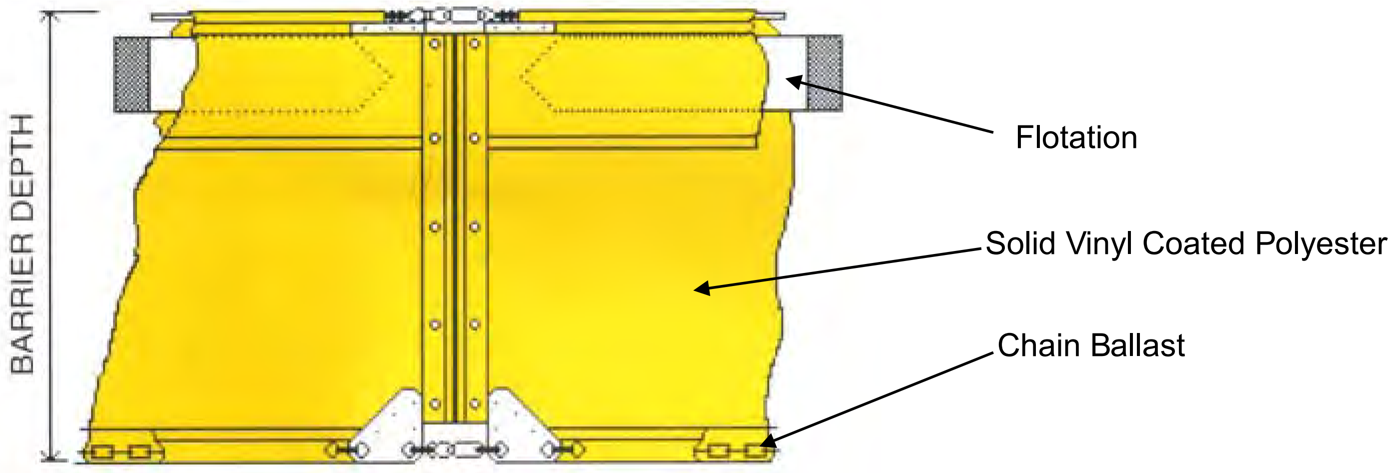


FIGURE 3-15

Dredging to Floating WRCs

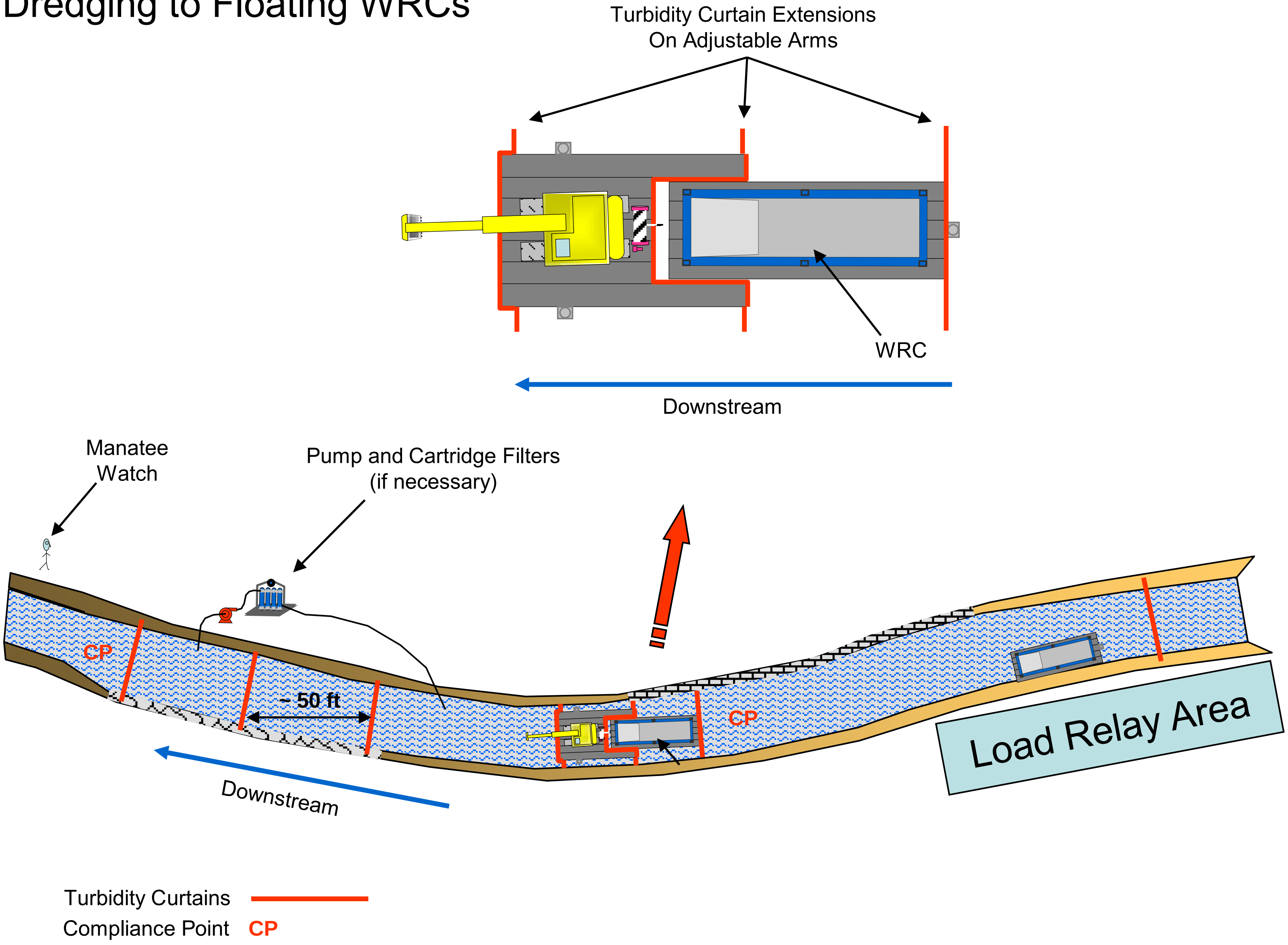


FIGURE 3-16
Dredging to Land-Side WRCs

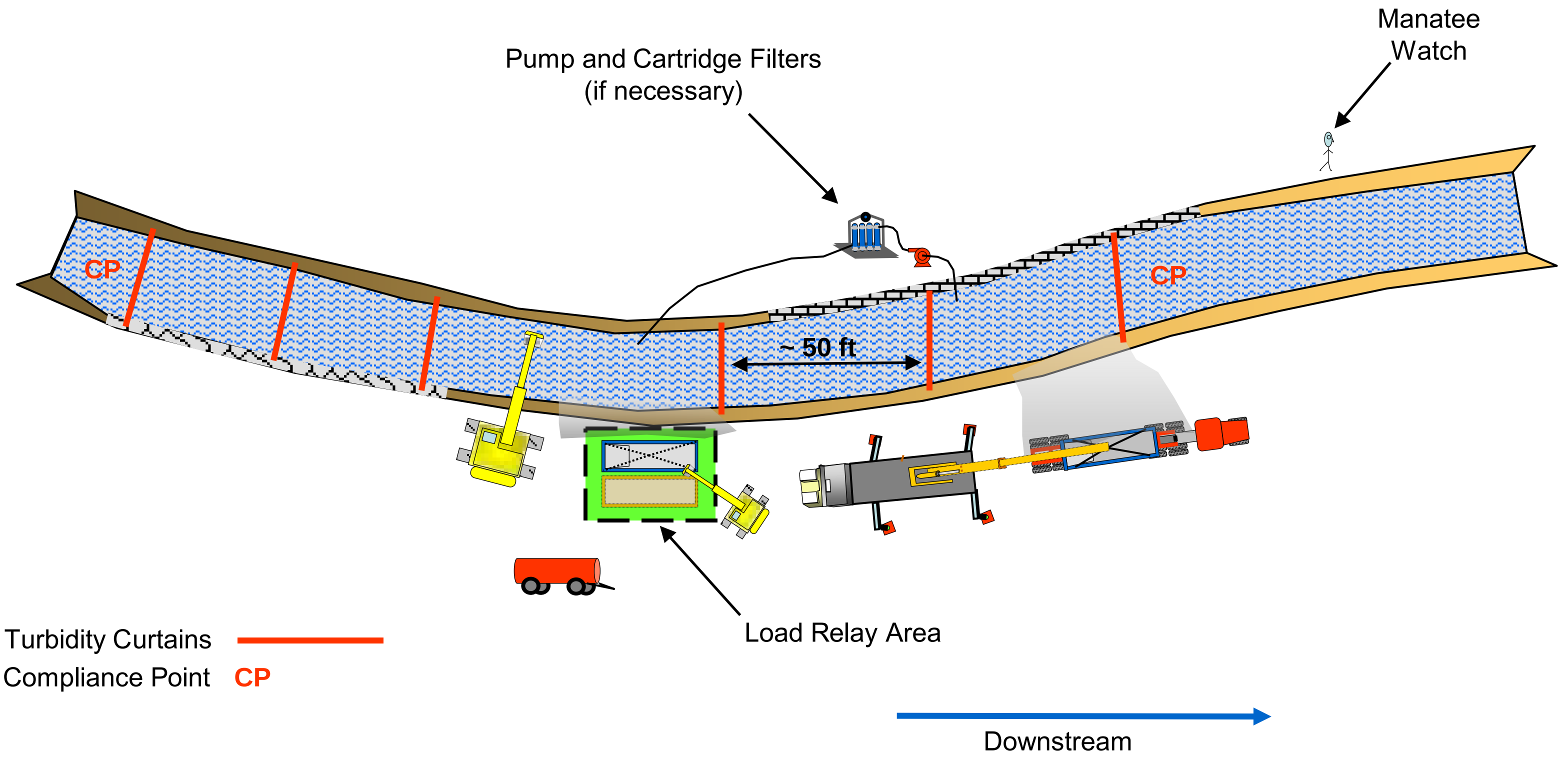


FIGURE 3-17
Seybold Canal Water Quality Control/Manatee Watch

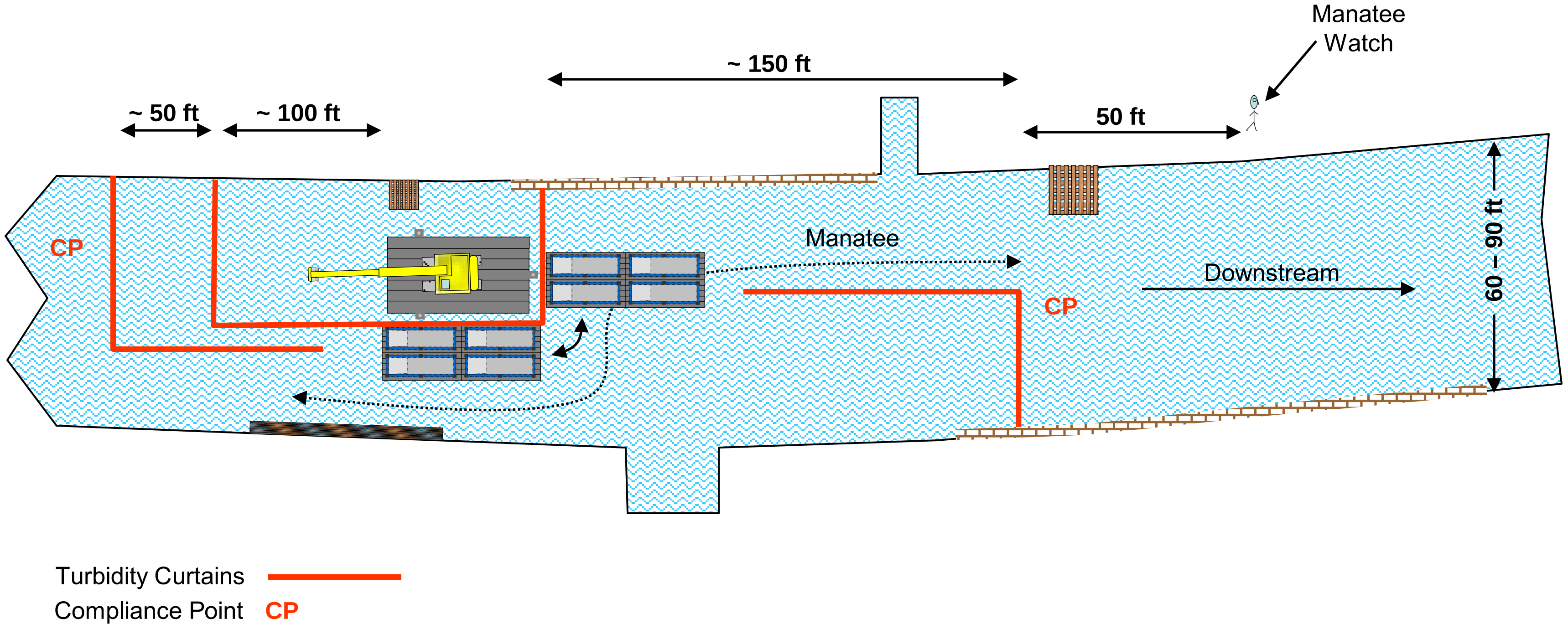


FIGURE 3-18
Typical Air Curtain

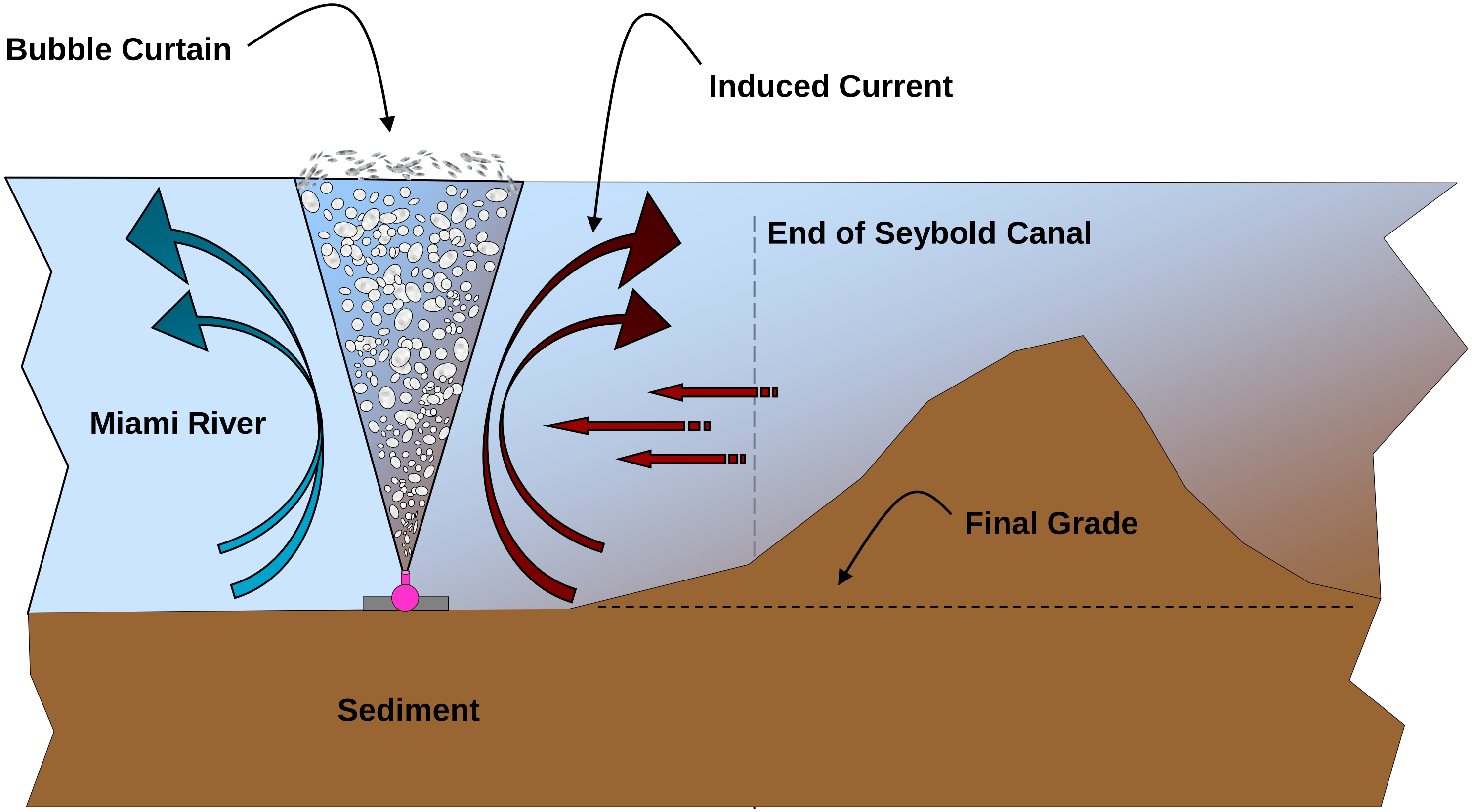


FIGURE 3-19

Dredging Near Mouth of Seybold Canal Water Quality Control/Manatee Watch

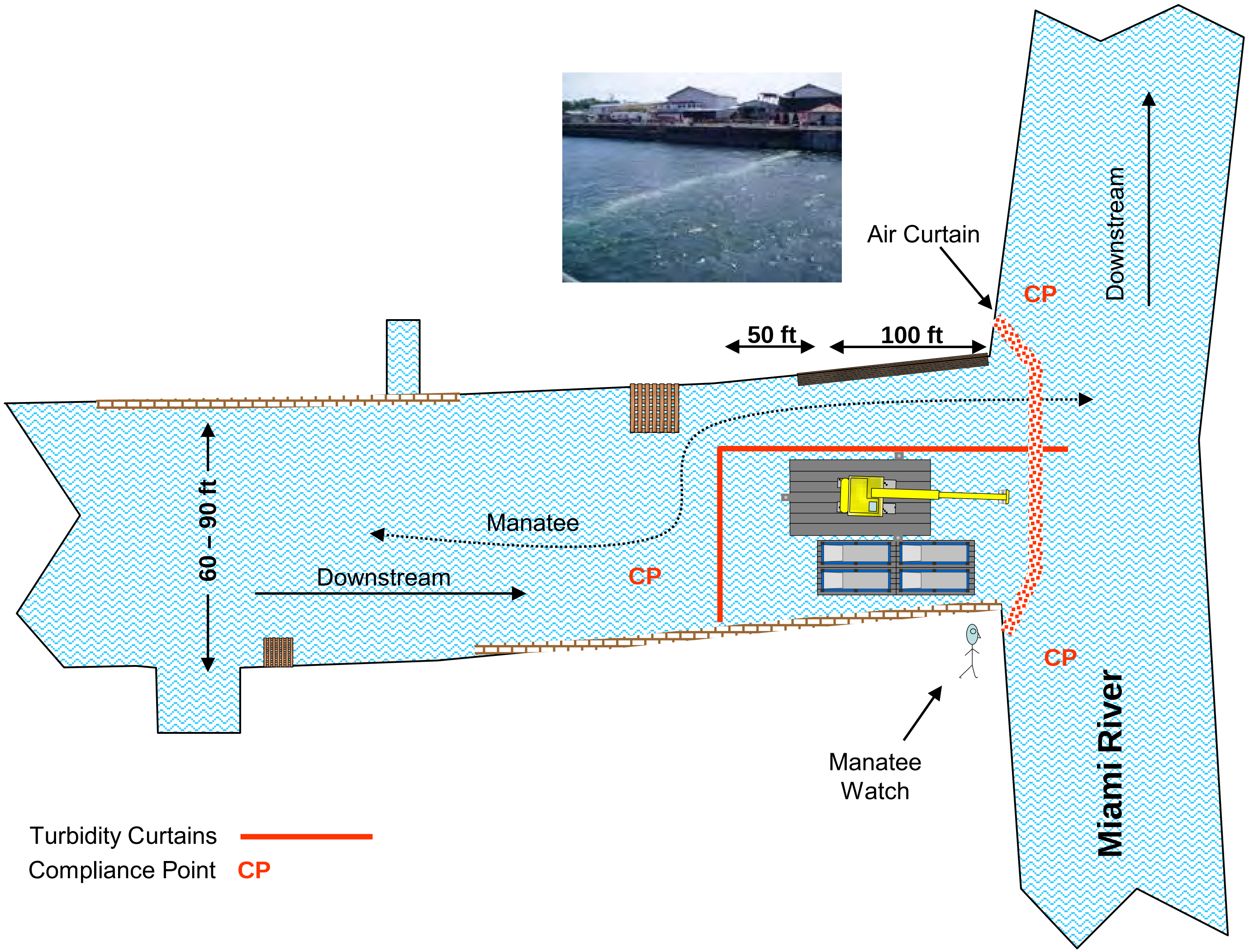


FIGURE 3-20
Wide Area Transportation Routes
Corrective Action Plan

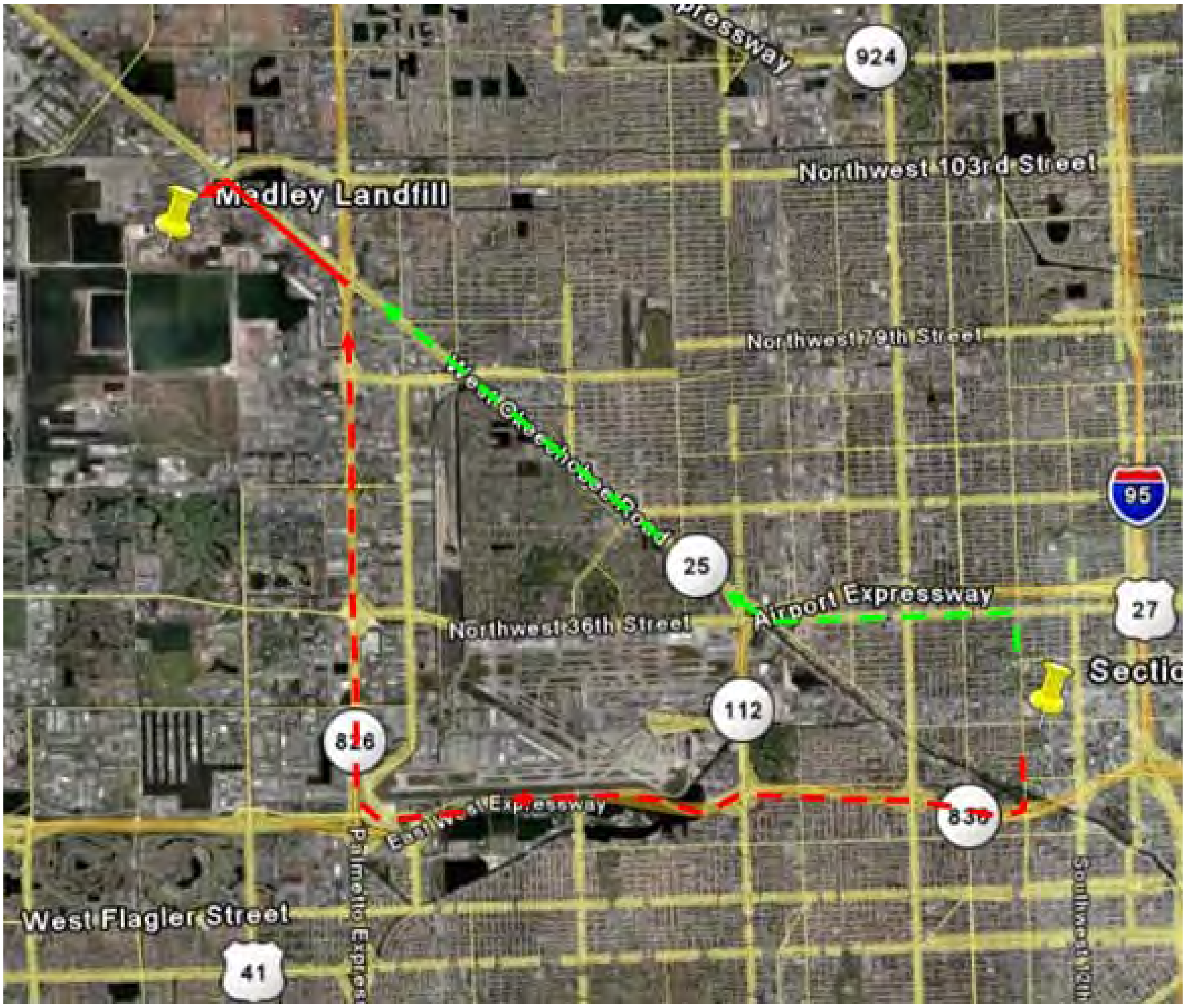


Figure 3-21
Local Transportation Routes - Wagner Creek
Corrective Action Plan

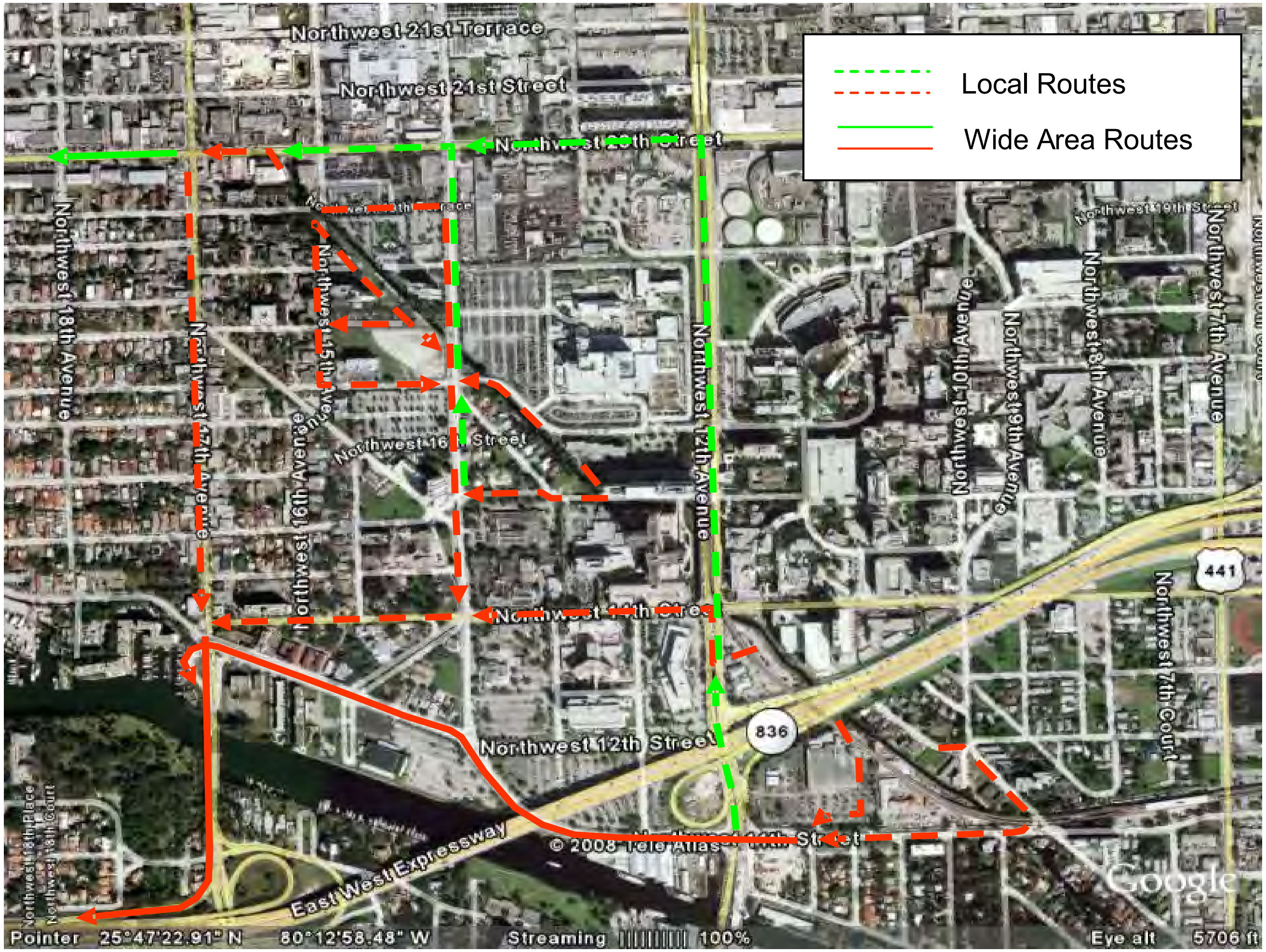
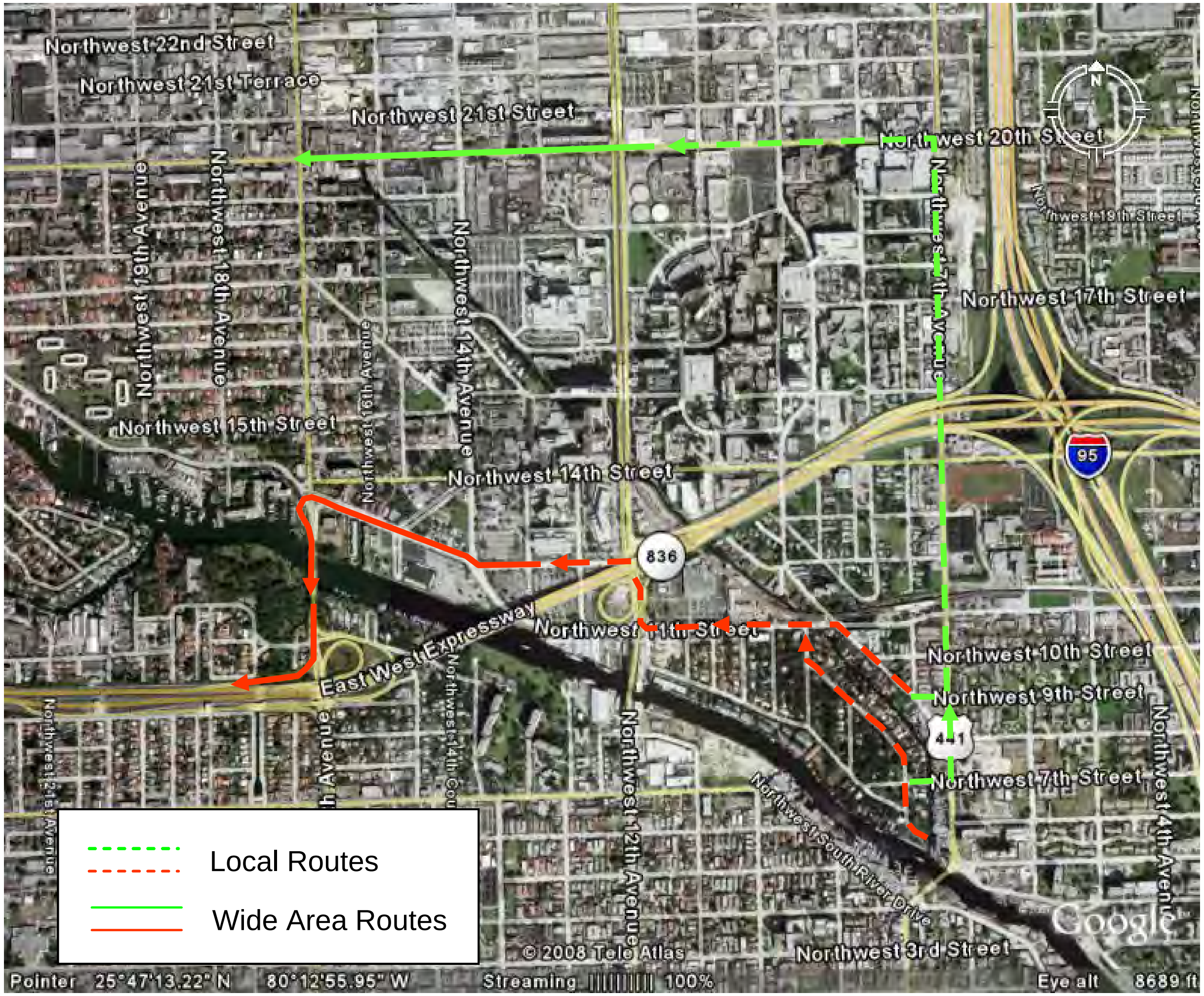


FIGURE 3-22
Local Transportation Routes – Seybold Canal
Corrective Action Plan



Volume 1, Appendix A-1

Sediment and Survey Results

Sediment Characterization Report Wagner Creek and Seybold Canal

Miami, Florida

July 2009

Prepared for

City of Miami

Under the

City of Miami Contract B-50643

Prepared by

CH2MHILL
Constructors, Inc.

Atlanta, Georgia

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Acronyms and Abbreviations

amsl	above mean sea level
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CAP	Corrective Action Plan
COC	contaminant of concern
cm^3	cubic centimeter
°F	degrees Fahrenheit
DERM	Department of Environmental Resources Management
DOT	Department of Transportation
DQO	data quality objective
DRO	diesel range organics
FDEP	Florida Department of Environmental Protection
FLPRO	Florida Petroleum Range Organics
FSP	Field Sampling Plan
ft	foot or feet
g	gram
GPS	Global Positioning System
GRO	gasoline range organics
L	liter
µg/kg	micrograms per kilogram
MAC	maximum allowable concentration
MEK	Methyl-ethyl-ketone
mg/kg	milligrams per kilogram
mg/L	milligram per liter
MS	matrix spike
MSD	matrix spike duplicate
MTBE	methyl tert-butyl ether
NAD	North American Datum
NGVD	National Geodetic Vertical Datum
pg/L	picogram per liter
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
pg/g	picograms per gram
PPE	personal protective equipment

ppt	Parts per trillion
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
SAP	Sampling and Analysis Plan
SCS	Soil Conservation Service
SOP	standard operating procedure
SPCS	State Plane Coordinate System
SR	State Road
SVOC	semivolatile organic compound
TCLP	Toxicity Characteristic Leaching Procedure
TEF	toxic equivalent factor
TEQ	toxic equivalent
U.S.	United States
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
yd^3	cubic yards

SECTION 1

1. Introduction

The overall objective of the sampling of the project site is to determine the sediment and surface water quality of Wagner Creek and Seybold Canal, Miami, Dade County, Florida for the sediment removal and proper disposal of the excavated sediments. The purpose of this specific sampling effort was to update the assessment of sediment and surface water quality along the project site of Wagner Creek and Seybold Canal. Information gathered during these field assessments will be used to obtain appropriate permits and support the proposed corrective action of maintenance dredging within Wagner Creek and Seybold Canal. Based upon the sediment quality results determined from the June-July 2008 field sampling event along Wagner Creek and Seybold Canal, additional sediment samples were collected from the upstream section of Wagner Creek in May 2009 in order to further define the extent of dioxin impacted sediments. This document presents the results of the sediment and surface water sampling field work conducted at Wagner Creek and Seybold Canal in June-July 2008 and in May 2009. The sampling and analysis plan (SAP) for this investigation was developed using protocols and standard operating procedures (SOPs) provided in Florida Department of Environmental Protection (FDEP) SOP 001/01. Analytical results summary for all the samples collected to date are presented to estimate the removal volumes and segregation of the removed sediments for disposal in either a municipal or hazardous waste landfill.

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SECTION 2

2. Project Site Description and History

Wagner Creek, and its associated downstream extension of Seybold Canal, is a major tributary to the Miami River, which discharges into Biscayne Bay. The creek is maintained by the City of Miami to provide stormwater conveyance during rain events, draining the surrounding portion of the C-6 Basin of the Miami metropolitan area. Wagner Creek is not navigable by boat due to its shallow depths and the presence of low-lying bridges and buried utility lines. The creek extends from NW 20th Street downstream to NW 11th Street, is approximately 5,900 feet long and approximately 30 feet wide (top-of-bank to top-of-bank), and has depths ranging between 3 and 6 feet.

The Seybold Canal and turning basin were dredged by the U.S. Army Corps of Engineers in the 1930s to their current depth of 15 feet. Today, the canal is bordered by residential and business properties and bounded by seawalls. The canal is a navigable waterway and most residents have docks and boats. The approximate length of Seybold Canal is 2,200 feet, with a width of 30 to 50 feet. The 100-foot wide turning basin is located at the canal's northernmost extent, which receives stormwater runoff from Wagner Creek. Seybold Canal extends downstream from NW 11th Street to the confluence with the Miami River.

Sediments in Wagner Creek and Seybold Canal were reported to contain a variety of organic and inorganic contaminants. In April-May 2003, Consulting Engineering and Science, Inc. (CES) of Miami, Florida collected sediment samples from 12 locations (2 from upstream of Wagner Creek, 8 from Wagner Creek and 2 from Seybold Canal) to characterize the sediment quality. The CES investigation assessed both the lateral and vertical extent of chemical impacts to the sediments within Wagner Creek and Seybold Canal. In December 2003, PHS Engineering Corporation (PHS) of Miami, Florida performed an additional assessment by collecting sediment samples for dioxin analysis from six locations along the upstream 2,500 feet section of Wagner Creek. Based on that information, a previous removal program was developed and designated Phases IV, V, and VI, which correspond to the sections of creek and canal between NW 14th Avenue and NW 11th Street.

The current removal program determined that the 2003 samples may no longer be adequately representative of current sediment quality of the canal due to fate and transport process that are likely to have influenced the sediment migration and chemical distribution in the surface water bodies. Based upon the known environmental properties and behavior of sediments in canals, and fate of inorganic and relatively stable organic chemicals (such as dioxins) could be persistent in the sediments. However, sediments themselves are dynamic and would be expected to migrate from their previously reported locations. Therefore, additional sampling was proposed in this phase of the project to further define the extent of dioxin impacts within the upstream section of Wagner Creek.

The 2003 data was used in identifying the presence of elevated chemical concentrations; however, this data had quality issues limiting its usability. For example, the sample locations from the PHS field event did not have GPS or survey coordinates, thus could not be field verified for specific sample locations. Additionally, several data quality aspects of the previously collected sediment data were not documented or were insufficient. Although CES collected samples down the channel of the creek and canal, the number of samples collected were limited (10 total) for the length (8,100 feet) of the creek and the canal. Thus the existing data was not adequate to prepare a preliminary design for the removal, containment, and control of sediments without additional understanding of the sediment chemical characteristics through data collection.

Developing data of defined quality is important and requires an understanding of the actual sampling methodology, sample preparation, and decontamination procedures. Given the high resolution procedures used in the analytical methodology for dioxin, cross-contamination is a possibility and the historical data reports were not fully descriptive of the techniques used during sample collection, preparation, and handling. Therefore, additional sediment quality data were collected and analyzed to provide a more intensive assessment of the chemical distribution throughout the length of Wagner Creek and Seybold Canal; this will help determine if any special handling or excavation procedures are required for individual sections of the creek and canal.

SECTION 3

3. Field Activity Summary

This section outlines the scope of work and sampling approach applied during the June-July 2008 and the May 2009 field activities that were conducted to collect data along Wagner Creek and Seybold Canal. The Miami-Dade County Department of Environmental Resources Management (DERM) was notified 48 hours in advance of the field work in support of the SAP.

June-July 2008 Sampling Event

Sediment samples for physical characterization and chemical analysis were collected at 45 locations along the entire length, approximately 8,100 feet, of Wagner Creek and Seybold Canal, distributed as follows:

- 33 sample transects spaced at approximately 150-foot to 200-foot intervals were collected along Wagner Creek.
- 12 sample transects spaced at approximately 150-foot to 200-foot intervals were collected along Seybold Canal.

The sampling locations along the entire length of Wagner Creek/Seybold Canal were identified with station identifications as CH-01 through CH-45 and are shown in **Figure 1**. Geographic coordinates for sample locations are provided in **Table 1**. In addition to the 45 sediment samples, 5 field duplicates and 1 matrix spike/matrix spike duplicate sample were collected, for a total of 51 samples. Laboratory analyses were performed on 23 samples (odd numbered transects) to determine the disposal characteristics (with toxicity characteristic leaching procedure [TCLP] extraction) and physical parameters and on 22 samples (even numbered transects) for bulk sediment chemistry (with SW 846 methods that included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, and herbicides), physical parameters (grain size, specific gravity, and bulk density), and dioxin analyses. Elutriate samples were collected from four transects along the length of the project site in order to conduct simulation tests of the dredging process. Surface water samples were collected at the same four transects as the elutriate samples in order to assess the surface water quality conditions at the time of the field event. Daily field reports were completed during the sampling event and are provided in **Appendix A**.

May 2009 Sampling Event

As a follow-up to the June-July 2008 sampling event, additional sediment samples were collected for dioxin analysis along 10 transects from the upper 2,500 feet of Wagner Creek (from N.W. 20th Street to N.W. 15th Street) to further define the sediment areas with elevated dioxins. The sampling transects, identified as CH-02-01 through CH-02-10, were located relative to transects from the June-July 2008 sampling locations that reported elevated dioxin concentrations in order to further delineate sections of the impacted sediment materials within the creek/canal (**Figure 1**). In addition to the 10 sediment samples, 1 duplicate sample was collected, for a total of 11 samples. All eleven samples were analyzed for dioxins. Additional sediment and surface water samples were also collected from three transect locations within the same area to represent simulation of dredging elutriate. Daily reports were completed during the May 2009 sampling and are provided in **Appendix A**.

3.1 Bathymetric and Land Survey

CH2M HILL subcontracted ARC Surveying and Mapping, Inc., a Florida-licensed land surveyor from Jacksonville, Florida, for the surveying services during the June-July 2008 field event. Bathymetric surveying services conducted during this field event included establishing three tide gauge stations to define tidal fluctuation, water depths, and cross-section profiling at transects along flow channel of the creek and the canal. The bathymetric survey and cross-section profiling was used in determining current channel morphology of the creek and canal, while the tide gauge stations were place in order to monitor the tidal changes in the water levels within the creek and canal during the field activities. The locations were referenced both horizontally and vertically to permanent land monuments or a grid system. Both Global Positioning System (GPS) and conventional surveying techniques were used during the field event. Coordinates were provided in the Florida State Plane Coordinate System (SPCS), zone 3200 for the area. The survey controls were tied to a benchmark and North American Datum (NAD) 83 for horizontal and National Geodetic Vertical Datum of 1929 (NGVD 29) for the vertical. Vertical control for topographic surface, surface water, and cross-section profiling of the creek channel was surveyed to the nearest 0.01 ft and the horizontal control was to the nearest 0.10 ft.

3.2 Biological and Structure Survey

CH2M HILL subcontracted Milian Swain and Associates, Inc. (MSA), a West Palm Beach, Florida based consulting firm, to assist with the biological and structure survey at the project site during the June-July 2008 field event. The biological survey along Wagner Creek and Seybold Canal consisted of a photo-documentation and littoral zone assessment. By walking the banks of the creek as well as using a boat within Seybold Canal, MSA conducted the survey noting benthic species, location(s) of physical obstructions and debris, taking inventory of any threatened or endangered species and light penetration within the water as determined by a Secchi disk. In addition, MSA assisted in implementing manatee protection measures to avoid potential impacts to manatees during the sediment sampling activities along Wagner Creek and Seybold Canal. A report of the completed work was prepared and presented as an addendum to the Corrective Action Plan (CAP).

3.3 Tidal Measurements

In order to collect data on tidal fluctuations of the water level within Wagner Creek and Seybold Canal, CH2M HILL subcontracted ARC Surveying to install tidal gauges at three locations and collect daily measurements (**Appendix B**). An upstream gauge was installed at the NW 14th Avenue bridge, a mid-stream gauge was installed at the State Road (SR) 836 culvert, and a downstream gauge was installed along the seawall near the confluence of Seybold Canal with the Miami River. During the June-July 2008 field event, three measurements were collected each day from each of the tidal gauges and included early morning (around 7:00 AM), mid-day (around noon), and late afternoon (around 5:00 PM) readings. The water level measurements were collected to correlate the tidal changes within Wagner Creek and Seybold Canal with published readings of a nearby tidal monitoring station (e.g., Biscayne Bay).

3.4 Sediment, Aqueous, and Elutriate Sampling

During the June-July 2008 field event, 51 sediment samples (including field QC samples) for chemical analysis and 4 sediment samples to characterize potential dredging elutriate formation were collected from Wagner Creek and Seybold Canal. During the May 2009 field event, 11 sediment samples (including field QC samples) for dioxin analysis and 3 sediment samples for dredging elutriate preparation were collected in the upstream section of Wagner Creek (from 0+00 to 25+00). Continuous sediment sample cores were collected by ARC Surveying & Mapping, Inc., using 3-inch diameter poly-core tubes. Samples were collected by manually coring within Wagner Creek, and by use of a vibracore technology within Seybold Canal. Core tubes were advanced into the sediment material to refusal. The mechanical coring device used for this project was Specialty Devices, Inc.'s VibeCore-D, which is designed for small boat operation and easy deployment. In addition, during the June-July 2008 field event, sediment thickness measurements were collected at each of the 45 sampling transects by advancing a ¾-inch probing rod with a hammer until reaching refusal zone. Thickness measurements were collected to provide an estimate for the sediment removal depths.

During the June-July 2008 field event, surface water (aqueous) samples were collected at sample location transects at CH-10, CH-20, CH-30, and CH-39 in order to assess current ambient water conditions within the Wagner Creek and the Seybold Canal. Additional sediment and surface water samples were collected at transects CH-10, CH-20, CH-30, and CH-39 for preparation of elutriate samples. The elutriate sample preparation is a laboratory simulation to assess potential water quality impacts due to the agitation of sediment materials during the mechanical dredging process of the submerged sediments. As part of the preparation, one 8-oz jar of sediment materials was added to one 1-liter bottle of surface water and mixed for 30 minutes using a shaker machine in the laboratory. After 30 minutes of shaking, the sample bottles were set aside to allow the suspended materials to settle prior to filtering and analysis. Enough volume of both surface water (30 1-liter [L] amber bottles) and sediment (30 8-ounce [oz] jars) was collected at each of the four transects so that each chemical parameter could be analyzed in triplicate. For the elutriate sediment samples, additional cores were collected along each transect and homogenized with sediment used for the standard suite of chemical analyses. The elutriate sediment and water samples were submitted to the laboratory for processing and analyses.

However, after discussions with DERM and the City of Miami, it was determined that the Dredging Elutriate Test (DRET) protocol was more appropriate for elutriate samples since the agitation and mixing simulation tends to represent the mechanical dredging operation that will be conducted in the field more than other elutriate simulation methods (USACOE, 1995). Therefore, during the May 2009 field event, additional sediment and surface water samples were collected from three transects (E-01, E-02, and E-03) within the upstream section of Wagner Creek for elutriate testing using the DRET protocol. As part of the simulation and according to the DRET protocol, only 10 grams of sediment material was added to one 1-liter bottle of surface water and mixed for 30 minutes using a shaker machine. Enough volume of both surface water (30 1-liter [L] amber bottles) and sediment (10 8-ounce [oz] jars) was collected at each of the three transects so that each chemical parameter (same parameter list as during the June-July 2008 event) could be analyzed in triplicate. The results of this analysis are discussed in Section 5.

To characterize the sediment materials from Wagner Creek and Seybold Canal for disposal purposes, sediments from the odd numbered transects were collected and submitted to the laboratory for full TCLP analysis, ignitability, corrosivity, reactivity, and total petroleum hydrocarbons (TPH) analysis. The sediment samples collected from the three cores at the transects were homogenized in a mixing bowl, containerized in appropriate jars provided by the lab, packed on ice, and submitted to the laboratory for analyses. To minimize the potential for cross contamination, all sediment as well as all surface water samples were handled and processed using "clean hands-dirty hands" protocols as described in FDEP SOP FS 8200 *Clean Sampling for Ultratrace Metals in Surface Waters*. The field team member designated as "clean hands" was responsible for all operations involving contact with the sample and/or sample bottle. The field team member designated as "dirty hands" was responsible for all other activities. All samples were placed in the appropriate sample containers and stored in hard plastic ice chests/coolers and packed with ice until prepared for shipping.

SECTION 4

4. Sample Collection and Analysis

4.1 Transects

Sediment samples were collected at stations, along transects, along the length of Wagner Creek and Seybold Canal and were positioned approximately 200 feet apart along the length of the channel during the June-July 2008 field event. However, the spacing distance between some of the transects was changed in the field to maintain the predetermined number of sampling stations within each of the six operational sections (45 transects total) and generally ranged between 150 feet and 200 feet. Transects sampled during the May 2009 event were placed at additional locations to address the areas that were not previously sampled during the June-July 2008 field event and to further define the extent of elevated dioxins in sediments. Three sediment cores (or more for QC and elutriate samples), one from the center of the creek channel and two sides of the channel, approximately equidistant between the center core sample and the creek bank, were collected at each transect and homogenized as a composite sample for laboratory analyses. Additionally, surface water samples were collected at four locations in June-July 2008 and three locations in May 2009, at a pre-determined elutriate preparation sample transects. . All transects were surveyed by ARC Surveying after sample collection.

4.2 Collection Techniques

4.2.1 Hand Cores

Within sections of Wagner Creek that were difficult to navigate due to shallow waters, sediment samples were collected manually by ARC Surveying from a jon-boat by advancing 3-inch inner diameter poly-push core tubes. During the June-July 2008 field event, a total of 113 push core tubes were sampled manually within Wagner Creek along 33 transects, including CH-1 through CH-32 and CH-45. Additional push core tubes were collected at transects CH-10, CH-20, and CH-30 to provide enough sediment volume for the elutriate samples. During the May 2009 field event, a total of 39 push core tubes were sampled manually along 13 transects within the upstream section of Wagner Creek, including CH-02-01 through CH-02-10 and the three elutriate transects E-01, E-02, and E-03. The sample tubes were fitted with a removable core catch on the bottom to help retain the sediment material within the tubes during the sampling process. The core tubes were advanced into sediment until refusal. After the core had reached refusal, the sample was retrieved manually and brought to the surface, capped at the bottom, and provided to the CH2M HILL field team for processing. Photos of the sediment coring techniques are provided in **Appendix C**. Sediment core logs from each of the sampled transects along the project site are included in **Appendix D**.

4.2.2 VibeCore

The coring device used within Seybold Canal was VibeCore-D (Specialty Devices, Inc.), a vibracoring system designed for small boat operation. This device was deployed by ARC

Surveying from a Monarch 24 vessel for the collection of sediment samples throughout the entire length of Seybold Canal. During the June-July 2008 field event, a total of 39 vibracore samples were collected from within Seybold Canal along 12 transects, including CH-33 through CH-44. Additional vibracore samples were collected at transect CH-39 to provide enough sediment volume for the elutriate samples. The vibracoring system used a core tube lowered to the sediment surface and vibrated until refusal. After the core had reached refusal, the sample was retrieved and brought to the surface. Core catchers were utilized to prevent core washout. As each core was retrieved, the sample was provided to the CH2M HILL field representative prior to setting up for collection of the subsequent sample. Sufficient sample volume was collected from each station to perform the required sediment chemistry and geotechnical analyses. Photos of the sediment sampling techniques are provided in **Appendix C**. Sediment core logs from each of the sampled transects along the project site are included in **Appendix D**.

4.2.3 Composite Samples

Upon retrieval of the sediment cores, the CH2M HILL field team extruded the sediment core recoveries from a specific transect into a stainless steel mixing bowl, described the lithology of the core, and then homogenized the sample using a stainless steel spoon. For sediment chemical and physical analyses, three sediment cores collected along a bank-to-bank transect from a single sample location were combined within the stainless steel mixing bowl to form a single composite sample for that transect location. However, sediment samples collected for volatile organic compound (VOC) analysis were immediately containerized to prevent the volatilization, after which additional sample was collected for all other chemical and physical parameters analysis.

4.2.4 Sediment Thickness

During the June-July 2008 field event, sediment thickness measurements at each of the 45 sampling transects within Wagner Creek and Seybold Canal were also collected to assist with the volume calculations of materials to be removed during the proposed dredging corrective action. ARC Surveying advanced a ¾-inch steel probing rod into the sediment at each sample core location by pounding with a hammer to refusal along each transect to determine the thickness of sediment deposits above the native dense hardpan. The sediment thickness measurements from each transect are included in Table 2-B.

4.2.5 Surface Water Samples

Surface water samples were collected during the June-July 2008 for both ambient water (approximately 9 L) and elutriate water (30 L) analyses at each of the transects CH-10, CH-20, CH-30, and CH-39. However, during the May 2009 field event, surface water samples were collected for elutriate (30 L) water analyses from transects E-01, E-02, and E-03 and for ambient (1 L) water analysis from E-02 only (dioxin analysis only). Sampling was conducted as close to the centerline of the channel as possible and with a peristaltic pump and dedicated sample tubing positioned at approximately mid-depth within the creek or canal at each location. All tubing used for surface water sampling was pre-cleaned and sent to the site double-bagged. The pump system was flushed by pumping an equivalent of 10 times the volume of collection tubing prior to sample collection. Sufficient water sample volume was collected from each of four stations to perform ambient water chemistry and to prepare dredging elutriate in triplicate. Samples for metals analysis were filtered through a 0.45-micron capsule filter in the laboratory.

4.2.6 Decontamination Procedures

Equipment used in the sediment sampling was properly decontaminated between each of the sampling stations/transects. Stainless steel mixing bowls and spoons used in the homogenizing of the sediment materials from each transect were decontaminated through a four-step process. The first step involved washing the equipment in a tub with tap water to remove the larger deposits of sediment materials still on the equipment, followed by cleaning in a liquinox/distilled water solution, followed by a rinse with deionized water, and finally by a rinse with free-flowing isopropanol. After the isopropanol rinse, the equipment was allowed to air-dry prior to being used with other sediment samples, or wrapped in aluminum foil for use the following day. Disposable nitrile gloves were used during decontamination process and were changed-out between each new set of equipment that was decontaminated.

4.3 Laboratory Analyses

All samples designated for analysis were collected in appropriate laboratory-supplied sample containers. All sediment samples were collected in glass jars of varying volumes depending upon the analysis. Once collected in the appropriate jar, all samples were labeled, packed on ice in a cooler, and delivered with proper chain-of custody to PEL Laboratories, a division of Spectrum Analytical, Inc., in Tampa, Florida via FedEx or another courier service. Dioxin samples, sediment and aqueous, were packed on ice in a cooler and delivered to Maxxam Analytics, Inc. in Mississauga, Ontario, Canada via FedEx.

All sediments collected during the June-July 2008 field event were analyzed for chemical and physical (grain size, bulk density, specific gravity) properties. The entire suite of chemical and physical analyses included:

- Dioxins/Furans (SW 846)
- Metals (TCLP and SW 846)
- VOCs (TCLP and SW 846)
- Semi-volatile organic compounds (SVOCs) (TCLP and SW 846)
- Pesticides/Herbicides (TCLP and SW 846)
- Polychlorinated biphenyls (PCBs) (SW 846)
- Polyaromatic Hydrocarbons (PAHs)/Polynuclear Aromatics (PNAs) (SW 846)
- Florida Petroleum Range Organics (FLPRO) for petroleum hydrocarbons
- Total Organic Carbon (Method 9060)
- Total Volatile Solids (Method 160.4)
- Ignitability and Corrosivity
- Specific Gravity
- Bulk Density
- Grain Size
- Percent Solids

Additional sediment cores were collected at four existing station locations for use in dredging elutriate preparation, as previously described. Ambient water was collected at these same locations for chemical analysis and for elutriate preparation. Ambient water and elutriate samples were analyzed for the same suite of chemical parameters (dioxins/furans, metals, VOCs, SVOCs, pesticides, and PCBs) as the sediment samples. A complete listing of the constituents and tests for the analytical methods is included **Appendix E**.

All sediment and ambient water samples collected during the May 2009 field event were only analyzed for dioxin/furans (SW 846). However, elutriate water samples were analyzed for the same chemical parameters (dioxins/furans, metals, VOCs, SVOCs, pesticides, PCBs, PAHs/PNAs, FLPRO, TOC, and TVS) as the sediment sample list from the June-July 2008 field event. A complete listing of the constituents and tests for the analytical methods is included **Appendix E**.

4.4 QA/QC Sample Analyses

Adherence to established USEPA chain-of-custody procedures during the collection, transport, and analyses of the samples was maintained throughout the June-July 2008 and May 2009 field sampling events. Laboratory analyses of the samples conformed to accepted QA requirements.

The following QA/QC samples were collected/prepared during the field activities to confirm precision, accuracy, representativeness, completeness, and comparability:

- Equipment rinsate blanks
- Trip blanks
- Field blanks
- Field duplicates
- Matrix Spike/Matrix Spike Duplicates (MS/MSDs)

Field duplicates were collected at transects CH-14, CH-19, CH-24, CH-29, and CH-36 during the June-July 2008 field event and at transect CH-02-06 during the May 2009 field event. Field duplicate samples were collected at the same time as the regular sample and adjacent to the location of the regular sample in order to assess any variability in the distribution of constituents in the media. Duplicate samples were identified with the “Dup” label after the sample station identification.

Equipment rinsate blanks were collected during the June-July 2008 and May 2009 field events by running laboratory-supplied de-ionized water over/through the sampling equipment and placing them into the appropriate sample containers for laboratory analyses. Equipment rinsate blanks were collected from selected sampling equipment (sample tubing, stainless steel spoon or bowl, etc.). The results were used to verify that the sampling equipment had not contributed to contamination of the samples.

One field blank of the deionized water used in decontamination was collected. The field blank was collected by pouring the water from the original container or spigot directly into the sample bottle set. Appropriate efforts were made not to collect the field blanks in dusty environments. The results were used to verify that the water used in decontamination had not contributed to contamination of the samples.

5. Summary of Analytical Results

The analytical results from the June-July 2008 and May 2009 field events are summarized below for each of the six Operational Sections of the project site. Dioxin concentrations are presented as a Toxic Equivalent (TEQ) that is determined by the summation of the dioxin or furan congener concentrations (reported in picograms/gram) multiplied by their respective toxic equivalency factor (TEF). TEFs are multiplier values used to measure the relative toxicity of a specific dioxin or furan congener in terms of the most toxic form of dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]). The World Health Organization (WHO) through the International Programme on Chemical Safety (IPCS) re-evaluated the risk-based TEF values for humans and mammals, birds, and fish in 2005. The dioxin TEQ values within this report have been calculated using the 2005 WHO-TEFs (http://www.who.int/ipcs/assessment/tef_update/en/).

5.1 Operational Section (OS) 1 (NW 20th Street to NW 14th Avenue)

June-July 2008 Sampling Event

OS-1 includes transects CH-1, CH-2, CH-3, CH-4, CH-5, CH-6, CH-7, and CH-8 (**Figure 2**).

Physical Characteristics

Grain size of the sediment materials within the channel of OS-1 ranged from 0.7% to 19% gravels; 16.5% to 75.8% sands; and 21.1% to 82.8% fines (**Table 2-A**). The specific gravity of the sediments ranged from 2.48 to 2.55 and the bulk density ranged from 1.62 to 1.66 grams per cubic centimeter (g/cm^3) (1.36 to 1.40 tons/cubic yard [yd^3]). The sediment deposits were classified generally as a gray silt with sand with organics and with the Unified Soil Classification System (USCS) symbol of ML. Sediment thickness measurements averaged 3.1 feet within OS-1 (**Table 2-B**).

Bulk Sediment Chemistry/ Characteristics

pH: The pH in OS-1 ranged from 7.51 in CH-1 to 8.23 in CH-7 (**Table 3-A**).

Metals: Lead was reported at all of the sampling transects in OS-1 (CH-2, CH-4, CH-6 and CH-8), with its highest concentration of 3,610 milligrams per kilogram (mg/kg) in CH-2. Arsenic, barium, cadmium, chromium (total), nickel, and silver were also reported at all the sampling transects in OS-1 and with the highest concentrations at transect CH-2 of 29.4 mg/kg, 340 mg/kg, 57.6 mg/kg, 130 mg/kg, 42.7 mg/kg, and 23.5 mg/kg, respectively. Mercury was reported at all transects and with the highest concentration of 16.4 mg/kg at transect CH-4.

PCBs and Pesticides: DDT was reported only at transect CH- 4 in OS-1, at a concentration of 1.6 micrograms per kilogram (µg/kg). DDE was reported at all sampling transects in OS-1, with a maximum concentration of 21 µg/kg at transect CH-6. Aroclor-1242 was also reported at all transects, with its highest concentration of 860 µg/kg at transect CH-2. The congeners of Aroclor-1254 and Aroclor-1260 were also reported at CH-2 at the concentrations of 820 ug/kg and 410 ug/kg, respectively.

VOCs: In OS-1, acetone, carbon disulfide, 2-butanone (methyl ethyl ketone [MEK]) and methylene chloride were the only VOCs reported. Acetone was reported at elevated concentrations among all VOCs reported, with a maximum concentration of 92.1 µg/kg at transect CH-6. Most of these are also common laboratory contaminants used in sample extraction and as rinsate solvents of the analytical equipment.

SVOCs: Polyaromatic hydrocarbons (PAHs), which include fluoranthene, pyrene, chrysene, indeno(1,2,3-c,d)pyrene, phenanthrene, benzo(g,h,i)perylene, benzo(a)pyrene and benzo(a)anthracene, were reported at all transects in OS-1. Highest concentrations of benzo(a)pyrene and benzo(a)anthracene were reported at transect CH-4 at 684 µg/kg and 610 µg/kg, respectively. Benzo(b)fluoranthene was also reported at all transects, with a maximum concentration of 871 µg/kg at transect CH-2. Bis(2-ethylhexyl)phthalate was reported at all transects, with its highest concentration of 4,620 µg/kg at transect CH-4.

Total PAHs: The total PAHs were reported to be highest at transect CH-2 in OS-1, with a concentration of 6,354 µg/kg. This was followed by the concentration of 6,066 µg/kg at transect CH-4 and 3,598 µg/kg at transect CH-8. The total PAHs minimum concentration of 2,445 µg/kg was reported at transect CH-6.

Dioxins: The dioxins reported as 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,4,7,8-TCDD) toxicity equivalent (TEQ) values in OS-1 were found to be highest among all operational sections (**Table 3-B**). The highest dioxin TEQ value from OS-1 was detected at transect CH-8 (5,700 picograms per gram [pg/g] or parts per trillion (ppt)), followed by transect CH-4 (2420 pg/g), transect CH-6 (951 pg/g), and transect CH-2 (356 pg/g). The highest 2,4,7,8-TCDD level was also reported at transect CH-8 (378 pg/g) followed by transects CH-4 (116 pg/g), CH-6 (40.5 pg/g) and CH-2 (17.0 pg/g). The least toxic of the dioxin congeners, octachlorodibenzo-p-dioxin (OCDD) (TEF of 0.0003) was reported with the highest concentrations ranging from 32,100 pg/g (CH-2) to 113,000 pg/g (CH-6) in OS-1.

TCLP: Arsenic, barium, chromium (total), lead, and nickel were reported at all sampling transects in OS-1 (CH-1, CH-3, CH-5 and CH-7). The highest concentrations of arsenic, barium, and lead were reported at transect CH-3 at concentrations of 0.136 milligram per liter (mg/L), 0.68 mg/L, and 0.306 mg/L, respectively. Although benzene was reported at all waste characterization transects of OS-1 (highest concentration of 4.2 µg/L), benzene was not reported in any of the bulk chemistry transects (CH-2, CH-4, CH-6, and CH-8) and therefore its presence in the TCLP samples may be due to one or more laboratory processes. No other organic chemicals were reported in the TCLP results.

May 2009 Sampling Event

This effort was focused on further defining the lateral extent of the dioxins within the sediments of OS-1.

Dioxins: The dioxins toxic equivalent quantity (TEQ) values in OS-1 during the May 2009 sampling event ranged from 4,980 pg/g at the furthest upstream transect CH-02-01 of this sampling event down to 531 pg/g at transect CH-02-06. The congener 2,3,7,8-TCDD was reported at transect CH-01-01 (299 pg/g), CH-02-03 (67 pg/g), and CH-02-06 (22.5 pg/g).

The elevated dioxin TEQs reported in sediments collected at transects CH-02-01 (4,980 pg/g), CH-02-02 (1,880 pg/g) and CH-02-03 (1,110 pg/g) are located within a section of the Wagner Creek channel where elevated dioxin TEQs have historically been reported at elevated levels, including 3,207 pg/g at WC-4 (PHS, 2003) and 2,420 pg/g at CH-04 (CH2M HILL, 2008).

Aqueous Surface Water (E-02)

Dioxin: The dioxin TEQ value in water was reported to be 0.00051 picograms per liter (pg/L). No 2,3,7,8-TCDD was reported in the water samples which has less chlorine atoms within its molecular structure and thus is more soluble of the congeners (**Table XX**).

Elutriate Surface Water (E-01, E-02, and E-03)

General Chemistry: The pH of the elutriates ranged from 7.37 (E-01) to 7.62 (E-02) (**Table XX**).

Metals: Arsenic, barium, chromium (total), and lead were reported in all elutriate samples (elutriates E-01, E-02, and E-03). Average concentrations ranged from 0.00395 mg/L (E-02) to 0.00787 mg/L (E-03) for arsenic, 0.0942 mg/L (E-03) to 0.109 (E-01 and E-02) for barium, 0.00275 mg/L (E-01) to 0.00929 mg/L (E-02) for chromium (total), and 0.00957 mg/L (E-02) to 0.0117 mg/L (E-03) for lead. All of these inorganic chemicals also occur in ambient surface waters.

PAH: Fluorene and pyrene were the only PAHs that were reported in all three elutriate samples with the highest average concentrations of 0.17 µg/L (E-03) and 0.16 µg/L (E-02), respectively. However, 2-methylnaphthalene was reported in E-02 at 0.32 µg/L and acenaphthene and phenanthrene were both reported in E-01 at 0.071 µg/L and 0.0747 µg/L, respectively.

Pesticides: No pesticides were reported in any of the elutriates (E-01, E-02, and E-03).

SVOCs: Diethylphthalate was reported in elutriates E-02 and E-03, with an average concentration of 6.8 µg/L.

TPH: TPH was not reported in any of the elutriates (E-01, E-02, and E-03).

VOC: Acetone and methylene chloride were reported in elutriates E-01 and E-03. Both acetone and methylene chloride are common lab contaminants.

Dioxin: The dioxin TEQ values of the elutriate samples ranged from 0.339 pg/L (E-02) to 4.73 pg/L (E-03) (**Table XX**). The congener 2,3,7,8-TCDD was not reported in any of the elutriates samples, although the congener 1,2,3,7,8-pentachlorodibenzo-p-dioxin (1,2,3,7,8-PCDD) was reported at 1.46 pg/L in both elutriates E-01 and E-03. Dioxin molecules sorbed to suspended particulates in the elutriate samples may be contributing to the reported concentrations.

By comparing the analytical results of the surface water sample from E-02 with the elutriate water sample from E-01, E-02, and E-03, it appears that the agitation and mixing of the sediment/water samples as part of the elutriate simulation in the laboratory resulted in only a slight increase in concentrations of dioxins. Dioxin TEQ concentrations increased from a value of 0.00051 pg/L in the one ambient surface water sample (E-02) to an average concentration of 4.73 pg/L in E-03, likely from dioxin molecules sorbed to suspended sediment particles in the elutriate. Dioxins have a very low water solubility and, due to their high affinity to bind to sediment organics, remain tightly sorbed to any sediments particles in fine grained deposits and associated organic matter. The suspension of the fine grained sediment particles and colloidal materials in the water column as a result of the agitation and mixing process of the elutriate sample simulation would be expected.

5.2 OS-2 (NW 14th Avenue to NW 15th Street)

June-July 2008 Sampling Event

OS-2 includes transects CH-9, CH-10, CH-11, CH-12, CH-13, CH-45, CH-14, and CH-15 (**Figure 3**). In addition, surface water samples were collected for aqueous and elutriate analyses at CH-10.

Physical Characteristics

Grain size of the sediment materials within the channel of OS-2 ranged from 1.4% to 8.5% gravels; 17.1% to 64.3% sands; and 33.9% to 80.9% fines (**Table 2-A**). The specific gravity of the sediment ranged from 2.5 to 2.58 and the bulk density ranged from 1.63 to 1.66 g/ cm^3 (1.37 to 1.40 tons/ yd^3). The sediment deposits were classified as mainly gray silt with sand with organics and the general USCS symbol of ML. Sediment thickness measurements averaged 6.4 feet within OS-2 (**Table 2-B**).

Bulk Sediment Chemistry/ Characteristics

pH: The pH in OS-2 ranged from 7.45 (CH-15) to 8.02 (CH-11) (**Table 4-A**).

Metals: Lead was reported at all of the sampling transects in OS-2 (CH-10, CH-12 and CH-14), with its highest concentration of 1,230 mg/kg at CH-12. Barium, cadmium, chromium (total), nickel, silver, and mercury were also reported at all the sampling transects, with elevated concentrations at transect CH-12 of 76 mg/kg, 21.4 mg/kg, 393 mg/kg, 16.9 mg/kg, 2.25 mg/kg, and 2.46 respectively. Arsenic was also reported at all transects, with a maximum concentration of 50.3 mg/kg at transect CH-14.

PCBs and Pesticides: In OS-2, DDT was reported at transects CH-12 (8.7 µg/kg) and CH-14 (2.2 µg/kg in CH-14 Dup and 1.8 µg/kg in CH-14). DDE was reported at all three transects in OS-2, with a maximum concentration of 13 µg/kg. Chlordane was only reported at transect CH-10 at a concentration of 38 µg/kg. Aroclor-1254 was reported at all transects in OS-2, with a maximum concentration of 1,000 µg/kg at CH-12.

VOCs: o-xylene (1,2-Dimethylbenzene) was reported at transects CH-12 and CH-14, with its highest concentration of 0.0022 mg/kg at CH-12. Acetone, carbon disulfide, 2-butanone (MEK), and methylene chloride were detected at all transects of OS-2, with a maximum concentration of acetone of 140 µg/kg at CH-12. As previously indicated, many of the reported VOCs including acetone, MEK, and methylene chloride are also common laboratory contaminants used in sample extraction and as rinsate solvents of the analytical equipment.

SVOCs: PAHs, including benzo(b)fluoranthene, fluoranthene, pyrene, chrysene, benzo(a)pyrene, benzo(a)anthracene, benzo(k)fluoranthene and phenanthrene were reported at all transects in OS-2, with maximum concentrations at transect CH-12 of 24,000 µg/kg, 36,500 µg/kg, 21,200 µg/kg, 17,700 µg/kg, 15,500 µg/kg, 13,400 µg/kg, 15,200 µg/kg, and 11,000 µg/kg, respectively. Bis(2-ethylhexyl)phthalate was also reported at all transects in OS-2, with a maximum concentration of 3,780 µg/kg at CH-14. PAHs are commonly occurring in urban environments due to presence of asphalt material that contains high levels of PAHs, as well as to a lesser extent from burned fuel oils (ATSDR, 1995).

Total PAHs: In OS-2, the total PAHs were reported to be highest at transect CH-12, with a concentration of 162,583 µg/kg. Total PAHs were also reported as high as 11,348 µg/kg at transect CH-14-Dup and 40,161 µg/kg at transect CH-14.

Dioxins: The highest dioxin TEQ value from OS-2 was detected at transect CH-12 (2,050 pg/g) followed by 523 pg/g at transect CH-14 (328.62 pg/g in CH-14 Dup) and CH-10 (165 pg/g) (**Table 4-B**). The trend was the same for the concentration profile of 2,3,7,8-tetrachlorodibenzo-p-dioxin, the congener with the greatest TEF, which was reported to be maximum at CH-12 (48.9 pg/g) followed by CH-14 (11.0 pg/g in CH-14 Dup). Although the congener octachlorodibenzo-p-dioxin (OCDD) was reported with the highest concentrations ranging from 49,200 pg/g (CH-10) to 288,000 pg/g (CH-6) in OS-2, the relative toxicity of the congener is low and therefore has the lowest TEF value (0.0003).

TCLP: Lead was reported at elevated concentrations at all sampling transects (CH-9, CH-11, CH-13, CH-15 and CH-45) in OS-2, with its highest concentration of 1.23 mg/L at CH-13. Elevated concentrations were also reported for barium and arsenic at CH-13: 0.366 mg/L and 0.164 mg/L, respectively.

Aqueous Surface Water (CH-10)

General Chemistry: The pH of the aqueous surface water sampled was 7.34 (**Table 5-A**). Total organic carbon was reported to be 4.46 mg/L and total volatile solids were 233 mg/L.

Dissolved Metals: Arsenic, barium, chromium (total), and nickel were reported at concentrations of 0.00597 mg/L, 0.0292 mg/L, 0.00158 mg/L and 0.000719 mg/L, respectively, as dissolved metals in water.

Metals: Arsenic, barium, chromium (total), and lead were reported at concentrations of 0.00748 mg/L 0.0305 mg/L, 0.00105 mg/L, and 0.00432 mg/L, respectively.

PAH: Fluoranthene was reported at 0.095 µg/L.

Pesticides: No pesticides were reported in surface water sampled at transect CH-10.

SVOCs: Di-n-butyl phthalate was reported at 8.5 µg/L.

TPH: TPH was not detected.

VOCs: Toluene was reported at 0.62 µg/L.

Dioxin: The dioxin TEQ value in water was reported to be 0.266 picograms per liter (pg/L). No 2,3,7,8-TCDD was reported (**Table 5-B**).

Elutriate Surface Water (CH-10)

General Chemistry: The pH of elutriates at transect CH-10 averaged 7.97 (**Table 5-A**). Total organic carbon averaged 4.94 mg/L and total volatile solids values averaged 357.3 mg/L.

Metals: Arsenic, barium, chromium (total), lead, and nickel were reported in all elutriates (elutriates 1, 2, and 3) with average concentrations of 0.0156 mg/L, 0.0399 mg/L, 0.00256, mg/L, 0.00838 mg/L, and 0.000812 mg/L, respectively.

PAH: Benzo(b)fluoranthene, fluoranthene, phenanthrene, and pyrene were reported in elutriate 1 with concentrations of 0.22 µg/L, 0.37 µg/L, 0.14 µg/L, and 0.19 µg/L, respectively. No PAHs were reported in either elutriate 2 or elutriate 3.

Pesticides: Heptachlor was reported at a concentration of 0.002 µg/L in elutriate 2. However, no pesticides were reported in elutriate 1 and elutriate 3.

SVOCs: Bis(2-ethylhexyl)phthalate was reported in all elutriates, with an average concentration of 9.4 µg/L.

TPH: TPH was not reported in the elutriates at transect CH-10.

VOC: Acetone and methylene chloride were reported in all three elutriates, with average concentrations of 164.3 µg/L and 25.1 µg/L, respectively. Methyl tert-butyl ether (MTBE) was reported only in elutriate 2, at a concentration of 0.59 µg/L.

Dioxin: The dioxin TEQ values of the elutriate samples averaged 17.32 pg/L (**Table 5-B**). The highest concentration (160.8 pg/L) was reported for hexachlorinated dibenzofurans (total), although this concentration is not reflective of the TEQ calculations. The congener 2,3,7,8-tetrachlorodibenzo-p-dioxin was not reported in any of the elutriates from CH-10.

By comparing the analytical results of the surface water sample from CH-10 with the elutriate water sample from CH-10, it appears that the agitation and mixing of the sediment/water samples as part of the elutriate simulation in the laboratory resulted in increasing the concentrations of some VOCs, PAHs, pesticides, and metals. Total PAHs increased from 0.095 µg/L in the surface water sample to an average of 0.92 µg/L in the elutriate samples. In addition, dioxin TEQ concentrations increased substantially from 0.325 pg/L in the surface water sample to an average of 22.8 pg/L in the elutriate samples.

Dioxins have a very low water solubility and, due to their tricyclic aromatic chemical structures, remain tightly sorbed to any fine grained deposits and organic matter. PAHs also remain tightly sorbed to sediment materials due to their polyaromatic chemical structures. The suspension of the fine grained sediment particles and colloidal materials in the water column as a result of the agitation and mixing process of the elutriate sample simulation would be expected. Detected concentrations of dioxins and PAHs in the elutriate samples from location CH-10 as compared to the surface water sample collected from the same location may actually be attributed to the fine suspended particles that pass through the laboratory filtration process (0.45-micron filter) during the simulation sample preparation.

May 2009 Sampling Event

Dioxins: The dioxins toxic equivalent quantity (TEQ) values in OS-2 during the May 2009 sampling event ranged from 496 pg/g at the transect CH-02-09 of this sampling event down to 129 pg/g at transect CH-02-07. The congener 2,3,7,8-TCDD (TEF of 1), was reported at low levels in all four transects within OS-2 including CH-02-07 (3.99 pg/g), CH-02-08 (14.2 pg/g), CH-02-09 (13.1 pg/g) and CH-02-10 (7.15 pg/g). Although lower dioxin as TCDD equivalents (TEQs) were reported in sediments collected at transects CH-02-09 (496 pg/g) and CH-02-10 (193 pg/g), an elevated dioxin TEQ was reported in between CH-02-09 and CH-02-10 during the June-July 2008 field event at transect CH-12 (2,049 pg/g). Overall, the dioxin TEQ values within OS-2 are lower that the values reported from OS-1 of Wagner Creek.

5.3 OS-3 (NW 15th Street to NW 14th Street)

OS-3 includes transects CH-16, CH-17, CH-18, CH-19, CH-20, and CH-21 (**Figure 4**). In addition, CH-20 also includes surface water samples for aqueous and elutriate analyses.

Physical Characteristics

Grain size of the sediment materials within the channel of OS-3 ranged from 0.2% to 1.9% gravels; 6.9% to 33% sands; and 65.2% to 91.8% fines (**Table 2-A**). The specific gravity of sediment ranged from 2.51 to 2.64 and the bulk density ranged from 1.61 to 1.66 g/cm^3 (1.36 to 1.40 tons/ yd^3). The sediment deposits were classified completely as gray silt with sand with organics and the USCS symbol of ML. Sediment thickness measurements averaged 3.5 feet within OS-3 (**Table 2-B**).

Bulk Sediment Chemistry/ Characteristics

pH: The pH of OS-3 was in the range of 7.45 (CH-21) to 7.65 (CH-17) (**Table 6-A**).

Metals: Lead was reported at all of the sampling transects within OS-3 (CH-16, CH-18 and CH-20), with the highest concentration of 664 mg/kg at CH-16. Arsenic was detected only at transects CH-18 (20.6 mg/kg) and CH-20 (13.6 mg/kg). Barium and mercury were reported at all transects, with highest concentrations at CH-20 (60.2 mg/kg and 0.906 mg/kg, respectively). Elevated concentrations of cadmium, chromium (total), nickel, and silver were also reported at transect CH-16 (10.4 mg/kg, 105 mg/kg, 19.2 mg/kg, and 2.16 mg/kg, respectively).

PCBs and Pesticides: In OS-3, DDE was reported at all the sampling transects, with its highest concentration of 9.3 µg/kg at CH-16. Aroclor-1254 and Aroclor-1260 were also reported at all transects, with highest concentrations at CH-16 of 28 µg/kg and 24 µg/kg, respectively.

VOCs: Acetone, carbon disulfide, 2-butanone (MEK), and methylene chloride were detected at all transects in OS-3, with the highest concentration of acetone of 61 µg/kg at CH-20. MTBE was reported at transects CH-18 and CH-20, with a maximum concentration of 1.5 µg/kg at CH-18.

SVOCs: PAHs, including fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, pyrene, benzo(a)pyrene, chrysene, benzo(a)anthracene, and phenanthrene, were reported in all transects in OS-3, with elevated concentrations at transect CH-16 of 6,680 µg/kg, 5,370 µg/kg, 4,840 µg/kg, 3,980 µg/kg, 3,290 µg/kg, 3,240 µg/kg, 2,090 µg/kg, and 1,420 µg/kg, respectively. Bis(2-ethylhexyl)phthalate was also reported at all transects, with a maximum concentration of 4,000 µg/kg at CH-16.

Total PAHs: Total PAHs were reported highest at transect CH-16, with the concentration of 32,002 µg/kg in OS-3. The concentrations that were reported at transect CH-18 and CH-20 were 13,993 µg/kg and 3650 µg/kg, respectively.

Dioxins: The highest TEQ value within OS-3 was reported at transect CH-16 (691.53 pg/g), followed by transect CH-18 (377.76 pg/g) and transect CH-20 (329.08 pg/g) (**Table 6-B**). The trend was similar for the congener 2,3,7,8-TCDD concentration profile, with elevated concentrations at CH-16 (14.3 pg/g) followed by CH-18 (7.92 pg/g) and CH-20 (7.84 pg/g). Although the congener OCDD was reported with concentrations ranging from 98,600 pg/g (CH-20) to 220,000 pg/g (CH-16) in OS-3, the relative toxicity of this congener is low and therefore has the lowest TEF value (0.0003).

TCLP: In OS-3, barium and lead were reported in high concentrations at all sampling transects (CH-17, CH-19 and CH-21). Maximum concentrations of barium and lead were reported at CH-21 (1.28 mg/L) and CH-19 (0.719 mg/L), respectively. No organic chemicals from the leaching procedure were detected.

Aqueous Surface Water (CH-20)

General Chemistry: The pH of the aqueous surface water within OS-3 was 7.36 (**Table 5-A**). Total organic carbon was reported at 3.66 mg/L and total volatile solids at 257 mg/L.

Dissolved Metals: Arsenic, barium, and chromium (total) were reported at concentrations of 0.00555 mg/L, 0.0224 mg/L, and 0.00142 mg/L, respectively, as dissolved metals in water.

Metals: Arsenic, barium, chromium (total), and lead were reported at concentrations of 0.00814 mg/L 0.0247 mg/L, 0.00152 mg/L, and 0.00399 mg/L, respectively.

PAH: Fluoranthene and pyrene were reported at concentrations of 0.12 µg/L and 0.074 µg/L, respectively.

Pesticides: No pesticides were reported.

SVOC: Di-n-butyl phthalate was reported at 8.1 µg/L.

TPH: No TPH was reported in surface water.

VOCs: No VOCs were reported in surface water.

Dioxins: The TEQ value for dioxins contamination in water at transect CH-20 was reported to be 1.62 pg/L (**Table 5-B).** The congener 2,3,7,8-tetrachlorodibenzo-p-dioxin was not reported.

Elutriate Surface Water (CH-20)

General Chemistry: The pH of elutriates at transect CH-20 was reported as 8.14 (**Table 5-A**). Total organic carbon was reported as 4.2 mg/L and total volatile solids was reported as 290 mg/L.

Metals: Arsenic, barium, and chromium (total) were reported in all elutriates (elutriate 1, 2, and 3) at transect CH-20, with average concentrations of 0.0154 mg/L, 0.0595 mg/L, and 0.0032 mg/L, respectively. Lead was reported in elutriate 1 and 2 at an average concentration of 0.007255 mg/L. Mercury was reported only in elutriate 3, at a concentration of 0.00000367 mg/L.

PAH: Fluoranthene was reported in elutriate 3 at transect CH-20 at a concentration of 0.14 µg/L. No PAHs were reported in elutriate 1 or elutriate 2.

Pesticides: No pesticide was reported in any elutriate at transect CH-20.

SVOC: bis(2-ethylhexyl)phthalate was reported in elutriate 2 and elutriate 3, at an average concentration of 9.15 µg/L.

Petroleum hydrocarbons: TPH was reported at 0.34 mg/L in elutriate 1 at transect CH-20. TPH was not reported in elutriate 2 or elutriate 3.

VOC: Acetone and methylene chloride were reported in all three elutriates with average concentrations of 70.8 µg/L and 18.6 µg/L, respectively.

Dioxins: The dioxins TEQ value of elutriates at transect CH-20 was reported as 2.27 pg/L (**Table 5-B**). The highest concentration (of 646 pg/L) was reported for OCDD, while heptachlorinated dibenzo-p-dioxins (HPCDD) was reported at a concentration of 116 pg/L. The congener 2,3,7,8-TCDD was not reported in any elutriates.

By comparing the analytical results of the surface water sample from CH-20 with the elutriate water sample from CH-20, it appears that the agitation and mixing of the sediment/water samples as part of the elutriate simulation in the laboratory resulted in only slight increases in concentrations of some VOCs and metals. While the metals concentrations almost doubled due to the agitation and mixing process, total PAHs actually decreased slightly from 0.19 µg/L (surface water) to an average of 0.14 µg/L (elutriate water). In addition, dioxin TEQ concentrations decreased slightly from 2.94 pg/L in the surface water sample to an average of 2.14 pg/L in the elutriate samples from CH-20.

5.4 OS-4 (NW 14th Street to SR 836)

OS-4 includes transects CH-22, CH-23, CH-24, and CH-25 (**Figure 5**).

Physical Characteristics

Grain size of the sediment materials within the channel of OS-4 ranged from 1.5% to 17.6% gravels; 13.2% to 87.4% sands; and 8.4% to 69.3% fines (**Table 2-A**). The specific gravity of sediment ranged from 2.48 to 2.52 and the bulk density ranged from 1.64 to 1.68 g/ cm^3 (1.38 to 1.42 tons/ yd^3). The sediment deposits are classified as a combination of gray silt with sand and rocks with organics and gray silty sand with organics and USCS symbols of ML and SM. Sediment thickness measurements averaged at 4.0 feet within OS-4 (**Table 2-B**).

Bulk Sediment Chemistry/ Characteristics

pH: The pH of OS-4 was in the range of 7.95 (CH-23) to 8.87 (CH-25) (**Table 7-A**).

Metals: Lead, chromium, barium, nickel, and mercury were reported at all transects in OS-4 (CH-22 and CH-24) with elevated concentrations of 438 mg/kg, 91.9 mg/kg, 19.5 mg/kg, 6.6 mg/kg, and 0.412 mg/kg, respectively. Arsenic was reported at a maximum concentration of 14.3 mg/kg at transect CH-22. Cadmium was reported at 0.935 mg/kg in the CH-24Dup but not from transect CH-22 or the regular sample from CH-24.

PCBs and Pesticides: DDT was reported at both sampling transects of OS-4 (CH-22 and CH-24), with its highest concentration of 9.6 µg/kg from CH-24Dup. Additionally, DDT, DDE, DDD, chlordane, and dieldrin were reported at elevated concentrations of 35 µg/kg, 38 µg/kg, 120 µg/kg, and 15 µg/kg, respectively, from transect CH-24. Aroclor-1242 and Aroclor-1254 were both reported at a maximum concentration of 78 µg/kg at transect CH-24.

VOC: Acetone, carbon disulfide, 2-butanone (methyl ethyl ketone), and methylene chloride were detected at both transects of OS-4, with the highest concentration of acetone (0.0479 mg/kg) at CH-22. No benzene was reported in OS-4.

SVOC: PAHs, including fluoranthene, benzo(b)fluoranthene, pyrene, benzo(k)fluoranthene, chrysene, benzo(a)pyrene, and benzo(a)anthracene were reported at all sampling transects in OS-4, with elevated concentrations at transect CH-24 of 2,580 µg/kg, 1,880 µg/kg, 1,500 µg/kg, 1,220 µg/kg, 1,160 µg/kg, 1,080 µg/kg, and 862 µg/kg, respectively. Phenanthrene was reported at 716 µg/kg at transect CH-24 (Dup) but not at transect CH-22. Bis(2-ethylhexyl)phthalate was also reported at all transects, with a maximum concentration of 3,770 µg/kg at CH-24 (Dup). As previously stated, PAHs are likely to be associated with asphalt or other burned oil materials that are common to urban environments.

Total PAHs: The total PAHs were reported to be highest at transect CH-24 Dup, with their highest concentration of 11,788 µg/kg from OS-4. The concentration of total PAHs reported at transect CH-24 was 5,452 µg/kg. The minimum concentration in OS-4 (1,262 µg/kg) was reported at transect CH-22.

Dioxins: The highest TEQ value from OS-4 was reported at transect CH-24 (203.01 pg/g) followed by transect CH-22 (184.58 pg/g) (**Table 7-B**). The congener of 2,3,7,8-RCDD was reported at 3.1 pg/g at transect CH-22, but was not reported in either samples CH-24 or CH-24Dup. Although the congener OCDD was reported with the highest concentrations ranging from 91,200 pg/g (CH-22) to 92,400 pg/g (CH-24) in OS-4, the relative toxicity of this congener is low and therefore has the lowest TEF value (0.0003).

TCLP: Arsenic, barium, and lead were reported at their maximum concentrations at transect CH-23 of 0.169 mg/L, 0.135 mg/L, and 0.123 mg/L, respectively. At transect CH-25, arsenic, barium, and lead were reported at 0.0603 mg/L, 0.0781 mg/L, and 0.0657 mg/L, respectively. Maximum concentrations of chromium and nickel were reported at CH-23, at 0.00606 mg/L and 0.0128 mg/L, respectively.

5.5 OS-5 (SR 836 to NW 11th Street)

OS-5 includes transects CH-26, CH-27, CH-28, CH-29, CH-30, CH-31, and CH-32 (**Figure 6**). Additionally, surface water was collected at CH-30 for aqueous and elutriate analyses.

Physical Characteristics

Grain size of the sediment materials within the channel of OS-5 ranged from 2.2% to 23.6% gravels; 37% to 68% sands; and 14.4% to 57.8% fines (**Table 2-A**). The specific gravity of sediment materials ranged from 2.5 to 2.59 and the bulk density ranged from 1.61 to 1.66 g/cm^3 (1.36 to 1.40 tons/ yd^3). The sediment deposits were classified mainly as gray silt with sand with rocks/shell with organics and a USCS symbol of SM. Sediment thickness measurements averaged 3.9 feet within OS-5 (**Table 2-B**).

Bulk Sediment Chemistry/ Characteristics

pH: The pH of OS-5 was in the range of 7.71 (CH-29Dup) to 8.2 (CH-27) (**Table 8-A**).

Metals: Lead, chromium (total), barium, nickel, mercury, and silver were reported at all sampling transects in OS-5 (CH-26, CH-28, CH-30, and CH-32). Lead, chromium (total), barium, and cadmium were reported with maximum concentrations of 229 mg/kg, 109mg/kg, 15.7 mg/kg, and 1.53 mg/kg, respectively, at transect CH-30. No cadmium was reported at transect CH-32. Mercury, nickel, and silver were reported at highest concentrations of 0.378 mg/kg, 10.3 mg/kg, and 0.655 mg/kg, respectively, at transect CH-28.

PCBs and Pesticides: DDT was reported at transects CH-26, CH-28, and CH-32, with its highest concentration of 2.2 µg/kg at transect CH-28. DDE was reported at all sampling transects in OS-5, with its highest concentration of 18 µg/kg at transect CH-30. Chlordane was also reported at CH-26, CH-28, and CH-32, with a maximum concentration of 33 µg/kg at transect CH-32. Aroclor-1242 was reported at all sampling transects, with its highest concentration of 160 µg/kg at transect CH-30.

VOCs: Methylene chloride was reported at all sampling transects, with a maximum concentration of 0.033 mg/kg at transect CH-28. Naphthalene was reported at transect CH-30, at a concentration of 0.00075 mg/kg. Acetone was reported at three transects (CH-28, CH-30, and CH-32), with a maximum concentration of 0.0521 mg/kg at transect CH-28.

SVOCs: PAHs, including fluoranthene, pyrene, benzo(b)fluoranthene, chrysene, benzo(a)pyrene, benzo(a)anthracene, and benzo(k)fluoranthene were reported at all sampling transects in OS-5, with elevated concentrations at transect CH-28 of 12,500 µg/kg, 7,180 µg/kg, 8460 µg/kg, 7,100 µg/kg, 5,790 µg/kg, 5,100 µg/kg, and 6,560 µg/kg, respectively. Phenanthrene and anthracene were reported at transects CH-26, CH-28, and CH-32, with maximum concentrations of 1530 µg/kg and 423 µg/kg, respectively, at transect CH-28. Bis(2-ethylhexyl)phthalate was reported at all sampling transects, with a maximum concentration of 2,770 µg/kg at CH-28.

Total PAHs: The highest concentration of total PAHs (56,638 µg/kg) was reported at transect CH-28 in OS-5. This was followed by concentrations at transect CH-32 and CH-26 of 7,262 µg/kg and 3,664 µg/kg, respectively. The minimum concentration (1039 µg/kg) was reported at transect CH-30.

Dioxins: The highest TEQ value from OS-5 was reported at transect CH-28 (147.88 pg/g) followed by transect CH-26 (124.14 pg/g), CH-30 (120.43pg/g) and CH-32 (69.73 pg/g) (**Table 8-B**). The congener 2,3,7,8-tetrachlorodibenzo-p-dioxin was reported at transect CH-28 (3.88 pg/g) and transect CH-30 (1.8 pg/g), but not at either transects CH-26 or CH-32. Although the congener octachlorodibenzo-p-dioxin (OCDD) was reported with the highest concentrations ranging from 32,700 pg/g (CH-32) to 51,600 pg/g (CH-26) in OS-5, the relative toxicity of the congener is low and therefore has the lowest TEF value (0.0003).

TCLP: Arsenic, barium, chromium (total), lead, and nickel were reported in all sampling transects (CH-27, CH-29, and CH-31). Lead was reported at a maximum concentration of 0.176 mg/L at transect CH-27. Barium and arsenic were reported at elevated concentrations of 0.309 mg/L and 0.123 mg/L, respectively, at transect CH-31 and chromium (total) was reported to be highest at 0.0127 mg/L at transect CH-29.

Aqueous Surface Water (CH-30)

General Chemistry: The pH of the aqueous surface water was 7.35 (**Table 5-A**). Total organic carbon was reported at 4.19 mg/L and total volatile solids at 398 mg/L.

Dissolved Metals: Barium, chromium (total), and lead were reported at concentrations of 0.0206 mg/L, 0.00302 mg/L, and 0.0055 mg/L, respectively, as dissolved metals in water.

Metals: Barium, chromium (total), lead, and silver were reported at concentrations of 0.0232 mg/L, 0.00391mg/L, 0.00506 mg/L, and 0.000633 mg/L, respectively.

PAHs: No PAHs were reported in surface water.

Pesticides: No pesticides were reported in surface water.

SVOCs: No SVOCs were reported in surface water.

TPH: No TPH was reported.

VOCs: No VOCs were reported in the surface water.

Dioxins: The TEQ value for dioxin contamination in water at transect CH-30 was reported to be 1.06 pg/L (**Table 5-B**). The congener 2,3,7,8-TCDD was not reported. The OCDD was reported at the highest concentration of 33.1 pg/L.

Elutriate Surface Water (CH-30)

General Chemistry: The pH of the elutriates averaged 8.05 (**Table 5-A**). Total organic carbon was reported at 4.86 mg/L and total volatile solids were reported at 217 mg/L.

Metals: Barium, chromium (total), and lead were reported in all elutriates (elutriate 1, 2, and 3), with average concentrations of 0.0288 mg/L, 0.00329 mg/L, and 0.0198 mg/L, respectively. Arsenic was reported in elutriate 1 and elutriate 2 at an average concentration of 0.0177 mg/L.

PAHs: Naphthalene was reported in all three elutriates at an average concentration of 0.098 µg/L. Phenanthrene was reported only in elutriate 1 at a concentration of 0.054µg/L, while pyrene was reported only in elutriate 2 at 0.051µg/L.

Pesticides: DDE was reported in elutriate 1 at a concentration of 0.0075µg/L. No other pesticides were reported in elutriate 2 or elutriate 3.

SVOCs: No SVOCs were reported in elutriates 1, 2, or 3.

Petroleum hydrocarbons: TPH was not reported in elutriates 1, 2, or 3.

VOC: Acetone, methyl isobutyl ketone, methylene chloride, and MTBE were reported in all three elutriates at average concentrations of 32.5 µg/L, 7.7 µg/L, 24.2 µg/L and 0.93 µg/L, respectively.

Dioxins: The TEQ values of elutriates averaged 0.50 pg/L (**Table 5-B**). The highest congener concentration (223 pg/L) was reported for octachlorodibenzo-p-dioxin. The congener 2,3,7,8-tetrachlorodibenzo-p-dioxin was not reported in elutriates 1, 2, or 3.

By comparing the analytical results of the surface water sample from CH-30 with the elutriate water sample from CH-30, it appears that the agitation and mixing of the sediment/water samples as part of the elutriate simulation in the laboratory resulted in increasing the concentrations of some VOCs and PAHs. Total PAHs increased from no detections in the surface water sample to an average of 2.58 µg/L in the elutriate samples. Only slight increases in concentrations were observed with metals. However, dioxin TEQ concentrations actually decreased slightly from 1.08 pg/L in the surface water sample to an average of 0.453 pg/L in the elutriate samples.

PAHs remain tightly sorbed to sediment materials due to their polyaromatic chemical structures. The suspension of the fine grained sediment particles and colloidal materials into the water column as a result of the agitation and mixing process of the elutriate sample simulation would be expected. Elevated concentrations of PAHs in the elutriate samples from location CH-30 as compared to the surface water sample collected from the same location may actually be attributed to the PAHs sorbed to fine suspended particles that pass through the filtration process (0.45 micron filter) during the simulation sample preparation.

5.6 OS-6 (NW 11th Street to Miami River)

OS-6 includes all of Seybold Canal and the transects CH-33, CH-34, CH-35, CH-36, CH-37, CH-38, CH-39, CH-40, CH-41, CH-42, CH-43, and CH-44 (**Figures 7a** and **7b**). In addition, surface water was collected at CH-39 for aqueous and elutriate analyses.

Physical Characteristics

Grain size (Table 2) of the sediment materials within the channel of OS-6 ranged from 0.2% to 5.9% gravels; 13.5% to 76.5% sands; and 20.8% to 86.2% fines (**Table 2-A**). The specific gravity of sediment materials ranged from 2.49 to 2.63 and the bulk density ranged from 1.61 to 1.65 g/cm^3 (1.36 to 1.49 tons/ yd^3). The sediment deposits were classified mainly as gray silt with sand with organics and the USCS symbol of ML. Sediment thickness measurements averaged 3.9 feet within OS-6 (**Table 2-B**).

Bulk Sediment Chemistry/ Characteristics

pH: The pH of OS-6 ranged from 7.31 (CH-37) to 8.09 (CH-39) (**Table 9-A**).

Metals: Lead, chromium (total), cadmium, barium, nickel, and mercury were reported at all sampling transects of OS-6. Lead, chromium (total), and cadmium were reported at elevated concentrations of 827 mg/kg, 390 mg/kg, and 15.2 mg/kg, respectively, at transect CH-38. Mercury and barium were reported at maximum concentrations of 8.9 mg/kg and 78.4 mg/kg, respectively, at transect CH-42, while an elevated concentration for nickel of

12.2 mg/kg was reported at transect CH-40. Arsenic was reported only at transects CH-42 and CH-44, with its highest concentration of 50.1 mg/kg at transect CH-42.

PCBs and Pesticides: DDT was reported at transects CH-36, CH-40, and CH-42 with a maximum concentration of 20 µg/kg at transect CH-42. DDE, DDD and chlordane were reported at all sampling transects in OS-6, with highest concentrations of 77 µg/kg, 45 µg/kg, and 80 µg/kg, respectively, at transect CH-42. Aroclor-1260 and Aroclor-1254 were reported at all sampling transects, with maximum concentrations of 1,500 µg/kg and 1,000 µg/kg, respectively, at transect CH-42.

VOCs: Naphthalene, isopropylbenzene (cumene), n-butylbenzene, n-propylbenzene, sec-butylbenzene and t-butylbenzene were reported at CH-42 with concentrations of 0.0059 mg/kg, 0.006 mg/kg, 0.0226 mg/kg, 0.005 mg/kg, 0.041 mg/kg, and 0.0073 mg/kg, respectively. Acetone, carbon disulfide, and methylene chloride were detected at all transects of OS-6, with the highest concentration of acetone of 0.0558 mg/kg at CH-40. 2-butanone (MEK) was reported at all sampling transects in OS-6, with the exception of CH-38, with its highest concentration of 0.0115 mg/kg in the duplicate sample from CH-36.

SVOCs: PAHs, fluoranthene, pyrene, benzo(b)fluoranthene, chrysene, benzo(a)pyrene, benzo(a)anthracene, and benzo(k)fluoranthene were reported at all sampling transects within OS-6. Benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, chrysene, and pyrene were reported to have highest concentrations at transect CH-36: 414 µg/kg, 619 µg/kg, 844 µg/kg, 497 µg/kg and 687 µg/kg, respectively. Fluoranthene and benzo(b)fluoranthene were reported to have highest concentrations of 982 µg/kg and 764 µg/kg, respectively, at transect CH-38. Anthracene was reported only at transects CH-42 and CH-44, with the highest concentration of 130 µg/kg at transect CH-42. Phenanthrene, detected at all transects except CH-36, was reported at a maximum concentration of 378 µg/kg at transect CH-42. Bis(2-ethylhexyl)phthalate was reported at all sampling transects, with a maximum concentration of 1,970 µg/kg at CH-40.

Total PAHs: The highest concentration of total PAHs was reported as 4,693 µg/kg at transect CH-38 in OS-6. This was followed by a concentration of 4,558 µg/kg at transect CH-36. Total PAH concentrations were also reported as 3,360 µg/kg at transect CH-40, 3,430 µg/kg at transect CH-44, 2,927 µg/kg at transect CH-42, 1,887 µg/kg at transect CH-34, and minimum of 1,309 µg/kg at transect CH-36 Dup.

Dioxins: The highest TEQ value in OS-6 was reported from transect CH-40 at 272.82 pg/g (**Table 9-B**). The TEQ values at transects CH-34, CH-36, CH-36Dup, CH-38, CH-42, and CH-44 were 96.00 pg/g, 151 pg/g, 97.53 pg/g, 195.40 pg/g, 82.19 pg/g, and 54.93 pg/g, respectively. The congener 2,3,7,8-TCDD was not reported at any of the sampling transects in OS-6. Although the congener OCDD was reported with the highest concentrations ranging from 18,900 pg/g (CH-44) to 84,000 pg/g (CH-40) in OS-6, the relative toxicity of this congener is low and therefore has the lowest TEF value (0.0003).

TCLP: Arsenic, barium, chromium (total), and lead were reported in all the sampling transects (CH-33, CH-35, CH-37, CH-39, CH-41 and CH-43). Lead was reported at its highest concentration of 0.964 mg/L at transect CH-39. Chromium (total) and arsenic were reported at highest concentrations of 0.0424 mg/L and 0.126 mg/L, respectively, at transect CH-37, while barium was reported at a maximum of 1.11 mg/L at transect CH-41. Nickel was reported at all sampling transects except CH-35, with a maximum concentration of 0.0245 mg/L at transect CH-33. Cadmium was reported at transects CH-37 and CH-39, with its highest concentration of 0.0231 mg/L at transect CH-39.

Aqueous Surface Water (CH-39)

General Chemistry: The pH of surface water within OS-6 was 7.44 (**Table 5-A**). Total organic carbon was reported at 6.82 mg/L and total volatile solids at 620 mg/L.

Dissolved Metals: Arsenic, barium, and chromium (total) were reported at concentrations of 0.00768 mg/L, 0.0186 mg/L, and 0.00349 mg/L, respectively, as dissolved metals in water.

Total Metals: Arsenic, barium, chromium (total), and lead were reported at concentrations of 0.00861 mg/L, 0.0206mg/L, 0.00371 mg/L, and 0.00562 mg/L, respectively.

PAHs: Naphthalene and pyrene were reported at concentrations of 0.11 µg/L and 0.074 µg/L, respectively.

Pesticides: No pesticides were reported in the surface water.

SVOCs: DI-n-butyl phthalate was reported at a concentration of 8.2µg/L.

TPH: No TPH was reported in surface water.

VOCs: Acetone and toluene were reported at concentrations of 30.2µg/L and 0.52µg/L, respectively.

Dioxins: The TEQ value for dioxins in surface water at transect CH-39 was reported to be 0.407 pg/L (**Table 5-B**). Octachlorodibenzo-p-dioxin was reported to be highest at a concentration of 203 pg/L. The congener 2,3,7,8-TCDD was not reported.

Elutriate Surface Water (CH-39)

General Chemistry: The pH of the elutriates averaged 8.06 (**Table 5-A**). Total organic carbon was reported at 5.61 mg/L and total volatile solids at 526.7 mg/L.

Total Metals: Arsenic, barium, and chromium (total) were reported in all elutriates (elutriate 1, 2, and 3) with average concentrations of 0.0187 mg/L, 0.088 mg/L, and 0.00508 mg/L, respectively. Lead, mercury, nickel, and silver were not reported in any elutriates.

PAHs: No PAHs were reported in any elutriates at transect CH-39.

Pesticides: No pesticides were reported in any elutriates.

SVOCs: No SVOCs was reported in any elutriates.

TPH: No TPH was reported in any elutriates.

VOCs: Acetone, methyl isobutyl ketone, and methylene chloride were reported in all three elutriates with average concentrations of 33.8 µg/L, 6.27 µg/L, and 13.2 µg/L, respectively.

Dioxins: The dioxins TEQ values of the elutriates averaged 0.568 pg/L (**Table 5-B**). The highest concentration (84.6 pg/L) was reported for octachlorodibenzo-p-dioxin. The congener 2,3,7,8-TCDD was not reported in any elutriates.

By comparing the analytical results of the surface water sample from CH-39 with the elutriate water sample from CH-39, it appears that the agitation and mixing of the sediment/water samples as part of the elutriate simulation in the laboratory resulted in only slight increases in concentrations of some VOCs, metals, and dioxins. While the metals concentrations more than doubled due to the mixing process, total PAHs actually decreased slightly from 0.18 µg/L (surface water) to no detections (elutriate water). In addition, dioxin TEQ concentrations increased slightly from 0.367 pg/L in the surface water sample to an average of 0.550 pg/L in the elutriate samples.

Dioxins have a very low water solubility and, due to their tricyclic aromatic chemical structures, remain tightly sorbed to any fine grained deposits and organic matter. The suspension of the fine grained sediment particles and colloidal materials into the water column as a result of the agitation and mixing process of the elutriate sample simulation would be expected. Elevated concentrations of dioxins in the elutriate samples from location CH-39 as compared to the surface water sample collected from the same location may actually be attributed to the dioxins sorbed to fine suspended particles that pass through the filtration process (0.45 micron filter) during the simulation sample preparation.

SECTION 6

6. Conclusions

The sediment and surface water characterization of the Wagner Creek and Seybold Canal was conducted during sampling events in June-July 2008 and May 2009 to determine the nature and extent of impacted sediments. The 2008-2009 sediment data was also evaluated with previous data collected during April-May 2003 and December 2003 field events. Sediment removal and disposal decisions as part of the dredging correction action will be based upon the dioxin TEQs reported in the samples, specifically within OS 1. Surface water characterization was also conducted during the June-July 2008 and May 2009 sampling events in order to assess potential changes in water quality conditions due to the mechanical process of the dredging operations.

Changes in water levels within Wagner Creek and Seybold Canal were measured each day during the June-July 2008 field event to assess the extent of tidal influence on the creek. Water levels within the creek and canal were measured using three staff gauges at the NW 14th Avenue bridge, the S.R. 836 Culvert, and the seawall at the confluence of the Seybold Canal and the Miami River. Changes in water levels measured at the gauging stations generally followed the tidal fluctuations in the water levels measured at the National Oceanic and Atmospheric Administration (NOAA) tidal monitoring station at Biscayne Bay, Miami, Florida (Figure 8).

Sediment thicknesses within the channels of both Wagner Creek and Seybold Canal were measured during the June-July 2008 field event to determine the depth for dredging removal. A steel probe rod was advanced into the sediment material until refusal using a hammer and the length driven into the sediment was measured. Three probe rods were advanced at each location across the creek channel in order to determine a cross section profile of the sediment thickness. The average sediment thicknesses within Wagner Creek and Seybold Canal varied from 3.1 feet in OS-1 to 6.4 feet in OS-2 (Figure 9). Once removed, sediments will be disposed off as either non-hazardous or hazardous material based on the sediment, elutriate and leachable (i.e. TCLP) concentration of various chemical parameters. Sediments for offsite disposal as hazardous waste will be identified based on TCLP results and dioxin concentrations. Based on the results of the detected parameters in the various samples described in Section 5.0 above, removal and disposal decisions that are based on dioxin TEQs are likely to address the sediment materials from OS-1 removed from the creek and canal channel.

General trends based on June-July 2008 sampling results indicated that the chemical concentrations within Wagner Creek and Seybold Canal appear to be decreasing from the upstream sections (OSs-1 and -2) to the downstream sections (OS-6). Concentrations of specific constituents (dioxins, total PAHs, and analytes [metals]) were generally higher within sediment deposits from OS-1 and -2, and then significantly decreased in the downstream sections (OS-3 to OS-6) within the channel of Wagner Creek and Seybold Canal.

Dioxin TEQs within sediments were reported at a maximum value of 5,700 pg/g (ppt) at CH-8 (OS-1) and then generally decreased in concentrations moving downstream within the creek and canal to 54.9 pg/g at CH-44 (OS-6). In general, decreasing concentration trends were also noted for PAHs, although high concentrations of total PAHs were reported with a maximum of 163,000 µg/kg [15,500 µg/kg of benzo(a)pyrene] at CH-12 (OS-2) and then again of 56,600 µg/kg [5,790 µg/kg of benzo(a)pyrene] at CH-28 (OS-5). In addition, lead was reported in sediment deposits as high as 3,610 mg/kg at CH-2 (OS-1) and decreased to a concentration as low as 70.7 mg/kg in CH-22 (OS-4). This decreasing trend from upstream sections to downstream sections is similar to the trend reported in the analytical results from the sediment sampling conducted in 2003.

In general, dioxin TEQ results from sediments collected during the May 2009 field event appear to represent decreasing trends from upstream (OS 1) to downstream (OS 2) within the two sections of the channel. Dioxin TEQs within sediments were reported at 4,980 pg/g in CH-02-01 (OS 1) and decreased in downstream location to 193 pg/g at CH-02-10 (OS 2) of Wagner Creek (Figure 10). Aside from the elevated concentration of dioxin TEQ in the upstream location CH-02-01, the other sampling locations within OS 1 reported dioxin TEQs at relatively lower levels ranging from 1,880 pg/g (CH-02-02) to 531 pg/g (CH-02-06), while the samples from OS 2 reported dioxin TEQs ranging from 496 pg/g (CH-02-09) to 130 pg/g (CH-02-07).

Considering the varied land uses of the surrounding watershed area that contributes runoff to the Wagner Creek, the detected concentrations in the sediments of Wagner Creek are likely a result of runoff and accumulation over time, and not likely due to a single source or a one-time release. Elevated concentrations of dioxins, total PAHs, and metals within the upstream areas of Wagner Creek are likely due to non-point source contributions form the urban environment reaching the creek sediments and accumulating over time in the creek bottom due to stormwater runoff over time.

Additional sediment cores and surface water samples were collected during the June-July 2008 field investigation at existing sample locations (transects CH-10, CH-20, CH-30, and CH-39) for use in dredging elutriate simulation. Of the four elutriate samples that were collected, the agitation and mixing performed in the lab simulation appears to increase the aqueous concentrations only in samples collected from the upstream section of Wagner Creek (CH-10). However, it should be noted that the sample agitation and mixing process conducted during the elutriate sample preparation in the laboratory (30 minutes on the shaking machine) may be more aggressive than the mechanical dredging operation that will be conducted in the field during the corrective action.

In addition to sediment samples collected for physical and chemical analysis, three additional sediment cores were collected during the May 2009 field investigation at sample location transects E-01, E-02, and E-03 for use in dredging elutriate simulation. The Dredging Elutriate Testing (DRET) protocol was implemented by the lab since this method tends to represent the mechanical dredging operation that will be conducted in the field more than other elutriate simulation methods (USACOE, 1995). Of the three elutriate samples that were collected, the agitation and mixing simulation performed by the DRET simulation in the lab only appears to slightly increase the aqueous concentrations of dioxins in samples collected from the upstream section of Wagner Creek. The highest dioxin concentration of the three elutriate samples was reported in E-03 at 4.73 pg/g. The suspension of the fine grained sediment particles and colloidal materials (with sorbed dioxin compounds) into the water column as a result of the agitation and mixing process in the elutriate sample preparation would be expected. Suspended particulates would be expected to settle to the bottom within a short period of time as mechanical mixing is ceased.

The chemical concentration trends in the sediment samples indicate co-occurring lead, PAHs and dioxins in the OS-1 and OS-2 sections. The downstream sections OS-3 to OS-6 have sporadic detections of PAHs, and lead, however, are not detected in TCLP samples, thus are not considered a leachability concern in excavated sediments. Thus, dioxin TEQs will serve as conservatively protective representatives for sediment disposal decisions and will be used to estimate the sediments for disposal.

OSs-1 and -2, both located in the upstream section of Wagner Creek, generally reported the highest concentrations for dioxins, total PAHs, and lead in sediment. Dioxins have a very low water solubility and, have high affinity to partition into organic carbon in the sediment matrix, thus will remain tightly sorbed to fine grained deposits and organic matter in the sediments. The suspension of the fine grained sediment particles and colloidal materials in the water column as a result of the agitation and mixing process would be expected during excavation dredging. The detected dioxins in the elutriate samples from location CH-10 are likely from suspended sediment fine particles that passed through 0.45 micron filter, as elutriate levels were higher than surface water sampled from the same location. At the other locations within Wagner Creek and Seybold Canal where the elutriate samples were collected (transects CH-20, CH-30, and CH-39), did not have dioxin TEQs, though metals were reported to increase in the aqueous samples as a result of the agitation and mixing simulation.

Sediment thickness, as determined by the probing measurements recorded at each transect, varied across the length of Wagner Creek and Seybold Canal. Sediment thickness was greatest in OS-2 ranging from depths of 2.6 feet (CH-11) to 9.1 feet (CH-12), and least in OS-1 ranging from depths of 0.5 feet (CH-8) to 5.4 feet (CH-3). Within the downstream OSs-3 through -6, sediment thickness measurements ranged from 0.5 feet (CH-32) to 7.9 feet (CH-36).

Based on historical information provided, dioxins contained in Wagner Creek and Seybold Canal sediments are likely to have originated in runoff from offsite sources such as incinerators which operated on NW 20th Street, and aerial depositions from other incinerators farther from the area. Based on this information, the sediment is not contaminated with a listed waste as defined in 40 CFR Part 261 Subpart D. Therefore, the Wagner Creek/Seybold Canal sediment has been characterized as non-hazardous based on 40 CFR Part 261 Subpart C and compared to the disposal facilities' acceptance criteria for dioxin and other contaminants.

The analytical results from the June-July 2008 sampling event indicate that all of the Wagner Creek and Seybold Canal sediments are classified as non-hazardous waste as noted above. However, two of the sample locations (CH-4 and CH-8) exhibited a dioxin TEQ above the FDEP guidelines set for local Class 1 non-hazardous waste landfill disposal of 1 ppb (dioxin TEQ), same as 1000 ppt as presented in tables and figures. Since these sediments cannot be accepted by a local Class 1 landfill facility, it is recommended that they be removed (as part of the CAP) from the areas around CH-4 and CH-8and transported to an approved and certified disposal facility. All other sediments removed from Wagner Creek and Seybold Canal will be disposed of in a Local Class 1 landfill facility.

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SECTION 7

7. References

ATSDR, 1995. –Toxicological Profile for Polycyclic Aromatic Hydrocarbons (PAHs) (Update). Agency for Toxic Substances and Disease Registry U.S. Department of Health and Human Services, A Public Health Service, Atlanta, Georgia, August 1995.

Tables

Table 1

Survey Data from Sampling Locations

June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SAMPLE CORE	NORTHING	EASTING
CH01A	531804.1180	912262.3790
CH01B	531803.8720	912254.7380
CH01C	531806.6010	912251.3540
CH02A	531642.1050	912281.4780
CH02B	531642.3850	912288.4460
CH02C	531647.4180	912293.4870
CH03A	531463.0131	912474.4075
CH03B	531459.0126	912463.7945
CH03C	531451.8876	912455.9080
CH04A	531345.4630	912549.9990
CH04B	531352.4130	912558.2390
CH04C	531355.0120	912566.3510
CH05A	531212.2690	912693.2510
CH05B	531211.9740	912687.5180
CH05C	531187.1270	912699.0990
CH06A	531059.6280	912817.9590
CH06B	531063.8340	912822.1610
CH06C	531075.7710	912822.8780
CH07A	530912.7640	912977.9460
CH07B	530907.8980	912971.4490
CH07C	530903.3870	912966.8300
CH08A	530814.4130	913045.1060
CH08B	530822.5710	913047.3170
CH08C	530840.3600	913045.2580
CH09A	530697.0090	913177.7230
CH09B	530690.5620	913167.0790
CH09C	530677.7660	913161.6070
CH10A	530585.7930	913264.3330
CH10B	530590.2230	913253.3430
CH10C	530584.8740	913284.3150
CH11A	530472.2910	913389.4130
CH11B	530464.6270	913378.8470
CH11C	530457.6240	913368.5800
CH12A	530289.7491	913548.9785
CH12B	530279.6021	913546.3595
CH12C	530274.0601	913543.5585
CH13A	530120.7136	913693.8174
CH13B	530115.1668	913688.0526
CH13C	530108.1873	913680.8910
CH14A	530028.9580	913777.2460
CH14B	530021.2290	913772.0710
CH14C	530015.4510	913762.9250
CH15A	529920.4541	913877.1473

Table 1
Survey Data from Sampling Locations
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SAMPLE CORE	NORTHING	EASTING
CH15B	529915.4048	913869.0464
CH15C	529909.8245	913860.1994
CH16A	529857.5340	914002.0393
CH16B	529847.5400	914002.2900
CH16C	529837.5401	914002.5337
CH17A	529863.0968	914226.9705
CH17B	529853.0998	914227.2177
CH17C	529843.1029	914227.4650
CH18A	529804.6434	914380.5446
CH18B	529804.3971	914370.5477
CH18C	529804.1508	914360.5507
CH19A	529674.6829	914383.7467
CH19B	529674.4366	914373.7497
CH19C	529674.1903	914363.7527
CH20A	529404.7648	914390.3970
CH20B	529404.5185	914380.4000
CH20C	529404.2722	914370.4031
CH21A	529332.1114	914395.4366
CH21B	529326.9691	914386.8601
CH21C	529321.8268	914378.2836
CH22A	529225.3140	914597.0090
CH22B	529207.5580	914591.6680
CH22C	529201.4320	914590.4700
CH23A	529148.7140	914711.1870
CH23B	529152.0050	914720.5440
CH23C	529152.8170	914724.7330
CH24A	528956.0160	914865.9490
CH24B	528947.9020	914862.8920
CH24C	528942.5100	914859.7010
CH25A	528844.3230	914997.4830
CH25B	528840.4880	914990.7890
CH25C	528837.8118	914972.1700
CH26A	528661.3020	915174.8900
CH26B	528653.3490	915165.6740
CH26C	528647.4180	915159.3000
CH27A	528556.4800	915310.0510
CH27B	528552.0710	915301.8810
CH27C	528547.0860	915293.2470
CH28A	528464.4500	915435.9610
CH28B	528462.9880	915415.2240
CH28C	528458.7910	915409.8350
CH29A	528369.7000	915552.3000
CH29B	528361.3000	915545.8000

Table 1
Survey Data from Sampling Locations
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SAMPLE CORE	NORTHING	EASTING
CH29C	528357.5000	915542.5000
CH30A	528277.1000	915674.3000
CH30B	528268.2000	915667.4000
CH30C	528262.6000	915661.4000
CH31A	528220.2610	915774.1740
CH31B	528213.2030	915771.5450
CH31C	528202.7180	915769.8340
CH32A	528039.9040	916007.6250
CH32B	528041.7250	915993.0520
CH32C	528041.8920	915983.4650
CH33A	527942.4800	916111.2500
CH33B	527942.4100	916093.5400
CH33C	527952.3700	916100.3600
CH34A	527841.7000	916251.1700
CH34B	527845.7300	916228.1300
CH34C	527809.1000	916220.3800
CH35A	527646.6800	916396.9600
CH35B	527644.2200	916385.3700
CH35C	527630.8378	916369.2771
CH36A	527498.8800	916536.1900
CH36B	527502.2700	916533.5900
CH36C	527487.2100	916518.8000
CH37A	527379.8000	916696.6600
CH37B	527405.9300	916641.2100
CH37C	527377.4700	916629.3100
CH38A	527249.0900	916824.4000
CH38B	527239.2200	916808.0500
CH38C	527224.7114	916798.2357
CH39A	527063.8500	916935.8900
CH39B	527080.8700	916935.4000
CH39C	527076.7900	916904.3500
CH40A	526946.8800	917035.1800
CH40B	526911.9900	917028.6700
CH40C	526849.1500	917024.3200
CH41A	526767.7200	917043.7400
CH41B	526725.4500	917027.9700
CH41C	526736.5600	917010.2100
CH42A	526542.1900	917061.8000
CH42B	526510.8200	917038.3300
CH42C	526508.4500	917023.8600
CH43A	526319.0200	917059.2200
CH43B	526310.5400	917044.6800
CH43C	526316.9100	917028.5000

Table 1
Survey Data from Sampling Locations
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SAMPLE CORE	NORTHING	EASTING
CH44A	526131.1500	917067.4300
CH44B	526128.7500	917048.1600
CH44C	526129.2800	917033.1600
CH45A	530065.9895	913743.7188
CH45B	530059.9531	913737.7503
CH45C	530050.8812	913734.6961

Table 2-A
Sediment Geophysical Characteristics
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SampleID:	Collection Date	%Gravel	%Sand	%Sand + Gravel	%Fines (<200 Sieve)	Specific Gravity	Bulk Density (g/cm3)	Bulk Density (tons/cy)	Soil Description	USGS Soil Class
Operational Section 1: NW 20th Street to NW 14th Avenue										
CH-1	7/3/2008	3.1	75.8	78.9	21.1	2.48	1.65	1.39	Gray Silty Sand with Organics	SM
CH-2	6/30/2008	0.7	16.5	17.2	82.8	2.5	1.66	1.40	Gray Silt with Sand with Organics	ML
CH-3	07/03/08	2.4	20.6	23	77	2.5	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-4	06/30/08	4.9	17.2	22.1	77.9	2.55	1.62	1.36	Gray Silt with Sand with Organics	ML
CH-5	07/03/08	4.2	18.4	22.6	77.4	2.51	1.66	1.40	Gray Silt with Sand with Organics	ML
CH-6	06/30/08	6.3	28	34.3	65.6	2.5	1.66	1.40	Gray Silt with Sand with Organics	ML
CH-7	07/03/08	9.9	23.6	33.5	66.5	2.53	1.64	1.38	Gray Silt with Sand with Organics	ML
CH-8	06/30/08	19	26.1	45.1	54.9	2.52	1.65	1.39	Gray Silt with Sand with Rock/ Shell and with Organics	ML
Operational Section 2: NW 14th Avenue to NW 15th Street										
CH-9	07/07/08	1.8	64.3	66.1	33.9	2.5	1.66	1.40	Gray Silty Sand with Organics	SM
CH-10	07/08/08	4.1	55	59.1	40.9	2.53	1.64	1.38	Gray Silty Sand with Organics	SM
CH-11	07/07/08	3.7	18.2	21.9	78.1	2.52	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-12	06/30/08	8.5	25.8	34.3	65.7	2.51	1.66	1.40	Gray Silt with Sand with Organics	ML
CH-13	07/07/08	1.4	22.2	23.6	76.5	2.53	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-45	07/16/08	4.8	24.4	29.2	70.8	2.58	1.62	1.36	Gray Silt with Sand with Organics	ML
CH-14	07/07/08	2.3	19.2	21.5	78.5	2.52	1.66	1.40	Gray Silt with Sand with Organics	ML

Table 2-A
Sediment Geophysical Characteristics
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SampleID:	Collection Date	%Gravel	%Sand	%Sand + Gravel	%Fines (<200 Sieve)	Specific Gravity	Bulk Density (g/cm3)	Bulk Density (tons/cy)	Soil Description	USGS Soil Class
CH-14-DUP	07/07/08	2.4	22.8	25.2	74.9	2.55	1.64	1.38	Gray Silt with Sand with Organics	ML
CH-14MS	07/07/08	2.1	17.1	19.2	80.9	2.54	1.63	1.37	Gray Silt with Sand with Organics	ML
CH-14SD	07/07/08	2.1	19.7	21.8	78.2	2.53	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-15	07/12/08	2.9	25.8	28.7	71.4	2.52	1.64	1.38	Gray Silt with Sand with Organics	ML
Operational Section 3: NW 15th Street to NW 14th Street										
CH-16	07/07/08	1.9	14.4	16.3	83.7	2.52	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-17	07/12/08	1.3	6.9	8.2	91.8	2.54	1.64	1.38	Gray Silt with Sand with Organics	ML
CH-18	07/07/08	1.1	25.8	26.9	73.1	2.51	1.66	1.40	Gray Silt with Sand with Organics	ML
CH-19	07/12/08	0.2	11.5	11.7	88.3	2.64	1.61	1.36	Gray Silt with Sand with Organics	ML
CH-19DUP	07/12/08	0.2	11.7	11.9	88.2	2.58	1.62	1.36	Gray Silt with Sand with Organics	ML
CH-20	07/07/08	0.2	11.9	12.1	87.9	2.56	1.63	1.37	Gray Silt with Sand with Organics	ML
CH-21	07/12/08	1.8	33	34.8	65.2	2.58	1.63	1.37	Gray Silt with Sand with Organics	ML
Operational Section 4: NW 14th Street to SR 836										
CH-22	07/01/08	17.6	13.2	30.8	69.3	2.52	1.65	1.39	Gray Silt with Sand and Rock and with Organics	ML
CH-23	07/01/08	6.9	64.2	71.1	28.8	2.51	1.68	1.42	Gray Silty Sand with Organics	SM
CH-24-Dup	07/01/08	13.9	69.8	83.7	16.3	2.52	1.65	1.39	Gray Silty Sand with Organics	SM
CH-24	07/01/08	1.5	32.3	33.8	66.2	2.5	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-25	07/01/08	4.3	87.4	91.7	8.4	2.48	1.64	1.38	Gray Poorly Graded Sand with Organics	SP

Table 2-A
Sediment Geophysical Characteristics
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SampleID:	Collection Date	%Gravel	%Sand	%Sand + Gravel	%Fines (<200 Sieve)	Specific Gravity	Bulk Density (g/cm3)	Bulk Density (tons/cy)	Soil Description	USGS Soil Class
Operational Section 5: SR 836 to NW 11th Street										
CH-26	07/02/08	13.4	68	81.4	18.6	2.59	1.63	1.37	Gray Silt with Sand with Organics	ML
CH-27	07/02/08	16.8	54	70.8	29.2	2.56	1.63	1.37	Gray Silt with Sand with Rock/ Shell and with Organics	SM
CH-28	07/02/08	11.1	66.2	77.3	22.7	2.57	1.63	1.37	Gray Silty Sand with Organics	SM
CH-29	07/16/08	3.9	38.3	42.2	57.8	2.5	1.66	1.40	Gray Silt with Sand with Organics	ML
CH-29DUP	07/16/08	11.9	49.4	61.3	38.7	2.5	1.61	1.36	Gray Silty Sand with Organics	SM
CH-30	07/16/08	2.2	53.7	55.9	44	2.53	1.64	1.38	Gray Silty Sand with Organics	SM
CH-31	07/02/08	23.6	37	60.6	39.3	2.5	1.66	1.40	Gray Silt with Sand with Rock/ Shell and with Organics	SM
CH-32	07/02/08	22.1	63.5	85.6	14.4	2.54	1.64	1.38	Gray Silt with Sand with Rock/ Shell and with Organics	SM
Operational Section 6: NW 11th Street to Miami River										
CH-33	07/10/08	5.9	66.4	72.3	27.7	2.63	1.61	1.36	Gray Silty Sand with Organics	SM
CH-34	07/10/08	0.5	29.8	30.3	69.7	2.59	1.62	1.36	Gray Silt with Sand with Organics	ML
CH-35	07/10/08	0.2	24	24.2	75.9	2.61	1.61	1.36	Gray Silt with Sand with Organics	ML
CH-36	07/11/08	0.5	17.6	18.1	81.8	2.61	1.61	1.36	Gray Silt with Sand with Organics	ML
CH-36DUP	07/11/08	0.3	13.5	13.8	86.2	2.62	1.61	1.36	Gray Silt with Sand with Organics	ML
CH-37	07/11/08	0.3	18.2	18.5	81.5	2.54	1.64	1.38	Gray Silt with Sand with Organics	ML

Table 2-A
Sediment Geophysical Characteristics
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SampleID:	Collection Date	%Gravel	%Sand	%Sand + Gravel	%Fines (<200 Sieve)	Specific Gravity	Bulk Density (g/cm3)	Bulk Density (tons/cy)	Soil Description	USGS Soil Class
CH-38	07/11/08	1.2	22.2	23.4	76.5	2.54	1.64	1.38	Gray Silt with Sand with Organics	ML
CH-39-SO	07/09/08	1.1	23.8	24.9	75.1	2.49	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-40	07/09/08	5.5	30.1	35.6	64.4	2.55	1.63	1.37	Gray Silt with Sand with Organics	ML
CH-41	07/11/08	0.8	35.4	36.2	63.8	2.52	1.65	1.39	Gray Silt with Sand with Organics	ML
CH-42	07/09/08	1.6	59.5	61.1	38.9	2.51	1.65	1.39	Gray Silty Sand with Organics	SM
CH-43	07/10/08	2.7	76.5	79.2	20.8	2.62	1.63	1.37	Gray Silty Sand with Organics	SM
CH-44	07/10/08	2	50.4	52.4	47.6	2.52	1.64	1.38	Gray Silty Sand with Organics	SM

Table 2-B
Sediment Thickness Measurements
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	Sampling Technique: Hand Cores or Vibracore	Core Refusal (ft)	Sediment Thickness/ Probing Depth (ft)
Operational Section 1			
CH-1-A	Hand Cores	1.3	1.2
CH-1-B	Hand Cores	3.0	3.7
CH-1-C	Hand Cores	2.7	4.7
CH-1-D	Hand Cores	1.6	4.7
CH-2-A	Hand Cores		
CH-2-B	Hand Cores		
CH-2-C	Hand Cores		
CH-3-A	Hand Cores	1.8	2.0
CH-3-B	Hand Cores	4.8	5.3
CH-3-C	Hand Cores	3.9	5.4
CH-4-A	Hand Cores		
CH-4-B	Hand Cores		
CH-4-C	Hand Cores		
CH-5-A	Hand Cores	1.3	1.5
CH-5-B	Hand Cores	1.2	1.2
CH-5-C	Hand Cores	1.7	4.4
CH-6-A	Hand Cores		
CH-6-B	Hand Cores		
CH-6-C	Hand Cores		
CH-7-A	Hand Cores	2.0	3.6
CH-7-B	Hand Cores	3.5	3.9
CH-7-C	Hand Cores	1.5	1.8
CH-8-A	Hand Cores		0.5
CH-8-B	Hand Cores		
CH-8-C	Hand Cores		
Operational Section 2			
CH-9-A	Hand Cores	3.3	3.3
CH-9-B	Hand Cores	4.7	5.9
CH-9-C	Hand Cores	4.0	4.0
CH-10-A	Hand Cores	3.7	8.0
CH-10-B	Hand Cores	5.4	6.6
CH-10-C	Hand Cores	3.3	8.0
CH-11-A	Hand Cores	4.2	5.2
CH-11-B	Hand Cores	5.5	6.5
CH-11-C	Hand Cores	1.0	2.6
CH-12-A	Hand Cores	3.7	8.3
CH-12-B	Hand Cores	2.8	9.1
CH-12-C	Hand Cores	2.4	8.2
CH-13-A	Hand Cores	5.1	7.4
CH-13-B	Hand Cores	6.3	6.4
CH-13-C	Hand Cores	6.3	6.3
CH-14-A	Hand Cores	4.7	6.2

Table 2-B
Sediment Thickness Measurements
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	Sampling Technique: Hand Cores or Vibracore	**Core Refusal (ft)**	**Sediment Thickness/ Probing Depth (ft)**
CH-14-B	Hand Cores	5.6	5.9
CH-14-C	Hand Cores	7.2	7.2
CH-14-A-DUP	Hand Cores	5.3	6.0
CH-14-B-DUP	Hand Cores	4.4	5.6
CH-14-C-DUP	Hand Cores	6.4	5.6
CH-15-A	Hand Cores	2.8	6.0
CH-15-B	Hand Cores	3.2	6.9
CH-15-C	Hand Cores	2.8	7.1
CH-45-A	Hand Cores	4.1	6.7
CH-45-B	Hand Cores	5.4	6.0
CH-45-C	Hand Cores	3.9	8.7
Operational Section 3			
CH-16-A	Hand Cores	4.5	5.6
CH-16-B	Hand Cores	4.3	5.4
CH-16-C	Hand Cores	2.1	3.0
CH-17-A	Hand Cores	2.1	3.5
CH-17-B	Hand Cores	4.0	5.0
CH-17-C	Hand Cores	3.4	4.7
CH-18-A	Hand Cores	3.1	3.1
CH-18-B	Hand Cores	2.2	3.3
CH-18-C	Hand Cores	1.8	2.6
CH-19-A	Hand Cores	3.2	4.0
CH-19-B	Hand Cores	2.3	2.8
CH-19-C	Hand Cores	1.6	2.0
CH-19-A-DUP	Hand Cores	3.4	4.0
CH-19-B-DUP	Hand Cores	1.8	2.8
CH-19-C-DUP	Hand Cores	1.3	2.0
CH-20-A	Hand Cores	2.8	3.3
CH-20-A_elutriate	Hand Cores	2.0	3.5
CH-20-B	Hand Cores	3.6	3.9
CH-20-B_elutriate	Hand Cores	2.3	3.0
CH-20-C	Hand Cores	1.3	1.7
CH-20-C_elutriate	Hand Cores	3.1	3.6
CH-21-A	Hand Cores	0.6	1.5
CH-21-B	Hand Cores	2.7	4.8
CH-21-C	Hand Cores	3.1	4.5
Operational Section 4			
CH-22-A	Hand Cores	2.6	3.0
CH-22-B	Hand Cores	3.1	5.3
CH-22-C	Hand Cores	2.8	5.1
CH-23-A	Hand Cores	1.1	3.9
CH-23-B	Hand Cores	2.2	2.3
CH-23-C	Hand Cores	3.2	6.1

Table 2-B
Sediment Thickness Measurements
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	Sampling Technique: Hand Cores or Vibracore	**Core Refusal (ft)**	**Sediment Thickness/ Probing Depth (ft)**
CH-24-A	Hand Cores	3.1	4.0
CH-24-B	Hand Cores	1.6	2.6
CH-24-C	Hand Cores	2.6	4.4
CH-24-A-DUP	Hand Cores	1.7	4.0
CH-24-B-DUP	Hand Cores	0.9	2.6
CH-24-C-DUP	Hand Cores	2.1	4.4
CH-25-B	Hand Cores	2.8	4.9
Operational Section 5			
CH-26-A	Hand Cores	2.1	3.0
CH-26-B	Hand Cores	2.0	4.4
CH-26-C	Hand Cores	1.2	3.5
CH-27-A	Hand Cores	1.5	4.9
CH-27-B	Hand Cores	3.0	5.6
CH-27-C	Hand Cores	1.1	5.0
CH-28-A	Hand Cores	2.2	3.1
CH-28-B	Hand Cores	1.6	4.9
CH-28-C	Hand Cores	2.0	7.5
CH-29-A	Hand Cores	2.1	2.4
CH-29-B	Hand Cores	2.4	2.6
CH-29-C	Hand Cores	3.5	4.5
CH-29-A-DUP	Hand Cores	2.1	2.4
CH-29-B-DUP	Hand Cores	2.4	2.6
CH-29-C-DUP	Hand Cores	3.5	4.5
CH-30-A	Hand Cores	3.2	5.0
CH-30-B	Hand Cores	2.2	2.2
CH-30-C	Hand Cores	1.8	1.8
CH-31-A	Hand Cores	2.7	5.6
CH-31-B	Hand Cores	2.2	5.8
CH-31-C	Hand Cores	1.9	4.2
CH-32-A	Hand Cores	0.4	0.5
CH-32-B	Hand Cores	0.8	1.6
CH-32-C	Hand Cores	1.4	5.4
Operational Section 6			
CH-33-A	Vibracore	0.7	2.4
CH-33-B	Vibracore	1.2	2.5
CH-33-C	Vibracore	0.8	3.0
CH-34-A	Vibracore	1.4	6.7
CH-34-B	Vibracore	2.7	5.8
CH-34-C	Vibracore	2.4	6.8
CH-35-A	Vibracore	0.9	2.4
CH-35-B	Vibracore	3.2	5.0
CH-35-C	Vibracore	3.1	5.2
CH-36-A	Vibracore	1.1	1.8

Table 2-B
Sediment Thickness Measurements
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	Sampling Technique: Hand Cores or Vibracore	Core Refusal (ft)	Sediment Thickness/ Probing Depth (ft)
CH-36-B	Vibracore	3.1	4.9
CH-36-C	Vibracore	4.2	7.0
CH-36-A-DUP	Vibracore	1.0	2.1
CH-36-B-DUP	Vibracore	2.9	4.9
CH-36-C-DUP	Vibracore	5.3	7.9
CH-37-A	Vibracore	2.6	4.5
CH-37-B	Vibracore	1.1	4.8
CH-37-C	Vibracore	4.1	7.3
CH-38-A	Vibracore	1.6	3.0
CH-38-B	Vibracore	3.0	3.7
CH-39-A	Vibracore	2.9	3.2
CH-39-B	Vibracore	3.2	3.2
CH-39-C	Vibracore	2.5	2.5
CH-40-A	Vibracore	2.1	2.1
CH-40-B	Vibracore	3.2	3.5
CH-40-C	Vibracore	1.0	1.1
CH-41-A	Vibracore	1.2	4.4
CH-41-B	Vibracore	2.7	4.5
CH-41-C	Vibracore	1.8	2.5
CH-42-A	Vibracore	0.8	0.8
CH-42-B	Vibracore	2.0	2.1
CH-42-C	Vibracore	2.4	2.5
CH-43-A	Vibracore	1.0	5.0
CH-43-B	Vibracore	0.7	4.4
CH-43-C	Vibracore	0.4	3.7
CH-44-A	Vibracore	0.7	3.5
CH-44-B	Vibracore	0.5	3.8
CH-44-C	Vibracore	2.1	3.2

* Sediment thickness as determined by the probe rod refusal

Table 3-A
Bulk Sediment Chemistry and Characteristics
Operational Section 1: NW 20th Street to NW 14th Avenue

June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-1**	**CH-2**	**CH-3**	**CH-4**	**CH-5**	**CH-6**	**CH-7**	**CH-8**
	Collection Date:	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**
Parameter	Unit	Concentration							
VOCs									
ACETONE	mg/kg		0.0625 =		0.0334 J		0.0921 =		0.0273 J
CARBON DISULFIDE	mg/kg		0.0034 J		0.0061 J		0.0064 =		0.0058 J
ISOPROPYLBENZENE (CUMENE)	mg/kg								
METHYL ETHYL KETONE (2-BUTANONE)	mg/kg		0.0177 J		0.0132 J		0.0212 J		0.0096 J
METHYLENE CHLORIDE	mg/kg						0.0045 J		0.0051 J
n-BUTYLBENZENE	mg/kg								
n-PROPYLBENZENE	mg/kg								
NAPHTHALENE	mg/kg								
o-XYLENE (1,2-Dimethylbenzene)	mg/kg								
SEC-BUTYLBENZENE	mg/kg								
t-BUTYLBENZENE	mg/kg								
tert-BUTYL METHYL ETHER	mg/kg								
SVOCs									
1,2-DICHLOROBENZENE	µg/kg		110 J		84 J				
1,4-DICHLOROBENZENE	µg/kg				69 J				
4-METHYLPHENOL (p-CRESOL)	µg/kg		256 J		300 J				
BENZOIC ACID	µg/kg								
BENZYL BUTYL PHTHALATE	µg/kg		94.9 J		153 J				
bis(2-ETHYLHEXYL) PHTHALATE	µg/kg		2800 =		4620 =		523 =		691 =
DI-n-BUTYL PHTHALATE	µg/kg								
DIBENZOFURAN	µg/kg								
PAHs									
1-METHYLNAPHTHALENE	µg/kg								
2-METHYLNAPHTHALENE	µg/kg				92.9 J		80.3 J		
ACENAPHTHENE	µg/kg								
ANTHRACENE	µg/kg		90.5 J		126 J		91.6 J		
BENZO(a)ANTHRACENE	µg/kg		498 =		610 =		178 J		276 J
BENZO(a)PYRENE	µg/kg		568 =		684 =		260 J		344 J
BENZO(b)FLUORANTHENE	µg/kg		871 =				355 J		560 =
BENZO(g,h,i)PERYLENE	µg/kg		172 J		162 J		103 J		135 J

Table 3-A
Bulk Sediment Chemistry and Characteristics
Operational Section 1: NW 20th Street to NW 14th Avenue
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-1**	**CH-2**	**CH-3**	**CH-4**	**CH-5**	**CH-6**	**CH-7**	**CH-8**
	Collection Date:	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**
Parameter	Unit	Concentration							
BENZO(k)FLUORANTHENE	µg/kg		776 =				236 J		345 J
CHRYSENE	µg/kg		755 =		922 =		242 J		396 J
DIBENZ(a,h)ANTHRACENE	µg/kg								
FLUORANTHENE	µg/kg		1160 =		1680 =		359 J		656 =
FLUORENE	µg/kg								
INDENO(1,2,3-c,d)PYRENE	µg/kg		142 J		113 J		133 J		192 J
NAPHTHALENE	µg/kg		75 J		110 J				
PHENANTHRENE	µg/kg		366 J		387 J		90.1 J		168 J
PYRENE	µg/kg		881 =		1180 =		317 J		526 =
TOTAL			6354.5		6066.9		2445		3598
PCBs									
PCB-1242 (AROCHLOR 1242)	µg/kg		860 =		100 =		180 =		90 =
PCB-1254 (AROCHLOR 1254)	µg/kg		820 =				130 =		90 =
PCB-1260 (AROCHLOR 1260)	µg/kg		410 J		51 J		120 J		
Pesticides									
ALDRIN	µg/kg								
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	µg/kg				1 J				
CHLORDANE	µg/kg								
DIELDRIN	µg/kg		4.2 J		2.8 =		3 J		
ENDRIN	µg/kg								
ENDRIN ALDEHYDE	µg/kg				2.9 J				
HEPTACHLOR	µg/kg								
HEPTACHLOR EPOXIDE	µg/kg								
p,p'-DDD	µg/kg				1.8 J				
p,p'-DDE	µg/kg		12 J		16 =		21 J		18 J
p,p'-DDT	µg/kg				1.6 J				
Herbicides									
DINOSEB	µg/kg								
Metals									
ARSENIC	mg/kg		29.4 =		26.3 =		25.4 =		15 =
BARIUM	mg/kg		340 =		145 =		156 =		53.3 =

Table 3-A
Bulk Sediment Chemistry and Characteristics
Operational Section 1: NW 20th Street to NW 14th Avenue
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-1**	**CH-2**	**CH-3**	**CH-4**	**CH-5**	**CH-6**	**CH-7**	**CH-8**
	Collection Date:	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**	**07/03/08**	**06/30/08**
Parameter	Unit	Concentration							
CADMIUM	mg/kg		57.6 =		43.3 =		19.8 =		11.3 =
CHROMIUM, TOTAL	mg/kg		130 =		80.6 =		60.4 =		102 =
LEAD	mg/kg		3610 JD		1510 JD		856 JD		439 J
MERCURY	mg/kg		13.6 =		16.4 =		4.61 =		1.49 =
NICKEL	mg/kg		42.7 =		19.5 =		19.3 =		22.1 =
SELENIUM	mg/kg								
SILVER	mg/kg		23.5 =		8.88 =		4.06 =D		2.09 =
General Chemistry									
pH		7.51 =		7.82 =		8.07 =		8.23 =	
TCLP_Metal									
ARSENIC	mg/L	0.109 =		0.136 =		0.115 =		0.136 =	
BARIUM	mg/L	0.406 =		0.68 =		0.578 =		0.199 =	
CADMIUM	mg/L								
CHROMIUM, TOTAL	mg/L	0.00809 J		0.00744 J		0.0108 J		0.01 J	
LEAD	mg/L	0.0732 J		0.306 =		0.243 =		0.26 =	
NICKEL	mg/L	0.069 =		0.0526 =		0.0245 J		0.0104 J	
TCLP_VOC									
BENZENE	mg/L	0.00042 J		0.0034 J		0.0042 J		0.0038 J	

mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
mg/L = milligrams per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 3-B
Dioxins in Sediments
Operational Section 1: NW 20th Street to NW 14th Avenue
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:		**CH-2**		**CH-4**		**CH-6**		**CH-8**	
	Collection Date:		**06/30/08**		**06/30/08**		**06/30/08**		**06/30/08**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	New TEQ	Conc.	New TEQ	Conc.	New TEQ
Dioxins										
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/g	0.01	3890 =	38.9	10600 =	106	13400 =	134	21000 =	210
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/g	0.01			3520 =	35.2	2830 =	28.3	8420 =	84.2
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/g	0.01	127 =	1.27	539 =	5.39	318 =	3.18	1290 =	12.9
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/g	0.1	109 =	10.9	710 =	71	279 =	27.9	1980 =	198
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	153 =	15.3	983 =	98.3	325 =	32.5	2660 =	266
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	301 =	30.1	1450 =	145	928 =	92.8	3800 =	380
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1			1220 =	122			3080 =	308
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	203 =	20.3	1190 =	119	493 =	49.3	3140 =	314
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/g	0.1	15.5 =	1.55	89 =	8.9	31.9 =	3.19	211 =	21.1
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/g	1	83.7 =	83.7	616 =	616	208 =	208	1800 =	1800
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.03**	110 =	**3.3**	770 =	**23.1**	275 =	**8.25**	2000 =	**60**
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	199 =	19.9	1410 =	141	456 =	45.6	3600 =	360
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.3**	229 =	**68.7**	1720 =	**516**	537 =	**161.1**	4290 =	**1287**
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	pg/g	1	17 =	17	116 =	116	40.5 =	40.5	378 =	378
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/g	0.1	360 =	36	2820 =	282	814 =	81.4		
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		9090 =		23000 =		28300 =		43100 =	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1550 =		6700 =		9470 =		15200 =	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		3850 =		20200 =		9960 =		57400 =	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1990 =		11700 =		5840 =		30400 =	
OCTACHLORODIBENZO-p-DIOXIN	pg/g	**0.0003**	32100 =	**9.63**	38500 =	**11.55**	113000 =	**33.9**	56400 =	**16.92**
OCTACHLORODIBENZOFURAN	pg/g	**0.0003**	1010 =	**0.303**	2010 =	**0.603**	4650 =	**1.395**	4320 =	**1.296**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		1310 =		9610 =		3330 =		29400 =	
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		2360 =		15300 =		5640 =		42100 =	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		1140 =		7120 =		2710 =		27300 =	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		2230 =		16600 =		5290 =		46500 =	
Total TEQ				**357**		**2417**		**951**		**5697**

Reference for World Health Organization Toxic Equivalent Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 4-A
Bulk Sediment Chemistry and Characteristics
Operational Section 2: NW 14th Avenue to NW 15th Street

June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	CH-9	CH-10	CH-11	CH-12	CH-13	CH-45	CH-14	CH-14-DUP	CH-15
	Collection Date:	07/07/08	07/08/08	07/07/08	06/30/08	07/07/08	07/16/08	07/07/08	07/07/08	07/12/08
Parameter	Unit	Concentration								
VOCs										
ACETONE	mg/kg		0.0367 =		0.14 =			0.0737 =	0.0652 =	
CARBON DISULFIDE	mg/kg		0.0019 J		0.0062 J			0.0096 =	0.0069 =	
ISOPROPYLBENZENE (CUMENE)	mg/kg									
METHYL ETHYL KETONE (2-BUTANONE)	mg/kg		0.0077 J		0.0299 J			0.0209 J	0.0125 J	
METHYLENE CHLORIDE	mg/kg		0.0188 =		0.0139 J			0.015 J	0.0139 =	
n-BUTYLBENZENE	mg/kg									
n-PROPYLBENZENE	mg/kg									
NAPHTHALENE	mg/kg									
o-XYLENE (1,2-Dimethylbenzene)	mg/kg				0.0022 J			0.0017 J	0.0014 J	
SEC-BUTYLBENZENE	mg/kg									
t-BUTYLBENZENE	mg/kg									
tert-BUTYL METHYL ETHER	mg/kg		0.00099 J							
SVOCs										
1,2-DICHLOROBENZENE	µg/kg									
1,4-DICHLOROBENZENE	µg/kg									
4-METHYLPHENOL (p-CRESOL)	µg/kg				115 J					
BENZOIC ACID	µg/kg									
BENZYL BUTYL PHTHALATE	µg/kg				65.7 J					
bis(2-ETHYLHEXYL) PHTHALATE	µg/kg		697 J		3780 =			3880 =	3360 =	
DI-n-BUTYL PHTHALATE	µg/kg									
DIBENZOFURAN	µg/kg				415 J					
PAHs										
1-METHYLNAPHTHALENE	µg/kg				100 J					
2-METHYLNAPHTHALENE	µg/kg				125 J					
ACENAPHTHENE	µg/kg				1050 =					
ANTHRACENE	µg/kg				2440 =			481 J		
BENZO(a)ANTHRACENE	µg/kg		386 J		13400 =D			2680 =	812 J	
BENZO(a)PYRENE	µg/kg		428 J		15500 =D			4020 =	1190 J	
BENZO(b)FLUORANTHENE	µg/kg		666 J		24000 =D			7870 =	2190 =	
BENZO(g,h,i)PERYLENE	µg/kg				2060 =			743 J		
BENZO(k)FLUORANTHENE	µg/kg		627 J		15200 =D			4820 =	1440 J	
CHRYSENE	µg/kg		509 J		17700 =D			4480 =	1390 J	
DIBENZ(a,h)ANTHRACENE	µg/kg									
FLUORANTHENE	µg/kg		1000 J		36500 =D			8090 =	2360 =	
INDENO(1,2,3-c,d)PYRENE	µg/kg				1200 =			487 J		

Table 4-A
Bulk Sediment Chemistry and Characteristics
Operational Section 2: NW 14th Avenue to NW 15th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-9**	**CH-10**	**CH-11**	**CH-12**	**CH-13**	**CH-45**	**CH-14**	**CH-14-DUP**	**CH-15**
	Collection Date:	**07/07/08**	**07/08/08**	**07/07/08**	**06/30/08**	**07/07/08**	**07/16/08**	**07/07/08**	**07/07/08**	**07/12/08**
Parameter	Unit	Concentration								
FLUORENE	µg/kg				913 =					
NAPHTHALENE	µg/kg				195 J					
PHENANTHRENE	µg/kg		361 J		11000 =			1860 J	546 J	
PYRENE	µg/kg		616 J		21200 =D			4630 =	1420 J	
TOTAL			4593		162583			40161	11348	
PCBs										
PCB-1242 (AROCHLOR 1242)	µg/kg		100 =		460 J					
PCB-1254 (AROCHLOR 1254)	µg/kg		110 =		1000 =			34 J	50 J	
PCB-1260 (AROCHLOR 1260)	µg/kg		160 =					42 J	52 J	
Pesticides										
ALDRIN	µg/kg									
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	µg/kg									
CHLORDANE	µg/kg		38 =							
DIELDRIN	µg/kg								1.2 J	
ENDRIN	µg/kg									
ENDRIN ALDEHYDE	µg/kg									
HEPTACHLOR	µg/kg									
HEPTACHLOR EPOXIDE	µg/kg									
p,p'-DDD	µg/kg		3.2 J						1.7 J	
p,p'-DDE	µg/kg		13 =		6 J			8.3 =	9 J	
p,p'-DDT	µg/kg				8.7 J			1.8 J	2.2 J	
Herbicides										
DINOSEB	µg/kg									
Metals										
ARSENIC	mg/kg		28 =D		15.7 =				50.3 =D	
BARIUM	mg/kg		26 =		76 =			53.6 =	42.1 =	
CADMIUM	mg/kg		6.51 =		21.4 =			11.8 =	7.19 =	
CHROMIUM, TOTAL	mg/kg		112 =		393 J			225 =	103 =	
LEAD	mg/kg		442 =		1230 =D			610 =	363 =	
MERCURY	mg/kg		0.78 =		2.46 =			1.82 =	1.54 =	
NICKEL	mg/kg		8.52 =		16.9 =			14.5 =D	8.02 =	
SELENIUM	mg/kg									
SILVER	mg/kg		0.907 =		2.25 =			1.94 =	1.32 =	
General Chemistry										
pH		7.82 =		8.02 =		8.01 =	7.58 =			7.45 =

Table 4-A
Bulk Sediment Chemistry and Characteristics
Operational Section 2: NW 14th Avenue to NW 15th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-9**	**CH-10**	**CH-11**	**CH-12**	**CH-13**	**CH-45**	**CH-14**	**CH-14-DUP**	**CH-15**
	Collection Date:	**07/07/08**	**07/08/08**	**07/07/08**	**06/30/08**	**07/07/08**	**07/16/08**	**07/07/08**	**07/07/08**	**07/12/08**
Parameter	Unit	Concentration								
TCLP_Metal										
ARSENIC	mg/L	0.108 =		0.111 =		0.164 =	0.101 =			0.0734 J
BARIUM	mg/L	0.318 =		0.279 =		0.366 =	0.212 =			0.335 =
CADMIUM	mg/L			0.0121 J						
CHROMIUM, TOTAL	mg/L	0.0195 J		0.0198 J		0.0579 J	0.015 J			0.0185 J
LEAD	mg/L	0.926 =		0.862 =		1.23 =	0.259 =			0.8 =
NICKEL	mg/L	0.0578 =		0.0434 J		0.0386 J	0.0112 J			0.0303 J
TCLP_VOC										
BENZENE	mg/L									

mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
mg/L = milligrams per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 4-B
Dioxins in Sediments
Operational Section 2: NW 14th Avenue to NW 15th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

SampleID:			**CH-10**		**CH-12**		**CH-14 MS/MSD**		**CH-14-DUP**	
Collection Date:			**07/08/08**		**06/30/08**		**07/07/08**		**07/07/08**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins										
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/g	0.01	4050 =	40.5	65700 =	657	18300 =	183	10400 =	104
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/g	0.01			13100 =	131	2720 =	27.2	1770 =	17.7
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/g	0.01	46.1 =	0.461	1160 =	11.6	215 =	2.15	135 =	1.35
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/g	0.1	43.8 =	4.38	459 =	45.9	107 =	10.7	79.2 =	7.92
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	67.3 =	6.73	636 =	63.6	128 =	12.8	94.2 =	9.42
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	199 =	19.9	3630 =	363	751 =	75.1	454 =	45.4
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1								
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	106 =	10.6	1590 =	159	319 =	31.9		
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/g	0.1	4 =	0.4	49.7 =	4.97	10.2 =	1.02		
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/g	1	28 =	28	232 =	232	57.4 =	57.4	48.7 =	48.7
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.03**								
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	75.2 =	7.52	634 =	63.4	136 =	13.6	117 =	11.7
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.3**	69.3 =	**20.79**	384 =	**115.2**	88.2 =	**26.46**	87.1 =	**26.13**
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	pg/g	1			48.9 =	48.9	13.3 =	13.3	11 =	11
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/g	0.1	103 =	10.3	585 =	58.5	134 =	13.4	123 =	12.3
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		10200 =		134000 =		40600 =		23000 =	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		2070 =		59600 =		11200 =		6750 =	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		2740 =		31000 =		6200 =		4240 =	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1590 =		23000 =		4390 =		2940 =	
OCTACHLORODIBENZO-p-DIOXIN	pg/g	**0.0003**	49200 =	**14.76**	288000 =	**86.4**	178000 =	**53.4**	107000 =	**32.1**
OCTACHLORODIBENZOFURAN	pg/g	**0.0003**	1750 =	**0.525**	29600 =	**8.88**	5310 =	**1.593**	3010 =	**0.903**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		381 =		4250 =		792 =		560 =	
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		2230 =		9150 =		2730 =		2410 =	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		355 =		6170 =		984 =		671 =	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		988 =		4970 =		1160 =		998 =	
Total TEQ				**165**		**2049**		**523**		**329**

Reference for World Health Organization Toxic Equivalent Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 5-A
Surface Water Chemistry and Characteristics
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:	CH-10					CH-20				
	Collection Date:	07/08/08					07/08/08				
	SampleID:	**CH-10-AQ**	**CH-10-ELUT-1**	**CH-10-ELUT-2**	**CH-10-ELUT-3**	**CH-10-ELUT-AVG**	**CH-20-AQ**	**CH-20-ELUT-1**	**CH-20-ELUT-2**	**CH-20-ELUT-3**	**CH-20-ELUT-AVG**
Parameter	Unit	**Concentration**					**Concentration**				
VOCs											
ACETONE	µg/L		178 JD	255 =D	59.8 =	164.3		60.2 =	32.1 =	120 =	70.8
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	µg/L										
METHYLENE CHLORIDE	µg/L		10.2 =	63.7 =	1.4 =	25.1		43.7 =	5.6 =	6.6 =	18.6
tert-BUTYL METHYL ETHER	µg/L			0.59 J		0.59					
TOLUENE	µg/L	0.62 J									
SVOCs											
bis(2-ETHYLHEXYL) PHTHALATE	µg/L		15.9 =	5.2 J	7.2 =	9.4			4.9 J	13.4 =	9.15
DI-n-BUTYL PHTHALATE	µg/L	8.5 =					8.1 =				
PAHs											
1-METHYLNAPHTHALENE	µg/L										
BENZO(a)ANTHRACENE	µg/L										
BENZO(a)PYRENE	µg/L										
BENZO(b)FLUORANTHENE	µg/L		0.22 J			0.22					
BENZO(g,h,i)PERYLENE	µg/L										
BENZO(k)FLUORANTHENE	µg/L										
CHRYSENE	µg/L										
DIBENZ(a,h)ANTHRACENE	µg/L										
FLUORANTHENE	µg/L	0.095 J	0.37 =			0.37	0.12 J			0.14 J	0.14
INDENO(1,2,3-c,d)PYRENE	µg/L										
NAPHTHALENE	µg/L										
PHENANTHRENE	µg/L		0.14 J			0.14					
PYRENE	µg/L		0.19 J			0.19	0.074 J				
TPH											
PETROLEUM HYDROCARBONS	mg/L							0.34 J			0.34
Pesticides											
HEPTACHLOR	µg/L			0.002 J		0.002					
p,p'-DDE	µg/L										
Metals											
ARSENIC	mg/L	0.00748 J	0.0177 =	0.0156 =	0.0136 =	0.0156	0.00814 J	0.0131 =	0.024 =D	0.0177 =	0.0154
BARIUM	mg/L	0.0305 =	0.0394 =	0.0418 =	0.0385 =	0.0399	0.0247 =	0.0567 =	0.0613 =	0.0605 =	0.0595
CHROMIUM, TOTAL	mg/L	0.00105 J	0.00367 J	0.00206 J	0.00195 J	0.00256	0.00152 J	0.00198 J	0.00253 J	0.00509 J	0.0032
LEAD	mg/L	0.00432 J	0.00834 J	0.00744 J	0.00937 J	0.00838	0.00399 J	0.00941 J	0.0051 J		0.007255
MERCURY	mg/L					0.000812				0.0000367 J	0.0000367
NICKEL	mg/L		0.000905 J	0.000762 J	0.000769 J						
SILVER	mg/L										
Dissolved Metals											
ARSENIC	µg/L	5.97 J					5.55 J				
BARIUM	µg/L	29.2 =					22.4 =				
CHROMIUM, TOTAL	µg/L	1.58 J					1.42 J				
LEAD	µg/L										
MERCURY	µg/L										
NICKEL	µg/L	0.719 J									
SELENIUM	µg/L										
General Chemistry											
pH	PH UNITS	7.34 =	7.9 =	8.02 =	7.98 =	7.97	7.36 =	8.07 =	8.16 =	8.19 =	8.14
TOTAL ORGANIC CARBON	mg/L	4.46 =	4.97 =	5.08 =	4.76 =	4.94	3.66 =	3.98 =	4.17 =	4.44 =	4.2
TOTAL VOLATILE SOLIDS	mg/L	233 =	244 =	432 =	396 =	357.3	257 =	267 =	323 =	280 =	290

AQ = surface water sample
ELUT-1 = elutriate sample 1
ELUT-2 = elutriate sample 2
ELUT-3 = elutriate sample 3
ELUT-AVG = average of ELUT-1, ELUT-2, and ELUT-3
ERB = equipment rinse blank
mg/L = milligrams per liter
ug/L = micrograms per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 5-A
Surface Water Chemistry and Characteristics
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:	CH-30					CH-39					ERB
	Collection Date:	07/14/08					07/09/08					07/03/08
	SampleID:	CH-30-AQ	CH-30-ELUT-1	CH-30-ELUT-2	CH-30-ELUT-3	CH-30-ELUT-AVG	CH-39-AQ	CH-39-ELUT-1	CH-39-ELUT-2	CH-39-ELUT-3	CH-39-ELUT-AVG	ERB-1
Parameter	Unit	Concentration					Concentration					Concentration
VOCs												
ACETONE	µg/L		32.5 =	31.4 =	33.7 =	32.5	30.2 =	30.7 =	25.9 =	44.9 =	33.8	
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	µg/L		7.6 =	8 =	7.5 =	7.7		7 =	6.7 =	5.1 =	6.27	
METHYLENE CHLORIDE	µg/L		16.2 =	40.5 =	16 =	24.2		18.4 =	2.5 =	18.6 =	13.2	2 =
tert-BUTYL METHYL ETHER	µg/L		0.92 J	0.87 J	1 =	0.93						
TOLUENE	µg/L						0.52 J					
SVOCs												
bis(2-ETHYLHEXYL) PHTHALATE	µg/L											
DI-n-BUTYL PHTHALATE	µg/L						8.2 =					
PAHs												
1-METHYLNAPHTHALENE	µg/L		0.17 J			0.17						
BENZO(a)ANTHRACENE	µg/L		0.2 J			0.2						
BENZO(a)PYRENE	µg/L		0.16 J			0.16						
BENZO(b)FLUORANTHENE	µg/L		0.27 =			0.27						
BENZO(g,h,i)PERYLENE	µg/L		0.4 =			0.4						
BENZO(k)FLUORANTHENE	µg/L		0.31 =			0.31						
CHRYSENE	µg/L		0.29 =			0.29						
DIBENZ(a,h)ANTHRACENE	µg/L		0.32 =			0.32						
FLUORANTHENE	µg/L											
INDENO(1,2,3-c,d)PYRENE	µg/L		0.26 =			0.26						
NAPHTHALENE	µg/L		0.17 J	0.064 J	0.06 J	0.098	0.11 J					
PHENANTHRENE	µg/L		0.054 J			0.054						
PYRENE	µg/L			0.051 J		0.051	0.074 J					
TPH												
PETROLEUM HYDROCARBONS	mg/L											
Pesticides												
HEPTACHLOR	µg/L											
p,p'-DDE	µg/L		0.0075 J			0.0075						
Metals												
ARSENIC	mg/L		0.0187 JD	0.0167 JD		0.0177	0.00861 JD	0.0208 =	0.0183 =	0.0171 =	0.0187	
BARIUM	mg/L	0.0232 =	0.0272 =	0.0297 =	0.0294 =	0.0288	0.0206 =	0.0891 =	0.0897 =	0.0853 =	0.088	0.00184 J
CHROMIUM, TOTAL	mg/L	0.00391 J	0.00303 J	0.00352 J	0.00333 J	0.00329	0.00371 J	0.00487 J	0.00446 J	0.0059 J	0.00508	
LEAD	mg/L	0.00506 J	0.00858 JD	0.0136 JD	0.0373 JD	0.0198	0.00562 J					
MERCURY	mg/L											
NICKEL	mg/L											
SILVER	mg/L	0.000633 J										
Dissolved Metals												
ARSENIC	µg/L						7.68 JD					
BARIUM	µg/L	20.6 =					18.6 =					
CHROMIUM, TOTAL	µg/L	3.02 J					3.49 J					
LEAD	µg/L	5.5 J										
MERCURY	µg/L											0.0351 J
NICKEL	µg/L											
SELENIUM	µg/L											6.49 J
General Chemistry												
pH	PH UNITS	7.35 =	8.02 =	8.1 =	8.02 =	8.047	7.44 =	8.11 =	8.12 =	7.95 =	8.06	5.13 =
TOTAL ORGANIC CARBON	mg/L	4.19 =	4.92 =	4.87 =	4.8 =	4.86	6.82 =	5.63 =	5.59 =	5.6 =	5.61	0.494 =
TOTAL VOLATILE SOLIDS	mg/L	398 =	212 =	207 =	232 =	217	620 =	579 =	480 =	521 =	526.7	6 =

AQ = surface water sample
ELUT-1 = elutriate sample 1
ELUT-2 = elutriate sample 2
ELUT-3 = elutriate sample 3
ELUT-AVG = average of ELUT-1, ELUT-2, and ELUT-3
ERB = equipment rinse blank
mg/L = milligrams per liter
ug/L = micrograms per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 5-B
Dioxins in Surface Water
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:		CH-10									
	Collection Date:		07/08/08									
	SampleID:		**CH-10-AQ**		**CH-10-ELUT-1**		**CH-10-ELUT-2**		**CH-10-ELUT-3**		**CH-10-ELUT-Avg**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins												
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/L	0.01			53.7 =	0.537	13 =	0.13	11.5 =	0.115	26.1	0.261
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/L	0.01			23.6 =	0.236	7.1 =	0.071	2.3 =	0.023	11	0.11
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/L	0.1			4.71 =	0.471					4.71	0.471
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			74.8 =	7.48	6.4 =	0.64	3.8 =	0.38	28.3	2.83
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			4.76 =	0.476					4.76	0.476
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1	0.97 =	0.097	34.9 =	3.49	5.8 =	0.58	2.9 =	0.29	14.5	1.45
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			8.35 =	0.835	2.43 =	0.243	1.4 =	0.14	4.06	0.406
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/L	0.1										
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.03**										
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			63.8 =	6.38	12.8 =	1.28	4 =	0.4	26.9	2.69
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.3**			27.5 =	**8.25**					27.5	**8.25**
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/L	0.1	1.69 =	0.169					3.1 =	0.31	3.1	0.31
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		10.4 =		127 =		26.2 =		25 =		59.4	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L				175 =		20.5 =		10 =		68.5	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		1.51 =		60.1 =		2.43 =		6.9 =		23.1	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		2.11 =		422 =		43.1 =		17.4 =		160.8	
OCTACHLORODIBENZO-p-DIOXIN	pg/L	**0.0003**			240 =	**0.072**	89.1 =	**0.02673**	129 =	0.0387	152.7	**0.04581**
OCTACHLORODIBENZOFURAN	pg/L	**0.0003**			187 =	**0.0561**	32.9 =	**0.00987**	13.5 =	0.00405	77.8	**0.02334**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L											
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L				278 =		26.8 =		8.4 =		104.4	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L				2.8 =						2.8	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		8.9 =		151 =		26.8 =		10.8 =		62.9	
TEQ Totals				**0.266**		**28.3**		**2.98**		**1.70**		**17.3**

Reference for World Health Organization Toxic Equivalent
Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
AQ = surface water sample
ELUT-1 = elutriate sample 1
ELUT-2 = elutriate sample 2
ELUT-3 = elutriate sample 3
ELUT-AVG = average of ELUT-1, ELUT-2, and ELUT-3
ERB = equipment rinse blank
pg/L = picogram per liter

Table 5-B
Dioxins in Surface Water
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:		**CH-20**									
	Collection Date:		**07/08/08**									
	SampleID:		**CH-20-AQ**		**CH-20-ELUT-1**		**CH-20-ELUT-2**		**CH-20-ELUT-3**		**CH-20-ELUT-Average**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins												
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/L	0.01			48.7 =	0.487	53 =	0.53	55.9 =	0.559	52.5	0.525
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/L	0.01										
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/L	0.1										
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			4.56 =	0.456					4.56	0.456
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			2.72 =	0.272			1.93 =	0.193	2.325	0.2325
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1					3.19 =	0.319			3.19	0.319
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1										
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/L	0.1										
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.03**										
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			3.68 =	0.368	2.89 =	0.289	2 =	0.2	2.86	0.286
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.3**	5.4 =	**1.62**								
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/L	0.1					2.7 =	0.27	2.43 =	0.243	2.565	0.2565
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		19.4 =		105 =		105 =		137 =		115.7	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		4.11 =		20.9 =		23.3 =		22.7 =		22.3	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		5.78 =		14.1 =		10.1 =		12.1 =		12.1	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		4.1 =		20.8 =		16.6 =		5.9 =		14.4	
OCTACHLORODIBENZO-p-DIOXIN	pg/L	**0.0003**			505 =	**0.1515**	611 =	**0.1833**	823 =	**0.2469**	646.3	**0.19389**
OCTACHLORODIBENZOFURAN	pg/L	**0.0003**			27 =	**0.0081**	27.6 =	**0.00828**	31.7 =	**0.00951**	28.8	**0.00864**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L											
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		5.4 =		11.7 =		10.9 =		8.3 =		10.3	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		3.12 =		1.3 =						1.3	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		3.9 =		14.2 =		11.4 =		3.58 =		9.73	
TEQ Totals				**1.62**		**1.74**		**1.60**		**1.45**		**2.28**

Reference for World Health Organization Toxic Equivalent
Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
AQ = surface water sample
ELUT-1 = elutriate sample 1
ELUT-2 = elutriate sample 2
ELUT-3 = elutriate sample 3
ELUT-AVG = average of ELUT-1, ELUT-2, and ELUT-3
ERB = equipment rinse blank
pg/L = picogram per liter

Table 5-B
Dioxins in Surface Water
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:		**CH-30**									
	Collection Date:		**07/14/08**									
	SampleID:		**CH-30-AQ**		**CH-30-ELUT-1**		**CH-30-ELUT-2**		**CH-30-ELUT-3**		**CH-30-ELUT-Average**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins												
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/L	0.01	7.32 =	0.0732	40.4 =	0.404	10.1 =	0.101	6.3 =	0.063	18.9	0.189
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/L	0.01										
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/L	0.1	1.8 =	0.18								
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1										
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1	1.65 =	0.165	2.4 =	0.24					2.4	0.24
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1										
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1	1.57 =	0.157								
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/L	0.1	1.5 =	0.15								
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.03**	1.3 =	**0.039**								
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1	1.3 =	0.13								
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.3**										
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/L	0.1	1.59 =	0.159								
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		7.32 =		98.4 =		10.1 =		6.3 =		38.3	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		2.9 =		18 =		3.7 =		1.89 =		7.86	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		5.02 =		12.9 =						12.9	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		2.8 =		7.5 =		5.1 =				6.3	
OCTACHLORODIBENZO-p-DIOXIN	pg/L	**0.0003**	33.1 =	**0.00993**	515 =	**0.1545**	114 =	**0.0342**	41 =	**0.0123**	223.3	**0.06699**
OCTACHLORODIBENZOFURAN	pg/L	**0.0003**	5.3 =	**0.00159**	15.2 =	**0.00456**					15.2	**0.00456**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L											
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		1.3 =		10 =						10	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L											
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		2.77 =				2.5 =				2.5	
TEQ Totals				**1.06**		**0.803**		**0.135**		**0.0753**		**0.501**

Reference for World Health Organization Toxic Equivalent
Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
AQ = surface water sample
ELUT-1 = elutriate sample 1
ELUT-2 = elutriate sample 2
ELUT-3 = elutriate sample 3
ELUT-AVG = average of ELUT-1, ELUT-2, and ELUT-3
ERB = equipment rinse blank
pg/L = picogram per liter

Table 5-B
Dioxins in Surface Water
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:		CH-39										ERB	
	Collection Date:		07/09/08										07/03/08	
	SampleID:		CH-39		CH-39-ELUT-1		CH-39-ELUT-2		CH-39-ELUT-3		CH-39-ELUT-Avg		ERB-1	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins														
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/L	0.01	16.6 =	0.166	10 =	0.1	6.79 =	0.0679	11.4 =	0.114	9.4	0.094		
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/L	0.01												
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/L	0.1												
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1												
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			0.76 =	0.076					0.76	0.076		
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			0.9 =	0.09			1.05 =	0.105	0.975	0.0975		
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			1.45 =	0.145					1.45	0.145		
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/L	0.1												
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.03**												
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1												
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/L	**0.3**												
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/L	0.1	1.8 =	0.18	1.76 =	0.176	1.06 =	0.106	1.05 =	0.105	1.29	0.129		
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		43 =		20.1 =		12.5 =		27 =		19.9			
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L				3.33 =				5.62 =		4.475			
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		2.7 =		2.21 =				2.15 =		2.18			
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		3.9 =		5.74 =		0.96 =		3.95 =		3.55			
OCTACHLORODIBENZO-p-DIOXIN	pg/L	**0.0003**	203 =	**0.0609**	63 =	**0.0189**	49.9 =	**0.01497**	141 =	**0.0423**	84.6	**0.02538**	4.8 =	**0.00144**
OCTACHLORODIBENZOFURAN	pg/L	**0.0003**					3.6 =	**0.00108**	6.8 =	**0.00204**	5.2	**0.00156**	2.2 =	**0.00066**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		5.4 =											
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		4.3 =		3.3 =				1.5 =		2.4		2.5 =	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L													
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		5.6 =		3.4 =		1.06 =		2.31 =		2.257		4.5 =	
TEQ Totals				**0.407**		**0.606**		**0.190**		**0.368**		**0.568**		**0.00210**

Reference for World Health Organization Toxic Equivalent
Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
AQ = surface water sample
ELUT-1 = elutriate sample 1
ELUT-2 = elutriate sample 2
ELUT-3 = elutriate sample 3
ELUT-AVG = average of ELUT-1, ELUT-2, and ELUT-3
ERB = equipment rinse blank
pg/L = picogram per liter

Table 6-A

Bulk Sediment Chemistry and Characteristics

Operational Section 3: NW 15th Street to NW 14th Street

June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-16**	**CH-17**	**CH-18**	**CH-19**	**CH-19Dup**	**CH-20**	**CH-21**
	Collection Date:	**07/07/08**	**07/12/08**	**07/07/08**	**07/12/08**	**07/12/08**	**07/07/08**	**07/12/08**
Parameter	Unit	**Concentration**						
VOCs								
ACETONE	mg/kg	0.0376 =		0.0288 =			0.061 =	
CARBON DISULFIDE	mg/kg	0.0102 =		0.0071 =			0.0032 J	
ISOPROPYLBENZENE (CUMENE)	mg/kg							
METHYL ETHYL KETONE (2-BUTANONE)	mg/kg	0.0118 J		0.006 J			0.0108 J	
METHYLENE CHLORIDE	mg/kg	0.0096 J		0.0411 =			0.0263 =	
n-BUTYLBENZENE	mg/kg							
n-PROPYLBENZENE	mg/kg							
NAPHTHALENE	mg/kg							
o-XYLENE (1,2-Dimethylbenzene)	mg/kg							
SEC-BUTYLBENZENE	mg/kg							
t-BUTYLBENZENE	mg/kg							
tert-BUTYL METHYL ETHER	mg/kg			0.0015 J			0.0011 J	
SVOCs								
1,2-DICHLOROBENZENE	µg/kg							
1,4-DICHLOROBENZENE	µg/kg							
4-METHYLPHENOL (p-CRESOL)	µg/kg							
BENZOIC ACID	µg/kg							
BENZYL BUTYL PHTHALATE	µg/kg	670 J						
bis(2-ETHYLHEXYL) PHTHALATE	µg/kg	4000 =		2800 =			929 =	
DI-n-BUTYL PHTHALATE	µg/kg							
DIBENZOFURAN	µg/kg							

Table 6-A
Bulk Sediment Chemistry and Characteristics
Operational Section 3: NW 15th Street to NW 14th Street

June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-16**	**CH-17**	**CH-18**	**CH-19**	**CH-19Dup**	**CH-20**	**CH-21**
	Collection Date:	**07/07/08**	**07/12/08**	**07/07/08**	**07/12/08**	**07/12/08**	**07/07/08**	**07/12/08**
Parameter	Unit	**Concentration**						
PAHs								
1-METHYLNAPHTHALENE	µg/kg							
2-METHYLNAPHTHALENE	µg/kg							
ACENAPHTHENE	µg/kg							
ANTHRACENE	µg/kg							
BENZO(a)ANTHRACENE	µg/kg	2090 J		974 J			242 J	
BENZO(a)PYRENE	µg/kg	3290 =		1520 J			333 J	
BENZO(b)FLUORANTHENE	µg/kg	5370 =		2450 =			436 =	
BENZO(g,h,i)PERYLENE	µg/kg	578 J		309 J			195 J	
BENZO(k)FLUORANTHENE	µg/kg	4840 =		1690 J			409 =	
CHRYSENE	µg/kg	3240 =		1440 J			349 J	
DIBENZ(a,h)ANTHRACENE	µg/kg							
FLUORANTHENE	µg/kg	6680 =		2860 =			706 =	
FLUORENE	µg/kg							
INDENO(1,2,3-c,d)PYRENE	µg/kg	514 J		270 J			210 J	
NAPHTHALENE	µg/kg						99 J	
PHENANTHRENE	µg/kg	1420 J		680 J			181 J	
PYRENE	µg/kg	3980 =		1800 J			490 =	
TOTAL		32002		13993			3650	
PCBs								
PCB-1242 (AROCHLOR 1242)	µg/kg							
PCB-1254 (AROCHLOR 1254)	µg/kg	28 J		14 J			19 J	
PCB-1260 (AROCHLOR 1260)	µg/kg	24 J		13 J			18 J	

Table 6-A
Bulk Sediment Chemistry and Characteristics
Operational Section 3: NW 15th Street to NW 14th Street

June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-16**	**CH-17**	**CH-18**	**CH-19**	**CH-19Dup**	**CH-20**	**CH-21**
	Collection Date:	**07/07/08**	**07/12/08**	**07/07/08**	**07/12/08**	**07/12/08**	**07/07/08**	**07/12/08**
Parameter	Unit	**Concentration**						
Pesticides								
ALDRIN	µg/kg							
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	µg/kg							
CHLORDANE	µg/kg							
DIELDRIN	µg/kg	0.94 J		0.9 J			0.81 J	
ENDRIN	µg/kg							
ENDRIN ALDEHYDE	µg/kg							
HEPTACHLOR	µg/kg							
HEPTACHLOR EPOXIDE	µg/kg							
p,p'-DDD	µg/kg							
p,p'-DDE	µg/kg	9.3 =		4.2 =			6.3 =	
p,p'-DDT	µg/kg							
Herbicides								
DINOSEB	µg/kg							
Metals								
ARSENIC	mg/kg			20.6 =D			13.6 =	
BARIUM	mg/kg	44.6 =		19 =D			60.2 =D	
CADMIUM	mg/kg	10.4 =		3.2 =			0.818 JD	
CHROMIUM, TOTAL	mg/kg	105 =		76.4 =D			73.7 =D	
LEAD	mg/kg	664 =D		419 =D			372 =D	
MERCURY	mg/kg	0.734 =		0.709 =			0.906 =	
NICKEL	mg/kg	19.2 =D		8.69 =			9.49 =D	
SELENIUM	mg/kg							
SILVER	mg/kg	2.16 =		1.01 =			0.968 JD	
General Chemistry								
pH			7.65 =		7.61 =	7.6 =		7.45 =

Table 6-A
Bulk Sediment Chemistry and Characteristics
Operational Section 3: NW 15th Street to NW 14th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-16**	**CH-17**	**CH-18**	**CH-19**	**CH-19Dup**	**CH-20**	**CH-21**
	Collection Date:	**07/07/08**	**07/12/08**	**07/07/08**	**07/12/08**	**07/12/08**	**07/07/08**	**07/12/08**
Parameter	Unit	**Concentration**						
TCLP_Metal								
ARSENIC	mg/L		0.124 =		0.117 =	0.145 =		0.146 =
BARIUM	mg/L		0.316 =		0.262 =	1.02 =		1.28 =
CADMIUM	mg/L		0.013 J		0.0254 J	0.00916 J		0.03 J
CHROMIUM, TOTAL	mg/L		0.0188 J		0.0215 J	0.0204 J		0.0288 J
LEAD	mg/L		0.43 =		0.719 =	0.635 =		0.593 =
NICKEL	mg/L		0.0249 J		0.0199 J	0.0287 J		0.0335 J
TCLP_VOC								
BENZENE	mg/L							

mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
mg/L = milligrams per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 6-B
Dioxins in Sediments
Operational Section 3: NW 15th Street to NW 14th Street

June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:		**CH-16**		**CH-18**		**CH-20**	
	Collection Date:		**07/07/08**		**07/07/08**		**07/07/08**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins								
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/g	0.01	27400 =	274	13700 =	137	12000 =	120
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/g	0.01	3470 =	34.7	1910 =	19.1	1790 =	17.9
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/g	0.01	312 =	3.12	173 =	1.73	145 =	1.45
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/g	0.1	149 =	14.9	78.4 =	7.84	74.1 =	7.41
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	195 =	19.5	103 =	10.3	94.7 =	9.47
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	1170 =	117	629 =	62.9	544 =	54.4
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1						
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1						
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/g	0.1	13.8 =	1.38	7.2 =	0.72	7.1 =	0.71
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/g	1	76.8 =	76.8	44.1 =	44.1	38.1 =	38.1
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.03**					61.3 =	**1.839**
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	204 =	20.4	109 =	10.9	103 =	10.3
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.3**	154 =	**46.2**	72.1 =	**21.63**	59.6 =	**17.88**
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	pg/g	1	14.3 =	14.3	7.92 =	7.92	7.84 =	7.84
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/g	0.1	263 =	1.23	150 =	15	112 =	11.2
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		58500 =		31800 =		26300 =	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		14600 =		7680 =		6930 =	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		8140 =		4360 =		3670 =	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		4900 =		2440 =		2370 =	
OCTACHLORODIBENZO-p-DIOXIN	pg/g	**0.0003**	220000 =	**66**	125000 =	**37.5**	98600 =	**29.58**
OCTACHLORODIBENZOFURAN	pg/g	**0.0003**	6690 =	**2.007**	3740 =	**1.122**	3340 =	**1.002**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		1200 =		734 =		454 =	
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		2850 =		1400 =		1480 =	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		1010 =		556 =		456 =	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1660 =		1280 =		918 =	
Total TEQ				**692**		**378**		**329**

Reference for World Health Organization Toxic Equivalent Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 7-A
Bulk Sediment Chemistry and Characteristics
Operational Section 4: NW 14th Street to SR 836
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-22**	**CH-23**	**CH-24**	**CH-24-DUP**	**CH-25**
	Collection Date:	**07/01/08**	**07/01/08**	**07/01/08**	**07/01/08**	**07/01/08**
Parameter	Unit	**Concentration**				
VOCs						
ACETONE	mg/kg	0.0479 =		0.0268 =	0.0324 J	
CARBON DISULFIDE	mg/kg	0.0078 =		0.0067 =	0.0103 =	
ISOPROPYLBENZENE (CUMENE)	mg/kg					
METHYL ETHYL KETONE (2-BUTANONE)	mg/kg	0.0112 J		0.0078 J		
METHYLENE CHLORIDE	mg/kg	0.0088 J		0.0069 J	0.0265 =	
n-BUTYLBENZENE	mg/kg					
n-PROPYLBENZENE	mg/kg					
NAPHTHALENE	mg/kg					
o-XYLENE (1,2-Dimethylbenzene)	mg/kg					
SEC-BUTYLBENZENE	mg/kg					
t-BUTYLBENZENE	mg/kg					
tert-BUTYL METHYL ETHER	mg/kg					
SVOCs						
1,2-DICHLOROBENZENE	µg/kg					
1,4-DICHLOROBENZENE	µg/kg					
4-METHYLPHENOL (p-CRESOL)	µg/kg					
BENZOIC ACID	µg/kg					
BENZYL BUTYL PHTHALATE	µg/kg			57.9 J	405 =	
bis(2-ETHYLHEXYL) PHTHALATE	µg/kg	380 J		3770 =	1860 =	
DI-n-BUTYL PHTHALATE	µg/kg				51.9 J	
DIBENZOFURAN	µg/kg					
PAHs						
1-METHYLNAPHTHALENE	µg/kg					
2-METHYLNAPHTHALENE	µg/kg				63.9 J	
ACENAPHTHENE	µg/kg				80.6 J	
ANTHRACENE	µg/kg			104 J	142 J	
BENZO(a)ANTHRACENE	µg/kg	90.4 J		406 =	862 =	
BENZO(a)PYRENE	µg/kg	140 J		529 =	1080 =	
BENZO(b)FLUORANTHENE	µg/kg	246 J		834 =	1880 =	
BENZO(g,h,i)PERYLENE	µg/kg			133 J	239 J	
BENZO(k)FLUORANTHENE	µg/kg	156 J		640 =	1220 =	
CHRYSENE	µg/kg	166 J		513 =	1160 =	
DIBENZ(a,h)ANTHRACENE	µg/kg					
FLUORANTHENE	µg/kg	280 J		1140 =	2580 =	
FLUORENE	µg/kg				55.8 J	
INDENO(1,2,3-c,d)PYRENE	µg/kg			137 J	153 J	
NAPHTHALENE	µg/kg				55.4 J	
PHENANTHRENE	µg/kg			345 J	716 =	
PYRENE	µg/kg	184 J		671 =	1500 =	
TOTAL		1262.4		5452	11787.7	
PCBs						
PCB-1242 (AROCHLOR 1242)	µg/kg	33 J		54 =	78 =	
PCB-1254 (AROCHLOR 1254)	µg/kg			53 =	78 =	
PCB-1260 (AROCHLOR 1260)	µg/kg	28 J		38 J	69 J	
Pesticides						
ALDRIN	µg/kg	0.31 J				
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	µg/kg				2.6 J	
CHLORDANE	µg/kg	28 =		25 =	120 J	
DIELDRIN	µg/kg	1.4 J		1.5 J	15 J	

Table 7-A
Bulk Sediment Chemistry and Characteristics
Operational Section 4: NW 14th Street to SR 836
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-22**	**CH-23**	**CH-24**	**CH-24-DUP**	**CH-25**
	Collection Date:	**07/01/08**	**07/01/08**	**07/01/08**	**07/01/08**	**07/01/08**
Parameter	Unit	**Concentration**				
ENDRIN	µg/kg					
ENDRIN ALDEHYDE	µg/kg	1.4 J		1.8 J	7.3 J	
HEPTACHLOR	µg/kg			0.43 J		
HEPTACHLOR EPOXIDE	µg/kg					
p,p'-DDD	µg/kg	3.2 =		3.1 =	38 =	
p,p'-DDE	µg/kg	9.6 =		11 =	35 =	
p,p'-DDT	µg/kg	0.77 J		1.1 J	9.6 J	
Herbicides						
DINOSEB	µg/kg					
Metals						
ARSENIC	mg/kg	14.3 =D		10.6 =		
BARIUM	mg/kg	18.9 =		19.5 =	12.9 =	
CADMIUM	mg/kg				0.935 =	
CHROMIUM, TOTAL	mg/kg	29.6 =		81.9 =	91.9 =	
LEAD	mg/kg	70.7 JD		214 J	438 JD	
MERCURY	mg/kg	0.155 =		0.405 =	0.412 =	
NICKEL	mg/kg	4.37 =		10.2 =	6.6 =	
SELENIUM	mg/kg					
SILVER	mg/kg	0.443 JD		0.669 JD	0.473 =	
General Chemistry						
pH			7.95 =			8.87 =
TCLP_Metal						
ARSENIC	mg/L		0.169 =			0.0603 J
BARIUM	mg/L		0.135 =			0.0781 J
CADMIUM	mg/L					
CHROMIUM, TOTAL	mg/L		0.00606 J			
LEAD	mg/L		0.123 J			0.0657 J
NICKEL	mg/L		0.0128 J			
TCLP_VOC						
BENZENE	mg/L		0.0043 J			

mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
mg/L = milligrams per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 7-B
Dioxins in Sediments
Operational Section 4: NW 14th Street to SR 836
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:		**CH-22**		**CH-24-DUP**		**CH-24**	
	Collection Date:		**07/01/08**		**07/01/08**		**07/01/08**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins								
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/g	0.01	6890 =	68.9	1120 =	11.2	7310 =	73.1
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/g	0.01	934 =	9.34	183 =	1.83	1130 =	11.3
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/g	0.01	78.6 =	0.786	17 =	0.17	94.1 =	0.941
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/g	0.1	37.5 =	3.75	12.6 =	1.26	36.7 =	3.67
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	52.4 =	5.24	16 =	1.6	68.1 =	6.81
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	281 =	28.1	48.1 =	4.81	302 =	30.2
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1						
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	80.2 =	4	30.9 =	3.09	89.6 =	8.96
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/g	0.1	2.6 =	0.26			2.4 =	0.24
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/g	1	15.7 =	15.7	6.69 =	6.69	18 =	18
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.03**					25.6 =	**0.768**
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	37.9 =	3.79	17.2 =	1.72	52.8 =	5.28
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.3**	29.5 =	**8.85**	12.5 =	**3.75**	32.7 =	**9.81**
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	pg/g	1	3.1 =	3.1				
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/g	0.1	47.8 =	4.78	27.1 =	2.71	55.1 =	5.51
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		16500 =		2550 =		17800 =	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		4000 =		602 =		4880 =	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		2190 =		487 =		2390 =	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1480 =		302 =		1700 =	
OCTACHLORODIBENZO-p-DIOXIN	pg/g	**0.0003**	91200 =	**27.36**	12400 =	**3.72**	92400 =	**27.72**
OCTACHLORODIBENZOFURAN	pg/g	**0.0003**	2100 =	**0.63**	321 =	**0.0963**	2340 =	**0.702**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		235 =		71.5 =		165 =	
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		648 =		250 =		772 =	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		164 =		139 =		270 =	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		312 =		275 =		379 =	
Total TEQ				**185**		**42.6**		**203**

Reference for World Health Organization Toxic Equivalent Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 8-A
Bulk Sediment Chemistry and Characteristics
Operational Section 5: SR 836 to NW 11th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-26**	**CH-27**	**CH-28**	**CH-29**	**CH-29Dup**	**CH-30**	**CH-31**	**CH-32**
	Collection Date:	**07/02/08**	**07/02/08**	**07/02/08**	**07/16/08**	**07/16/08**	**07/16/08**	**07/02/08**	**07/02/08**
Parameter	Unit	**Concentration**							
VOCs									
ACETONE	mg/kg			0.0521 J			0.0186 J		0.0193 =
CARBON DISULFIDE	mg/kg			0.0175 =					0.0022 J
ISOPROPYLBENZENE (CUMENE)	mg/kg								
METHYL ETHYL KETONE (2-BUTANONE)	mg/kg								0.0043 J
METHYLENE CHLORIDE	mg/kg	0.0158 =		0.033 J			0.0214 =		0.011 =
n-BUTYLBENZENE	mg/kg								
n-PROPYLBENZENE	mg/kg								
NAPHTHALENE	mg/kg						0.00075 J		
o-XYLENE (1,2-Dimethylbenzene)	mg/kg								
SEC-BUTYLBENZENE	mg/kg								
t-BUTYLBENZENE	mg/kg								
tert-BUTYL METHYL ETHER	mg/kg								
SVOCs									
1,2-DICHLOROBENZENE	µg/kg								
1,4-DICHLOROBENZENE	µg/kg								
4-METHYLPHENOL (p-CRESOL)	µg/kg								
BENZOIC ACID	µg/kg								
BENZYL BUTYL PHTHALATE	µg/kg			60.5 J					58.4 J
bis(2-ETHYLHEXYL) PHTHALATE	µg/kg	596 =		2770 =			290 J		1480 =
DI-n-BUTYL PHTHALATE	µg/kg			166 J			320 J		
DIBENZOFURAN	µg/kg								
PAHs									
1-METHYLNAPHTHALENE	µg/kg								
2-METHYLNAPHTHALENE	µg/kg								
ACENAPHTHENE	µg/kg			71.1 J					
ANTHRACENE	µg/kg	68.7 J		423 =					84.5 J
BENZO(a)ANTHRACENE	µg/kg	302 =		5100 =			94 J		508 =
BENZO(a)PYRENE	µg/kg	329 =		5790 =			126 J		772 =
BENZO(b)FLUORANTHENE	µg/kg	554 =		8460 =D			193 J		1430 =
BENZO(g,h,i)PERYLENE	µg/kg	64.2 J		890 =					161 J
BENZO(k)FLUORANTHENE	µg/kg	448 =		6560 =			161 J		885 =
CHRYSENE	µg/kg	336 =		7100 =			118 J		686 =
DIBENZ(a,h)ANTHRACENE	µg/kg	41.1 J		458 =					

Table 8-A
Bulk Sediment Chemistry and Characteristics
Operational Section 5: SR 836 to NW 11th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	CH-26	CH-27	CH-28	CH-29	CH-29Dup	CH-30	CH-31	CH-32
	Collection Date:	07/02/08	07/02/08	07/02/08	07/16/08	07/16/08	07/16/08	07/02/08	07/02/08
Parameter	Unit	Concentration							
FLUORANTHENE	µg/kg	755 =		12500 =D			218 J		1460 =
FLUORENE	µg/kg			75.2 J					
INDENO(1,2,3-c,d)PYRENE	µg/kg	44 J		501 =					91.8 J
NAPHTHALENE	µg/kg								
PHENANTHRENE	µg/kg	281 =		1530 =					339 J
PYRENE	µg/kg	441 =		7180 =			129 J		845 =
TOTAL		3664		56638.3			1039		7262.3
PCBs									
PCB-1242 (AROCHLOR 1242)	µg/kg	29 J		18 J			160 =		40 J
PCB-1254 (AROCHLOR 1254)	µg/kg	24 J		20 J			54 =		21 J
PCB-1260 (AROCHLOR 1260)	µg/kg	13 J		13 J			53 J		
Pesticides									
ALDRIN	µg/kg								
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	µg/kg	0.22 J		0.83 J					0.78 J
CHLORDANE	µg/kg	12 J		26 =					33 =
DIELDRIN	µg/kg	1.1 J		2.1 =					2.4 =
ENDRIN	µg/kg			0.47 J					
ENDRIN ALDEHYDE	µg/kg	1.3 J		2.8 =					2.5 J
HEPTACHLOR	µg/kg	0.5 J		0.35 J					
HEPTACHLOR EPOXIDE	µg/kg	1.1 J					2.5 J		
p,p'-DDD	µg/kg	1 J		2.1 =					2.1 J
p,p'-DDE	µg/kg	6.7 =		4.9 =			18 =		6.4 =
p,p'-DDT	µg/kg	0.83 J		2.2 =					1.3 J
Herbicides									
DINOSEB	µg/kg								
Metals									
ARSENIC	mg/kg								
BARIUM	mg/kg	9.31 =		11.2 =			15.7 =		8.8 =
CADMIUM	mg/kg	0.204 JD		0.53 JD			1.53 =		
CHROMIUM, TOTAL	mg/kg	71.1 =		66.7 =			109 =		30.6 =
LEAD	mg/kg	188 =		212 =			229 =D		118 =
MERCURY	mg/kg	0.205 =		0.378 =			0.0404 =		0.205 =
NICKEL	mg/kg	4 =		10.3 =			5.3 =		4.47 =
SELENIUM	mg/kg						0.586 JD		

Table 8-A
Bulk Sediment Chemistry and Characteristics
Operational Section 5: SR 836 to NW 11th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:	**CH-26**	**CH-27**	**CH-28**	**CH-29**	**CH-29Dup**	**CH-30**	**CH-31**	**CH-32**
	Collection Date:	**07/02/08**	**07/02/08**	**07/02/08**	**07/16/08**	**07/16/08**	**07/16/08**	**07/02/08**	**07/02/08**
Parameter	Unit	**Concentration**							
SILVER	mg/kg	0.27 J		0.655 =			0.61 =D		0.238 J
General Chemistry									
pH			8.2 =		8.11 =	7.71 =		8.07 =	
TCLP_Metal									
ARSENIC	mg/L		0.0925 J		0.0728 J	0.072 J		0.123 =	
BARIUM	mg/L		0.127 =		0.132 =	0.0915 J		0.309 =	
CADMIUM	mg/L								
CHROMIUM, TOTAL	mg/L		0.00987 J		0.0127 J	0.0111 J		0.0119 J	
LEAD	mg/L		0.176 =		0.124 J	0.117 J		0.174 =	
NICKEL	mg/L		0.0452 J		0.0163 J	0.0189 J		0.0176 J	
TCLP_VOC									
BENZENE	mg/L								

mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
mg/L = milligrams per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 8-B
Dioxins in Sediments
Operational Section 5: SR 836 to NW 11th Street
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:		**CH-26**		**CH-28**		**CH-30**		**CH-32**	
	Collection Date:		**07/02/08**		**07/02/08**		**07/16/08**		**07/02/08**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins										
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/g	0.01	4150 =	41.5	3250 =	32.5	4110 =	41.1	3060 =	30.6
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/g	0.01	728 =	7.28	587 =	5.87	732 =	7.32	248 =	2.48
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/g	0.01	62 =	0.62	51.8 =	0.518	44.2 =	0.442	18.9 =	0.189
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/g	0.1	27 =	2.7	48.1 =	4.81	27.9 =	2.79	13.6 =	1.36
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	57.6 =	5.76	37 =	3.7	41.9 =	4.19	16.6 =	1.66
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	213 =	21.3	171 =	17.1	176 =	17.6	68.5 =	6.85
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1								
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	60.3 =	6.03	171 =	17.1	57.6 =	5.76	31.3 =	3.13
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/g	0.1			1.8 =	0.18				
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/g	1	12 =	12	25.2 =	25.2	12.5 =	12.5	6.87 =	6.87
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.03**	12.7 =	**0.381**						
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	30.3 =	3.03	71.4 =	7.14	35.1 =	3.51	13.3 =	1.33
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.3**	16.5 =	**4.95**	45.3 =	**13.59**	20.4 =	**6.12**	12.5 =	**3.75**
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	pg/g	1			3.88 =	3.88	1.8 =	1.8		
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/g	0.1	26.4 =	2.64	44.9 =	4.49	27.5 =	2.75	15.5 =	1.55
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		10900 =		10000 =		10200 =		6180 =	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		3120 =		2240 =		2550 =		866 =	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		1780 =		2730 =		1580 =		598 =	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1180 =		1720 =		1120 =		390 =	
OCTACHLORODIBENZO-p-DIOXIN	pg/g	**0.0003**	51600 =	**15.48**	38100 =	**11.43**	47300 =	**14.19**	32700 =	**9.81**
OCTACHLORODIBENZOFURAN	pg/g	**0.0003**	1570 =	**0.471**	1260 =	**0.378**	1210 =	**0.363**	523 =	**0.1569**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		159 =		587 =		67 =		95 =	
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		477 =		3150 =		720 =		334 =	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		112 =		261 =		103 =		66.8 =	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		285 =		1130 =		258 =		230 =	
Total TEQ				**124**		**148**		**120**		**69.7**

Reference for World Health Organization Toxic Equivalent Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 9-A
Bulk Sediment Chemistry and Characteristics
Operational Section 6: NW 11th Street to Miami River
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

		SampleID:	**CH-33**	**CH-34**	**CH-35**	**CH-36**	**CH-36DUP**	**CH-37**	**CH-38**	**CH-39**	**CH-40**	**CH-44**
		Collection Date:	**07/10/08**	**07/10/08**	**07/10/08**	**07/11/08**	**07/11/08**	**07/11/08**	**07/11/08**	**07/09/08**	**07/09/08**	**07/10/08**
Parameter		Unit	**Concentration**									
VOCs												
	ACETONE	mg/kg		0.0207 J		0.0293 =	0.0442 =		0.0196 J		0.0558 J	0.0243 =
	CARBON DISULFIDE	mg/kg		0.0075 =		0.0094 =	0.0124 =		0.0074 =		0.0127 =	0.0099 =
	ISOPROPYLBENZENE (CUMENE)	mg/kg										
	METHYL ETHYL KETONE (2-BUTANONE)	mg/kg		0.0061 J		0.0086 J	0.0115 J				0.0059 J	0.0065 J
	METHYLENE CHLORIDE	mg/kg		0.012 J		0.0134 =	0.0094 J		0.0114 J		0.0324 =	0.0113 J
	n-BUTYLBENZENE	mg/kg										
	n-PROPYLBENZENE	mg/kg										
	NAPHTHALENE	mg/kg										
	o-XYLENE (1,2-Dimethylbenzene)	mg/kg										
	SEC-BUTYLBENZENE	mg/kg										
	t-BUTYLBENZENE	mg/kg										
	tert-BUTYL METHYL ETHER	mg/kg										
SVOCs												
	1,2-DICHLOROBENZENE	µg/kg										
	1,4-DICHLOROBENZENE	µg/kg										
	4-METHYLPHENOL (p-CRESOL)	µg/kg										
	BENZOIC ACID	µg/kg									2920 =	
	BENZYL BUTYL PHTHALATE	µg/kg									906 =	
	bis(2-ETHYLHEXYL) PHTHALATE	µg/kg		914 =		1860 J	600 =		1870 =		1970 =	569 =
	DI-n-BUTYL PHTHALATE	µg/kg									537 J	
	DIBENZOFURAN	µg/kg										
PAHs												
	1-METHYLNAPHTHALENE	µg/kg										
	2-METHYLNAPHTHALENE	µg/kg										
	ACENAPHTHENE	µg/kg										
	ANTHRACENE	µg/kg										63.7 J
	BENZO(a)ANTHRACENE	µg/kg		155 J		414 J	101 J		384 J		275 J	265 J
	BENZO(a)PYRENE	µg/kg		204 J		619 J	154 J		480 J		313 J	333 J
	BENZO(b)FLUORANTHENE	µg/kg		247 J		618 J	182 J		764 J		542 =	397 =
	BENZO(g,h,i)PERYLENE	µg/kg							122 J		97.4 J	66.8 J
	BENZO(k)FLUORANTHENE	µg/kg		251 J		844 J	237 J		587 J		477 J	414 =
	CHRYSENE	µg/kg		198 J		497 J	141 J		465 J		363 J	312 J
	DIBENZ(a,h)ANTHRACENE	µg/kg										
	FLUORANTHENE	µg/kg		414 =		879 J	252 J		982 =		662 =	734 =
	FLUORENE	µg/kg										
	INDENO(1,2,3-c,d)PYRENE	µg/kg										92.9 J
	NAPHTHALENE	µg/kg										
	PHENANTHRENE	µg/kg		145 J			68.2 J		289 J		193 J	233 J
	PYRENE	µg/kg		273 J		687 J	174 J		620 J		438 J	519 =
	TOTAL			1887		4558	1309.2		4693		3360.4	3430.4

Table 9-A
Bulk Sediment Chemistry and Characteristics
Operational Section 6: NW 11th Street to Miami River
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

		SampleID:	CH-33	CH-34	CH-35	CH-36	CH-36DUP	CH-37	CH-38	CH-39	CH-40	CH-44
		Collection Date:	07/10/08	07/10/08	07/10/08	07/11/08	07/11/08	07/11/08	07/11/08	07/09/08	07/09/08	07/10/08
Parameter		Unit	Concentration									
PCBs												
	PCB-1242 (AROCHLOR 1242)	µg/kg				230 =	91 =		250 =		130 =	
	PCB-1254 (AROCHLOR 1254)	µg/kg		85 =		170 =	84 =		220 =		140 =	540 =
	PCB-1260 (AROCHLOR 1260)	µg/kg		110 =		150 =	91 =		260 =		150 =	980 =
Pesticides												
	ALDRIN	µg/kg										
	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	µg/kg										
	CHLORDANE	µg/kg		9.4 J		20 J	8.5 J		29 J		32 J	77 =
	DIELDRIN	µg/kg									6 =	
	ENDRIN	µg/kg										
	ENDRIN ALDEHYDE	µg/kg										
	HEPTACHLOR	µg/kg										
	HEPTACHLOR EPOXIDE	µg/kg										
	p,p'-DDD	µg/kg		3.1 J		2.5 J	4.4 =		7.4 =		7.2 =	16 J
	p,p'-DDE	µg/kg		20 =		33 =	17 =		35 =		37 =	36 =
	p,p'-DDT	µg/kg				2.6 J					4.2 J	
Herbicides												
	DINOSEB	µg/kg										17 J
Metals												
	ARSENIC	mg/kg										7.98 =
	BARIUM	mg/kg		46 =D		77.9 =	24.4 =D		69.6 =D		46.9 =	29 =
	CADMIUM	mg/kg		4.13 =		0.98 JD			15.2 =D		4.13 =	0.895 =
	CHROMIUM, TOTAL	mg/kg		344 =D		133 =	47.2 =D		390 =D		205 =	31.6 =
	LEAD	mg/kg		576 =D		362 =D	150 =D		827 =D		620 =	301 =
	MERCURY	mg/kg		2.93 =		2.19 =	2.82 =		7.14 =		4.95 =	5.08 =
	NICKEL	mg/kg		8.77 =D		8.19 =	8.08 =D		11.6 =D		12.2 =	5.57 =
	SELENIUM	mg/kg										1.58 JD
	SILVER	mg/kg		1.5 =		1.43 =	0.636 =		2.96 =		2.37 =	3.37 =
General Chemistry												
	pH		7.74 =		7.5 =			7.31 =		8.09 =	7	
TCLP_Metal												
	ARSENIC	mg/L	0.124 =		0.123 =			0.126 =		0.11 =	0.107 =	
	BARIUM	mg/L	0.126 =		0.385 =			0.442 =		0.676 =	1.11 =	
	CADMIUM	mg/L						0.00806 J		0.0231 J		
	CHROMIUM, TOTAL	mg/L	0.0245 J		0.0388 J			0.0424 J		0.0245 J	0.0228 J	
	LEAD	mg/L	0.558 =		0.386 =			0.937 =		0.964 =	0.709 =	
	NICKEL	mg/L	0.0245 J					0.0233 J		0.0131 J	0.0131 J	
TCLP_VOC												
	BENZENE	mg/L										

mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
mg/L = milligrams per liter
J = estimated and detected value
D = reported value is based upon a dilution

Table 9-B
Dioxins in Sediments
Operational Section 6: NW 11th Street to Miami River
June-July 2008 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	SampleID:		**CH-34**		**CH-36**		**CH-36DUP**		**CH-38**		**CH-40**		**CH-42**		**CH-44**	
	Collection Date:		**07/10/08**		**07/11/08**		**07/11/08**		**07/11/08**		**07/09/08**		**07/09/08**		**07/10/08**	
Parameter	Unit	WHO-TEF(2005)	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins																
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/g	0.01	3810 =	38.1	4850 =	48.5	3360 =	33.6	7070 =	70.7	7260 =	72.6	2880 =	28.8	2040 =	20.4
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/g	0.01			950 =	9.5			1420 =	14.2	1420 =	14.2	1190 =	11.9	562 =	5.62
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/g	0.01	51.5 =	0.515	57 =	0.57	42.3 =	0.423	92.8 =	0.928	98.6 =	0.986	45.8 =	0.458	22.5 =	0.225
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/g	0.1	28.7 =	2.87	32.4 =	3.24	21.5 =	2.15	50.3 =	5.03	50.3 =	50.3	18.1 =	1.81	14.3 =	1.43
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	63.6 =	6.36	61.5 =	6.15	45 =	4.5	91.1 =	9.11	95.5 =	9.55	46.2 =	4.62	30.6 =	3.06
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	182 =	18.2	231 =	23.1	152 =	15.2	328 =	32.8	329 =	32.9	122 =	12.2	96.1 =	9.61
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1														
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	59.9 =	5.99	72.4 =	7.24	48.4 =	4.84	96.2 =	9.62	118 =	11.8	44.6 =	4.46	33.2 =	3.32
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/g	0.1					3 =	0.3			4.6 =	0.46				
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/g	1			16.1 =	16.1	12.1 =	12.1	23.6 =	23.6	25.8 =	25.8				
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.03**														
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	55.5 =	5.55	46.3 =	4.63	39 =	3.9	60.7 =	6.07	71.3 =	7.13	51.6 =	5.16	32 =	3.2
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/g	**0.3**			37.8 =	**11.34**	24.9 =	**7.47**			48.3 =	**14.49**				
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	pg/g	1														
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/g	0.1	36.8 =	3.68	43 =	4.3	25.6 =	2.56			66.6 =	6.66	31.5 =	3.15	21.7 =	2.17
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		9530 =		12200 =		8590 =		18700 =		19300 =		7410 =		6710 =	
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		2040 =		3270 =		1680 =		5000 =		4810 =		3060 =		1440 =	
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		767 =		1010 =		645 =		1380 =		1510 =		616 =		476 =	
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1600 =		1620 =		1180 =		2310 =		2420 =		1880 =		1010 =	
OCTACHLORODIBENZO-p-DIOXIN	pg/g	**0.0003**	47800 =	**14.34**	52900 =	**15.87**	33900 =	**10.17**	75600 =	**22.68**	84000 =	**25.2**	30200 =	**9.06**	18900 =	**5.67**
OCTACHLORODIBENZOFURAN	pg/g	**0.0003**	1340 =	**0.402**	1590 =	**0.477**	1080 =	**0.324**	2210 =	**0.663**	2480 =	**0.744**	1910 =	**0.573**	750 =	**0.225**
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		85.8 =		115 =		48.6 =		119 =		119 =					
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		1800 =		1520 =		1150 =		1840 =		2200 =		2350 =		1520 =	
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g		90.6 =		133 =		66.7 =		134 =		176 =		31.3 =		39.9 =	
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g		521 =		498 =		338 =		587 =		765 =		639 =		559 =	
Total TEQ				**96.0**		**151**		**97.5**		**195**		**273**		**82.2**		**54.9**

Reference for World Health Organization Toxic Equivalent Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 10
Dioxins in Sediments
May 2009 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:		CH-1		CH-2		CH-3		CH-4		CH-5		CH-6		CH-6		CH-7		CH-8		CH-9		CH-10	
	SampleID:		CH-02-01		CH-02-02		CH-02-03		CH-02-04		CH-02-05		CH-02-06		CH-02-06D		CH-02-07		CH-02-08		CH-02-09		CH-02-10	
	Collection Date:		5/7/2009		5/6/2009		5/6/2009		5/6/2009		5/5/2009		5/5/2009		5/5/2009		5/5/2009		5/5/2009		5/5/2009		5/5/2009	
	SampleType:		N		N		N		N		N		N		FD		N		N		N		N	
Parameter	Unit	WHO-TEF	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ
Dioxins																								
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/g	0.01	16100	161	8160	81.6	5220	52.2	5790	57.9	5520	55.2	5070	50.7	4860	48.6	2860	28.6	7720	77.2	11200	112	5200	52
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/g	0.01	7210	72.1	2860	28.6	1690	16.9	1100	11	1460	14.6	1220	12.2	1110	11.1			1330	13.3	1960	19.6	770	7.7
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/g	0.01	1320	13.2	424	4.24	177	1.77	144	1.44	216	2.16	155	1.55	153	1.53	53.3	0.533	159	1.59	189	1.89	61.1	0.611
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/g	0.1	1570	157	628	62.8	348	34.8	197	19.7	242	24.2	163	16.3	168	16.8	34.7	3.47	114	11.4	117	11.7	56.9	5.69
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	2210	221	840	84	486	48.6	213	21.3	290	29	201	20.1	227	22.7	45.4	4.54	152	15.2	172	17.2	84.1	8.41
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	3380	338	1320	132	770	77	540	54	592	59.2	454	45.4	446	44.6	143	14.3	503	50.3	692	69.2	293	29.3
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	2410	241	935	93.5	572	57.2	320	32	442	44.2												
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/g	0.1	3060	306	998	99.8	714	71.4	391	39.1	450	45	333	33.3	360	36	91.7	9.17	327	32.7	336	33.6	146	14.6
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/g	0.1	285	28.5	82.8	8.28	59.3	5.93	28.5	2.85	42.5	4.25	28	2.8	31	3.1	5.41 J	0.541	16.1	1.61	14.4	1.44	4.68 J	0.468
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/g	1	1550	1550	592	592	343	343	153	153	202	202	137	137	138	138	23.9	23.9	80.1	80.1	75.1	75.1	37.8	37.8
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/g	0.03	1870	56.1	688	20.64	409	12.27	181	5.43	257	7.71	166	4.98	163	4.89	28.4	0.852	98.8	2.964	104	3.12	17.3	0.519
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/g	0.1	3010	301	887	88.7	639	63.9	302	30.2	424	42.4	285	28.5	299	29.9	51.7	5.17	185	18.5	204	20.4	51.6	5.16
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/g	0.3	4060	1218	1310	393	837	251.1	362	108.6	525	157.5	333	99.9	336	100.8	52.6	15.78	190	57	175	52.5	39	11.7
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	pg/g	1	299	299			67	67					22.5	22.5	23	23	3.99 J	3.99	14.2	14.2	13.1	13.1	7.15	7.15
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/g	0.1			1820	182			499	49.9	719	71.9	453	45.3	465	46.5	76.8	7.68			236	23.6		
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g	0	31800	0	16600	0	10500	0	11500	0	11900	0	12000	0	11300	0	6010	0	17000	0	25000	0	11800	0
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g	0	13300	0	5390	0	3320	0	2460	0	3580	0	3110	0	3050	0	1540	0	4870	0	8090	0	3070	0
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g	0	45400	0	17200	0	10300	0	5580	0	7210	0	5680	0	5510	0	1370	0	4320	0	5420	0	3230	0
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g	0	23100	0	8560	0	5190	0	2940	0	3880	0	2490	0	2270	0	890	0	2630	0	3920	0	1370	0
OCTACHLORODIBENZO-p-DIOXIN	pg/g	0.0003	39200	11.76	29600	8.88	20400	6.12	29500	8.85	32600	9.78	33400 J	10.02	33400 J	10.02	33800 J	10.14	49900 J	14.97	133000	39.9	36500 J	10.95
OCTACHLORODIBENZOFURAN	pg/g	0.0003	4940	1.482	2290	0.687	1450	0.435	1280	0.384	1740	0.522	1430	0.429	1360	0.408	2440	0.732	2620	0.786	4250	1.275	1490	0.447
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g	0	21600	0	8210	0	4860	0	2040	0	2850	0	1980	0	1950	0	313	0	1200	0	1210	0	674	0
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g	0	37500	0	12700	0	7790	0	3450	0	4780	0	3220	0	3220	0	1140	0	3170	0	5820	0	1090	0
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/g	0	16200	0	11900	0	3490	0	1380	0	1700	0	1320	0	1300	0	240	0	897	0	815	0	360	0
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/g	0	36800	0	13900	0	8330	0	2950	0	4180	0	2660	0	2450	0	774	0	2110	0	2510	0	516	0
Total TEQ				**4975**		**1881**		**1110**		**596**		**770**		**531**		**538**		**129**		**392**		**496**		**193**

Reference for World Health Organization Toxic Equivalent Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 11-A
Elutriate Water Chemistry and Characteristics
May 2009 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

	StationID:	**E-01**				**E-02**				**E-03**			
	Collection Date:	**05/07/09**				**05/06/09**				**05/06/09**			
	SampleID:	**E-01A**	**E-01B**	**E-01C**	**Average**	**E-02A**	**E-02B**	**E-02C**	**Average**	**E-03A**	**E-03B**	**E-03C**	**Average**
Parameter	Unit	Concentration				Concentration				Concentration			
VOCs													
ACETONE	UG/L	10.2 =	16.8 =	5730 =	1919						36.7 =	23.5 =	30.1
METHYLENE CHLORIDE	UG/L	15.9 =	6.1 =	10700 =	3574						29.5 =	8.1 =	18.8
SVOCs													
DIETHYL PHTHALATE	UG/L					5.8 =	8 =	7 =	6.9	6.6 =			6.6
PAHs													
2-METHYLNAPHTHALENE	UG/L						0.32 =		0.32				
ACENAPHTHENE	UG/L	0.066 J	0.056 J	0.092 J	0.107								
FLUORANTHENE	UG/L					0.21 =	0.21 =	0.18 J	0.2				
FLUORENE	UG/L	0.084 J	0.068 J	0.078 J	0.0766	0.12 J	0.16 J	0.17 J	0.15	0.16 J	0.18 J		0.17
PHENANTHRENE	UG/L	0.081 J	0.061 J	0.082 J	0.0747								
PYRENE	UG/L	0.084 J			0.084	0.16 J	0.18 J	0.15 J	0.16	0.057 J	0.062 J		0.06
Metals													
ARSENIC	MG/L	0.00425 J	0.00349 J	0.0058 J	0.004513		0.00353 J	0.00437 J	0.00395	0.0079 J	0.00686 J	0.00884 J	0.00787
BARIUM	MG/L	0.0888 J	0.119 J	0.12 J	0.109	0.106 J	0.128 J	0.0926 J	0.109	0.114 J	0.0906 J	0.0779 J	0.0942
CADMIUM	MG/L					0.00107 J		0.000986 J	0.00103	0.000748 J		0.00118 J	0.00096
CHROMIUM, TOTAL	MG/L	0.00265 J	0.00279 J	0.00282 J	0.00275	0.0028 J	0.00328 J	0.00321 J	0.00929	0.00334 J	0.00353 J	0.00357 J	0.00348
LEAD	MG/L	0.0108 J	0.0104 J	0.0123 J	0.0112	0.00928 J	0.0124 J	0.00702 J	0.00957	0.0121 J	0.0108 J	0.0123 J	0.0117
NICKEL	MG/L		0.00125 J	0.000932 J	0.0011								
General Chemistry													
pH	PH UNITS	7.42 =	7.39 =	7.31 =	7.37	7.65 =	7.55 =	7.66 =	7.62	7.5 =	7.66 =	7.59 =	7.58
Total Volatile Solids	MG/L	0.536	0.664	0.688	0.629	0.900	0.932	1.01	0.947	0.524	0.584	0.592	0.567
Total Suspended Solids	MG/L	11.0	11.0	18.0	13.3	12.0	14.0	20.0	15.3	7.00	10.0	7.00	8.00
Total Organic Carbon	MG/L	3.78	3.82	4.03	3.88	3.84	3.99	3.87	3.90	3.67	3.65	7.84	5.05
Turbidity	NTU	1.39	2.88	1.01	1.76	2.09	0.76	1.54	1.46	0.57	0.93	1.29	0.93

Table 11-B
Dioxins in Elutriate and Surface Water Samples
May 2009 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

			E-01					E-02				
		StationID:	E-01					E-02				
		Collection Date:	5/7/2009					5/6/2009				
		SampleID:	**E-01A**	**E-01B**	**E-01C**	**Average**	**TEQ**	**E-02A**	**E-02B**	**E-02C**	**Average**	**TEQ**
Parameter	Unit	WHO-TEF	Concentration					Concentration				
Dioxins												
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/L	0.01	8.95 J	25.1 J		17.03	0.1703					0
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/L	0.01		2.11 J		2.11	0.0211					0
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/L	0.1		1.77 J		1.77	0.177					0
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1	0.99 J	2.34 J		1.67	0.167	1.09 J	0.68 J		0.89	0.089
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1		4.2 J		4.2	0.42	0.85 J			0.85	0.085
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1	1.26 J	3.11 J	0.74 J	1.48	0.148	0.79 J			0.79	0.079
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1	1.42 J	3.17 J		2.3	0.23					0
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/L	0.1					0					0
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/L	1		1.46 J		1.46	1.46					0
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/L	0.03		1.92 J		1.92	0.0576					0
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1	1.37 J	3.63 J	0.67 J	1.89	0.189	0.75 J			0.75	0.075
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/L	0.3					0					0
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/L	0.1		7.31 J		7.31	0.731					0
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		18.2 J	50.9 J		34.6	0	12.7 J			12.7	0
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L			2.11 J	0.56 J	1.34	0	1.3 J			1.3	0
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		5.5 J	47.7 J	3.67 J	18.96	0	4.22 J	1.46 J		2.84	0
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		7.72 J	25.7 J	3.76 J	12.93	0	4.04 J	0.78 J		2.41	0
OCTACHLORODIBENZO-p-DIOXIN	pg/L	0.0003	45.2 J	72 J		58.6	0.01758	32.6 J			32.6	0.00978
OCTACHLORODIBENZOFURAN	pg/L	0.0003	3.6 J	7.2 J	1.6 J	4.13	0.001239	2.5 J			2.5	0.00075
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L			13.5 J	1.4 J	7.45	0					0
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		9.3 J	43 J	7.91 J	20.1	0	7.37 J			7.37	0
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		1.31 J	9.15 J	2.96 J	4.47	0					0
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L			43.8 J		43.8	0					0
Total TEQ							**3.79**					**0.339**

Reference for World Health Organization Toxic Equivalent
Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 11-B
Dioxins in Elutriate and Surface Water Samples
May 2009 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

		StationID:	E-03					ERB		E-02	
		Collection Date:	5/6/2009					5/7/2009		5/6/2009	
		SampleID:	**E-03A**	**E-03B**	**E-03C**	**Average**	**TEQ**	**ERB-1_090507**	**TEQ**	**E-02-AQ**	**TEQ**
Parameter	Unit	WHO-TEF	Concentration					Concentration		Concentration	
Dioxins											
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/L	0.01	10.6 J		126 =	68.3	0.683	1.7 J	0.017		
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/L	0.01			3.5 J	3.5	0.035				
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/L	0.1			2.2 J	2.2	0.22				
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			5.07 J	5.07	0.507				
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			8.12 J	8.12	0.812				
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1					0				
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			3.7 J	3.7	0.37				
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/L	0.1			0.93 J	0.93	0.093				
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/L	1			1.46 J	1.46	1.46				
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/L	0.03			1.87 J	1.87	0.0561				
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			3.26 J	3.26	0.326				
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/L	0.3					0	1.25 J	0.375		
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/L	0.1					0	1.64 J	0.164		
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		24.4 J	12.8 J	290 =	109	0	2.77 J	0		
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L			2.42 J	56.1 J	29.3	0				
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		4 J	1.25 J	70.7 J	25.3	0				
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		2.43 J		41.6 J	22	0				
OCTACHLORODIBENZO-p-DIOXIN	pg/L	0.0003	129 =	54.8 J	1470 =	551	0.1653				
OCTACHLORODIBENZOFURAN	pg/L	0.0003	4.3 J	2.6 J	48.2 J	18.4	0.00552			1.7 J	0.00051
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L				12.3 J	12.3	0				
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L				36.8 J	36.8	0	2.88 J	0		
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L				5.1 J	5.1	0				
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L				33.7 J	33.7	0	8.32 J	0		
Total TEQ							**4.73**		**0.556**		**0.00051**

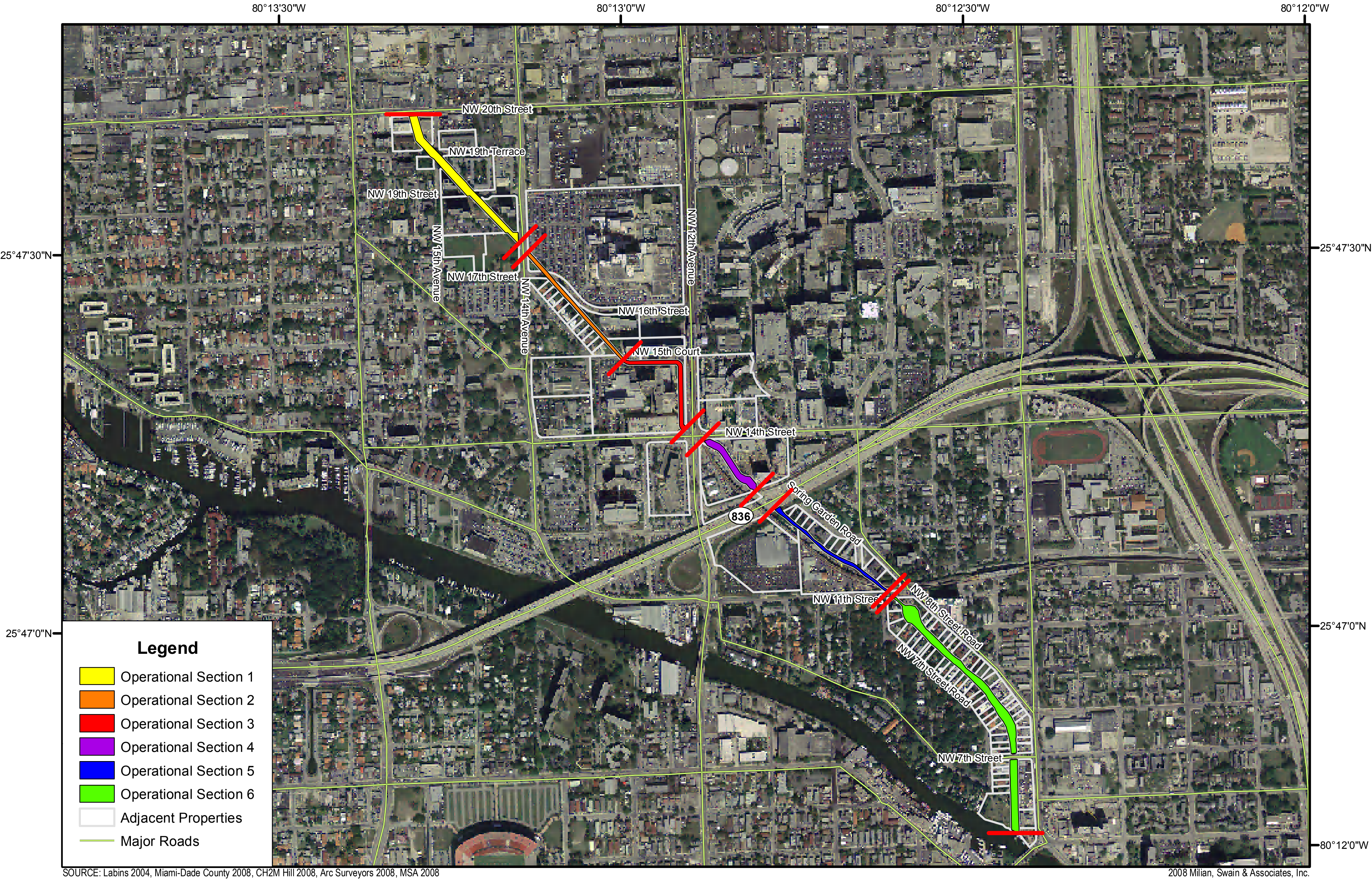
Reference for World Health Organization Toxic Equivalent
Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Table 11-B
Dioxins in Elutriate and Surface Water Samples
May 2009 Sampling Event
Wagner Creek and Seybold Canal
Miami, Dade County, Florida

		StationID:	E-03					ERB		E-02	
		Collection Date:	5/6/2009					5/7/2009		5/6/2009	
		SampleID:	**E-03A**	**E-03B**	**E-03C**	**Average**	**TEQ**	**ERB-1_090507**	**TEQ**	**E-02-AQ**	**TEQ**
Parameter	Unit	WHO-TEF	Concentration					Concentration		Concentration	
Dioxins											
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN	pg/L	0.01	10.6 J		126 =	68.3	0.683	1.7 J	0.017		
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/L	0.01			3.5 J	3.5	0.035				
1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN	pg/L	0.1			2.2 J	2.2	0.22				
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			5.07 J	5.07	0.507				
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			8.12 J	8.12	0.812				
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1					0				
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/L	0.1			3.7 J	3.7	0.37				
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/L	0.1			0.93 J	0.93	0.093				
1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	pg/L	1			1.46 J	1.46	1.46				
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/L	0.03			1.87 J	1.87	0.0561				
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/L	0.1			3.26 J	3.26	0.326				
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/L	0.3					0	1.25 J	0.375		
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/L	0.1					0	1.64 J	0.164		
HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		24.4 J	12.8 J	290 =	109	0	2.77 J	0		
HEPTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L			2.42 J	56.1 J	29.3	0				
HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L		4 J	1.25 J	70.7 J	25.3	0				
HEXACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L		2.43 J		41.6 J	22	0				
OCTACHLORODIBENZO-p-DIOXIN	pg/L	0.0003	129 =	54.8 J	1470 =	551	0.1653				
OCTACHLORODIBENZOFURAN	pg/L	0.0003	4.3 J	2.6 J	48.2 J	18.4	0.00552			1.7 J	0.00051
PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L				12.3 J	12.3	0				
PENTACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L				36.8 J	36.8	0	2.88 J	0		
TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)	pg/L				5.1 J	5.1	0				
TETRACHLORINATED DIBENZOFURANS, (TOTAL)	pg/L				33.7 J	33.7	0	8.32 J	0		
Total TEQ							**4.73**		**0.556**		**0.00051**

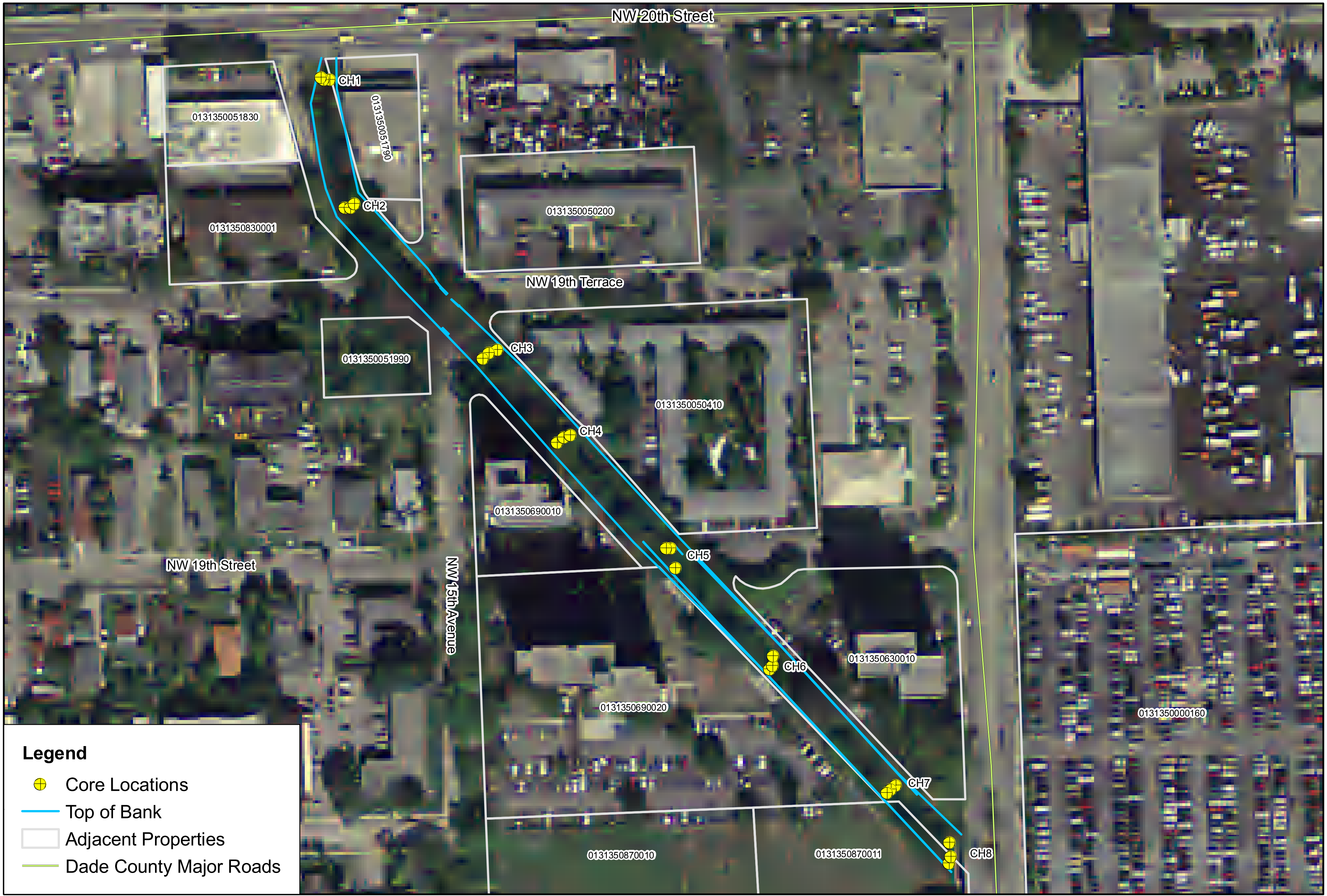
Reference for World Health Organization Toxic Equivalent
Factor (WHO TEF) (2005): http://www.who.int/ipcs/assessment/tef_update/en/
TEQ = Toxic Equivalent Quantity
pg/g = picogram per gram

Figures



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

Figure 1
Core Locations
Sediment Sampling and Characterization



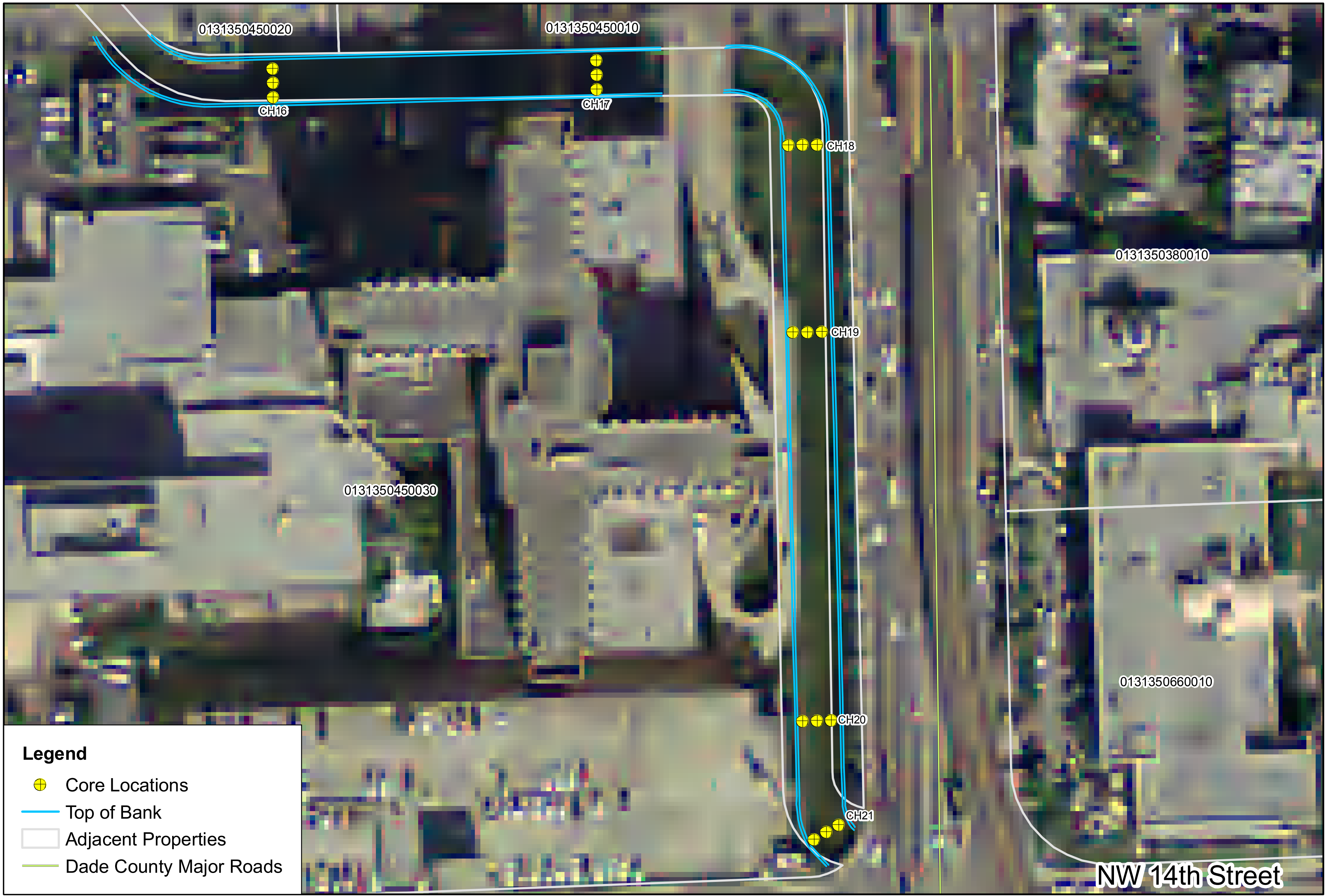
SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

2008 Milian, Swain & Associates, Inc.

Figure 2
Operational Section 1 Core Locations
Sediment Sampling and Characterization

SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

Figure 3
Operational Section 2 Core Locations
Sediment Sampling and Characterization



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

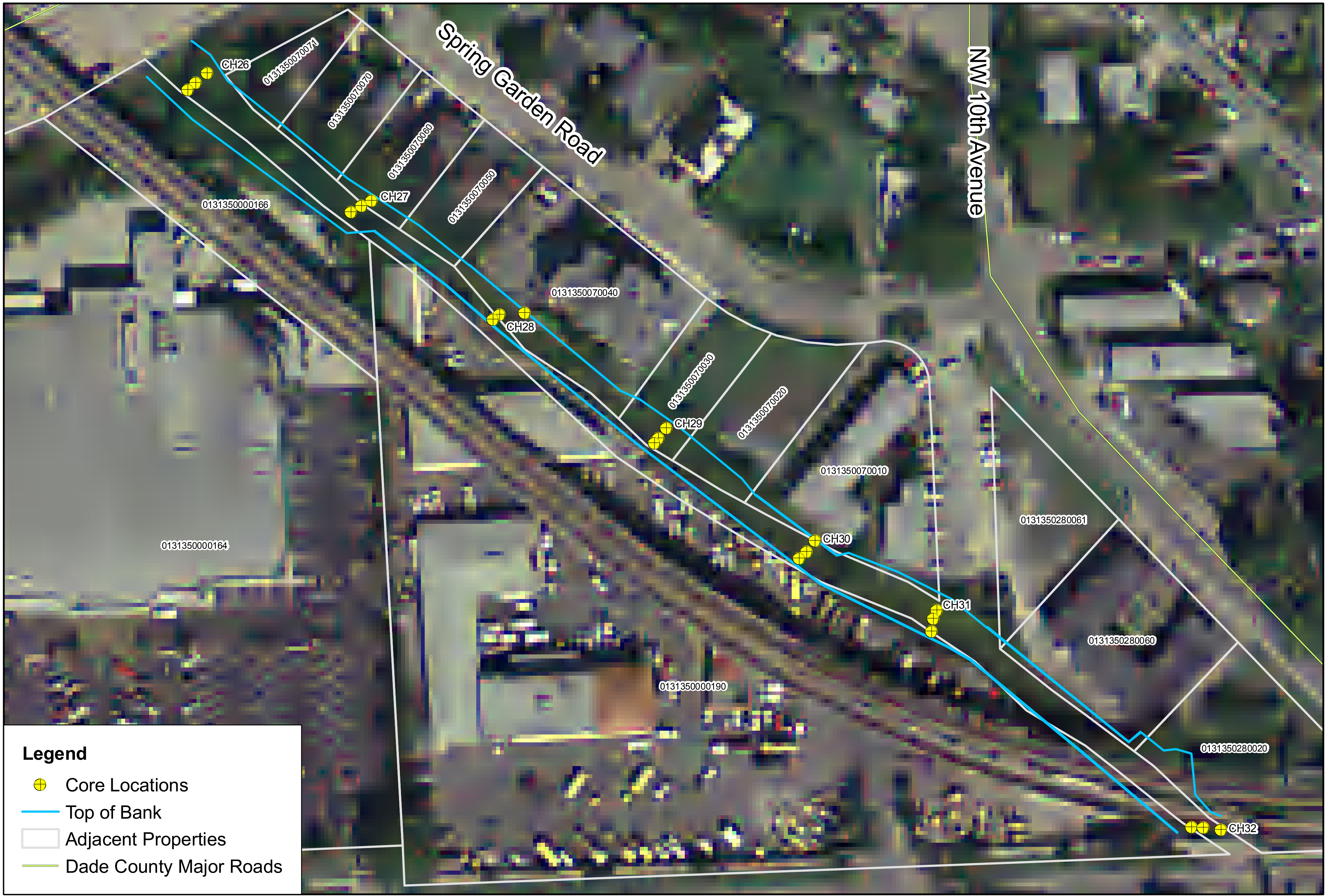
Figure 4
Operational Section 3 Core Locations
Sediment Sampling and Characterization

SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

Figure 5

Operational Section 4 Core Locations

Sediment Sampling and Characterization



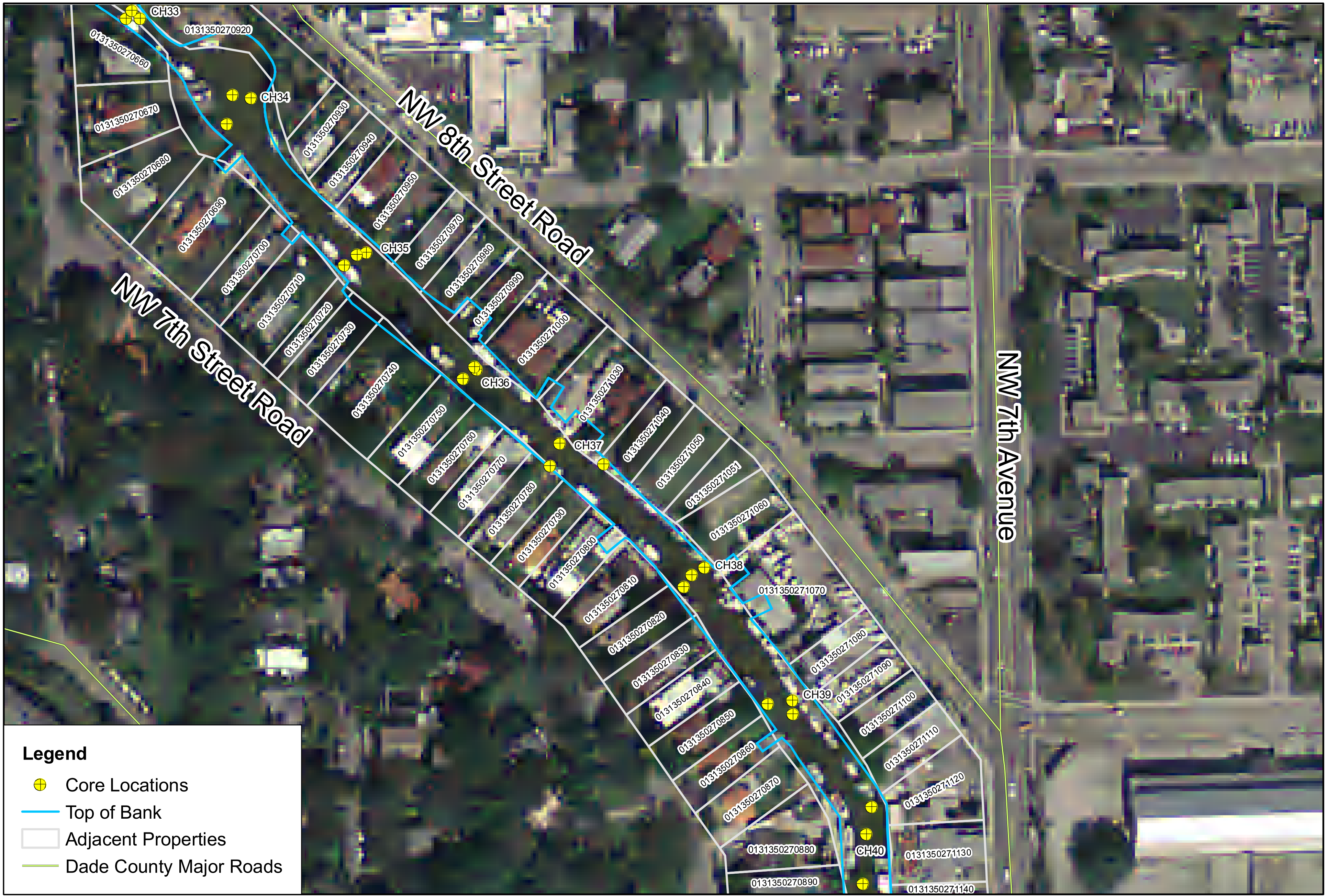
SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

2008 Milian, Swain & Associates, Inc.

Figure 6

Operational Section 5 Core Locations

Sediment Sampling and Characterization



SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

Figure 7a
Operational Section 6 Core Locations
Sediment Sampling and Characterization

SOURCE: Labins 2004, Miami-Dade County 2008, CH2M Hill 2008, Arc Surveyors 2008, MSA 2008

Figure 7b
Operational Section 6 Core Locations
Sediment Sampling and Characterization

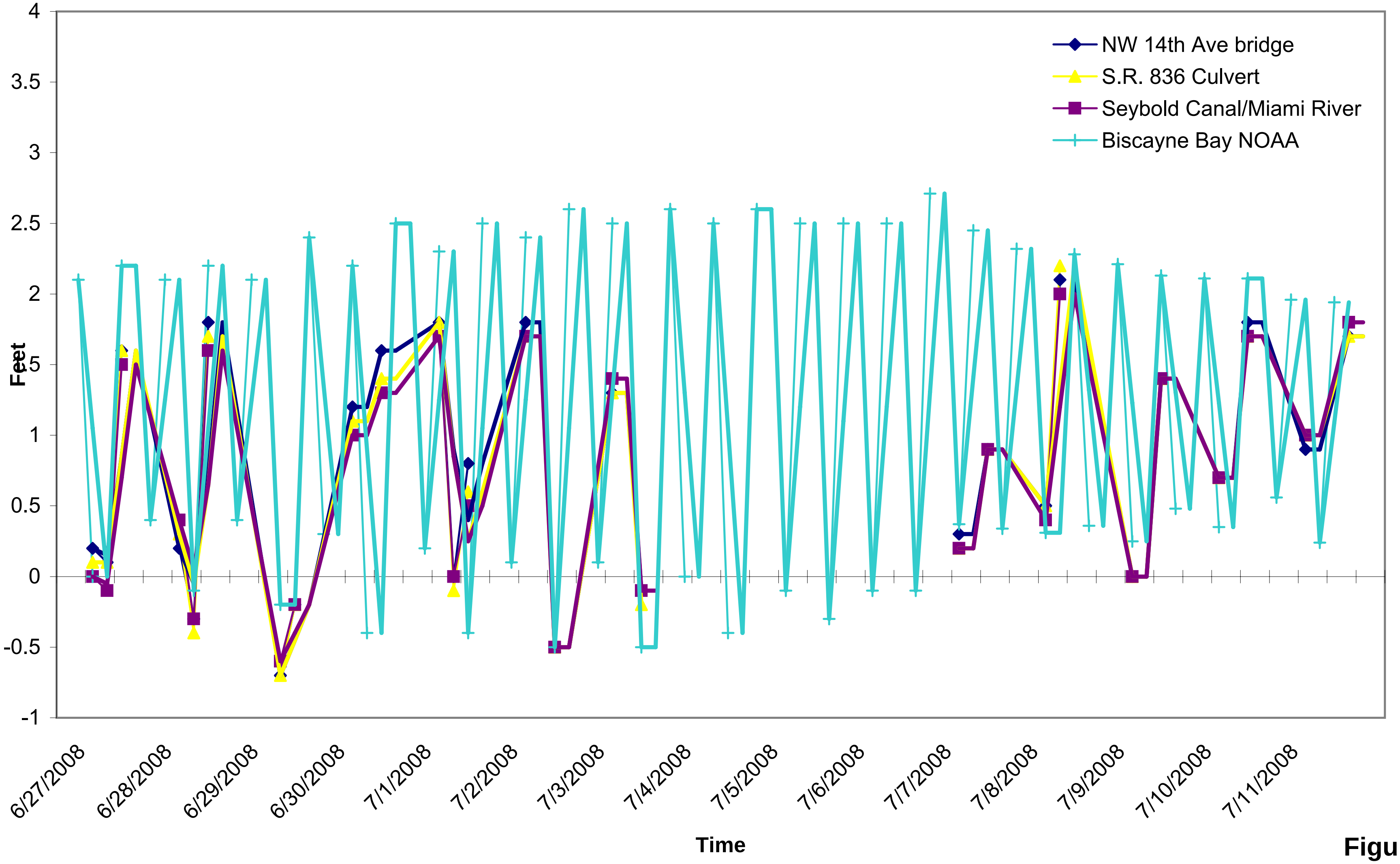


Figure 8

Wagner Creek and Biscayne Bay Tidal Data

June 27 - July 11, 2008

Wagner Creek/Seybold Canal

Miami, Dade County, Florida

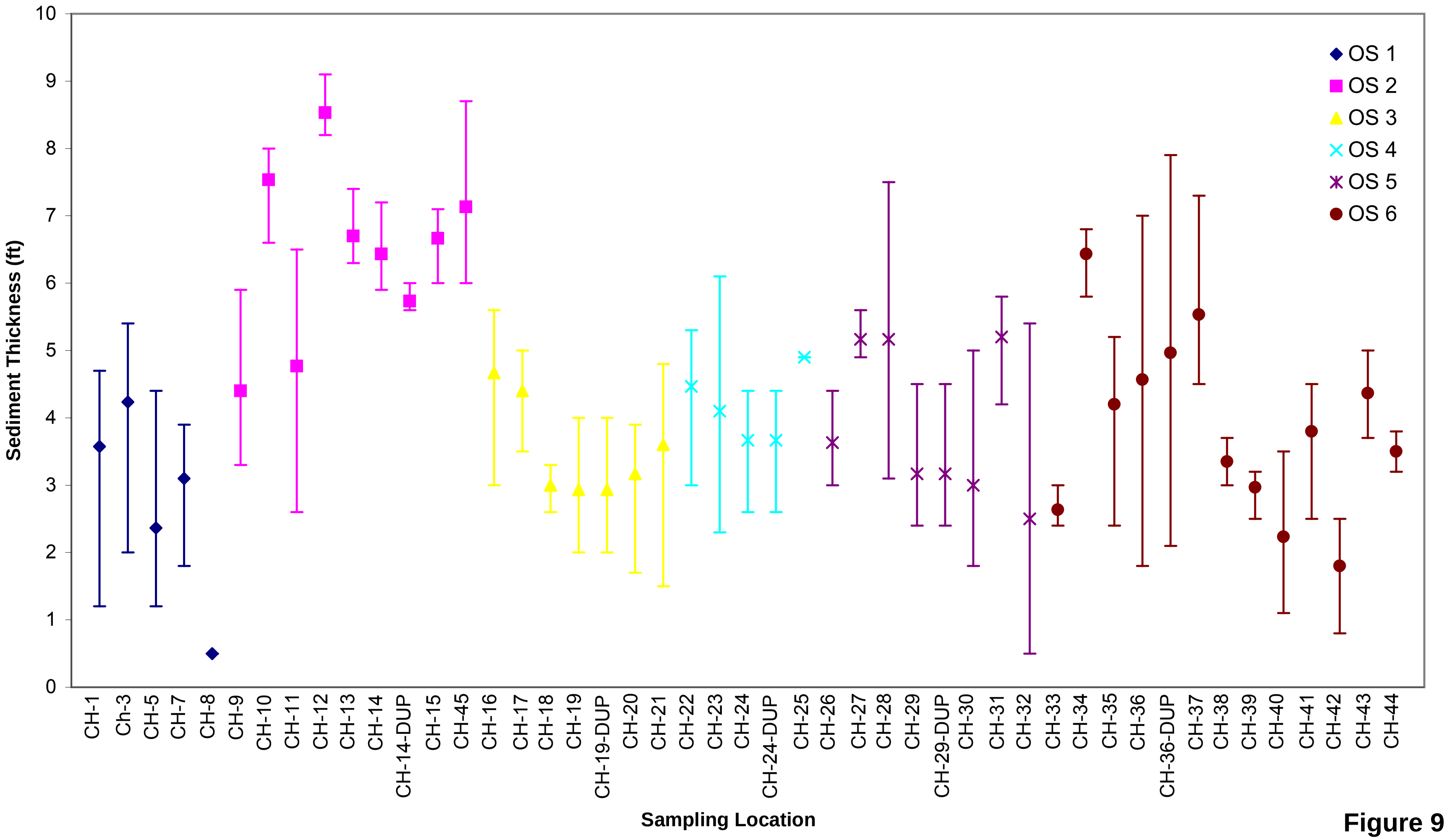


Figure 9
Average Sediment Thickness
June-July 2008
Wagner Creek/Seybold Canal
Miami, Dade County, Florida

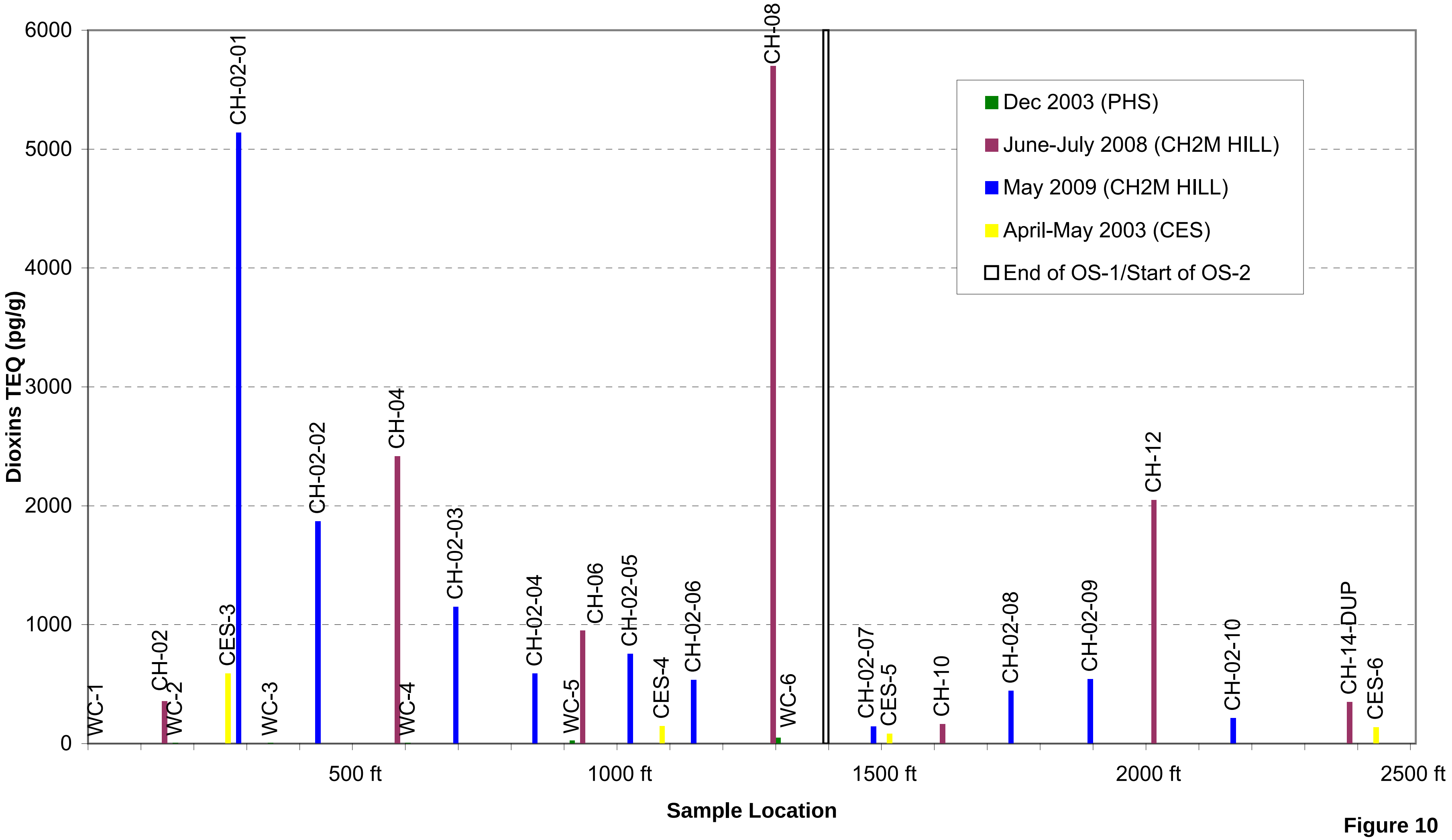


Figure 10
Dioxins TEQ Sediment Data
(disposal target concentration of 1,000 pg/g)
April-May 2003, Dec. 2003, June-July 2008, and May 2009
Wagner Creek/Seybold Canal
Miami, Dade County, Florida

Appendix A
Daily Field Reports

DAILY REPORT

SOP CQMM-017, Final, Rev 0

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

Wagner Creek/Seybold Canal

CONTRACT NAME:		REPORT NO:	WC-003
CONTRACT NUMBER:		REPORT DATE:	June 25, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:		PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	sediment characterization and surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	David Cole/CLE	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	Sunny, warm, 70s-80s	PM WEATHER:	Partly cloudy, warm, 80s-90s	MAX TEMP (F):	90	MIN TEMP (F):	75

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveyed sta. 0+00 commencing on the South side of 20th st. to sta. 16+50 at the intersection of Wagner creek and NW 17th St. Located misc planimetrics and utilities.

MSA : Land-based biological survey activities were completed from NW 20th St to NW 14th Ave on both the West and East sides of the canal; water based biological survey was also completed from NW 20th St to NW 14th Ave; Overall, 23 structures (15 biological resources and 6 instances of in-water debris) were documented

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

MSA inspected their rubber raft for any leaks as it was blown-up

TAILGATE TOPICS: stopping work during inclement weather; insect bites, immediately stopping work after an incident (e.g., someone falls out of the boat but does not cause physical injury); slips, trips, falls while walking along the creek banks; encountering transients at the project site and the need for working in the "buddy" system

LOSS PREVENTION OBSERVATIONS:

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
CH2MHILL			
ARC Surveying and Mapping	16	10	26
Milian Swain and Associates	0	7	7

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Planned Work / Test for Tomorrow:

Planned Work / Test for Next Week:

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

VISITORS AND DISCUSSIONS: Thomas Calvin (contractor for the City of Miami for debris removal from Wagner Creek)

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Signature of Inspector:	

Accumulation / Stockpile Area Inspected:							
No of Containers:		No of Tanks		No of Roll-Off Boxes:		No. of Drums	
Inspection Results:							

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	

CH2MHILL

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:		REPORT NO:	WC-004
CONTRACT NUMBER:		REPORT DATE:	June 26, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:		PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	sediment characterization and surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	David Cole/CLE	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	Partly sunny, warm, 70	PM WEATHER:	Cloudy, warm, 90	MAX TEMP (F):	93	MIN TEMP (F):	69

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveyed sta. 0+00 commencing on the South side of 20th st. to sta. 16+50 at the intersection of Wagner creek and NW 17th St. Located misc planimetrics and utilities.

MSA : Land-based biological survey activities were completed from NW 20th St to NW 14th Ave on both the West and East sides of the canal; water based biological survey was also completed from NW 20th St to NW 14th Ave; Overall, 26 structures, 61 biological resources and 5 instances of in-water debris) were documented

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

TAILGATE TOPICS: stopping work during inclement weather to see how the creek responds to "flash" conditions; insect bites; know the conditions of the creek with the tidal changes; slips, trips, falls while walking along the creek banks; keep yourself hydrated throughout the day; watch for traffic while crossing streets or while talking on the phone

LOSS PREVENTION OBSERVATIONS:

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
CH2MHILL	11	10	36
ARC Surveying and Mapping	26	10.5	36.5
Milian Swain and Associates	7	8	15

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Planned Work / Test for Tomorrow:

Planned Work / Test for Next Week:

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

VISITORS AND DISCUSSIONS: Michael A. Catalano, P.A., whose law office is located along Wagner Creek at 1531 NW 13th Court, approached Dan Tomczak/CH2M HILL and asked if the contractors with the heavy equipment to clean-out the creek would need to access the creek through his property. He mentioned that the contractors that cleaned out the creek about 4 years ago and used his property for access left his backyard muddy and disturbed.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:				Signature of Inspector:			
Accumulation / Stockpile Area Inspected:							
No of Containers:		No of Tanks		No of Roll-Off Boxes:		No. of Drums	
Inspection Results:							

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

PREPARER’S SIGNATURE DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:		REPORT NO:	WC-005
CONTRACT NUMBER:		REPORT DATE:	June 27, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:		PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	sediment characterization and surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	David Cole/CLE	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	Partly sunny, warm, 70s	PM WEATHER:	Cloudy, warm, 90s	MAX TEMP (F):	91	MIN TEMP (F):	71

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. At the 3 newly installed tidal gauges, recorded surface water levels in the morning, afternoon, and at the end of the day. Staked out the Wagner Creek baseline along the bulkhead parallel to NW 13th Ct/NW 15th St. Using the jon-boat in the creek, collected cross sections between 25+0 and 35+60 around the Univ. of Miami Hospital, then from 37+50 to 43+88.10+/- from southeast of NW 14th St to a concrete headwall north of the exit ramp to Hwy 836 (Dolphin Expy).

MSA : Surveying completed by Michael Kirkland/MSA, Cian Reger/MSA, and Leah Nation/CH2M HILL; land-based (only) biological survey activities were completed from just northwest of the NW 15th Street bridge down to the NW 14th Street bridge on both the West and East sides of the creek around the Univ. of Miami Hospital; overall, 5 structures, 82 biological resources and 6 instances of in-water debris were documented

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

TAILGATE TOPICS: discussed the need to stay hydrated while working in the heat; watch for traffic while crossing streets or while talking on the phone, especially with all of pedestrian and vehicular traffic around the Univ. of Miami Hospital; if someone approaches you and asks about what you are doing, direct them to Dan Tomczak/CH2M HILL; need to watch the equipment (surveying, etc) that is being set-out in public areas because other people may want to walk-away with them

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
CH2MHILL	36	10	46
ARC Surveying and Mapping	36.5	11	47.5
Milian Swain and Associates	15	6	21

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
jon-boat			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Planned Work / Test for Tomorrow:

Planned Work / Test for Next Week:

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

VISITORS AND DISCUSSIONS: Spoke to the security staff at the Univ. of Miami Hospital about the surveyors working around the hospital today.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:				Signature of Inspector:			
Accumulation / Stockpile Area Inspected:							
No of Containers:		No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS

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CH2MHILL

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-006
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	June 28, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	Partly sunny, warm, 70s	PM WEATHER:	Partly sunny, warm, 90s	MAX TEMP (F):	90	MIN TEMP (F):	70

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning, afternoon, and at the end of the day from the 3 tidal gauges. Surveyed remaining trees, planimetrics, and biologicals near NW 19th Terrace from station 1+50 to 9+00. Met up with ARC employee who had driven down from Jacksonville for the transfer of core pipes, caps, retainers (catchers), etc. Surveyed stations 45+50 commencing at the headwall of the south side of Highway 836 (Dolphin Expy) through station 57+00 at the NW 11th Street bridge.

MSA : N/A

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

TAILGATE TOPICS: discussed that there could be an issue with unloading and loading the large jon-boat with the tripod/Vibecore unit into the creek between the NW 12th St exit ramp and the NW 12th Avenue/NW 14th Street interchange; may need to use the small jon-boat during the low tide to access some of the sampling locations; be aware that some of the pedestrians on the streets may try to sell us things; need to have first aid kits and eye wash bottles in the vehicles

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2MHILL	46	3	49
Leah Nation/CH2M HILL	21	-	21
Patrick Sawyer/ARC Surveying and Mapping	47.5	10	57.5
Geoff Crews/ARC Surveying and Mapping	47.5	10	57.5
William Rios/ARC Surveying and Mapping	47.5	10	57.5
Michael Kirkland/Milian Swain and Associates	21	-	21
Cian Reger/Milian Swain and Associates	21	-	21

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
jon-boat			
RTK GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Planned Work / Test for Tomorrow:

Planned Work / Test for Next Week:

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

VISITORS AND DISCUSSIONS: Manny/AEM called Dan Tomczak and discussed the plan to drop off and pick-up the 5-gallon buckets that will be used for containerizing the IDW.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Signature of Inspector:	

Accumulation / Stockpile Area Inspected:	

No of Containers:		No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Daniel M Tomczak	6/28/08
PREPARER’S SIGNATURE	DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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SOP CQMM-017, Final, Rev 0

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-007
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	June 30, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	Partly sunny, warm, 70s	PM WEATHER:	Sunny, very warm, 90s	MAX TEMP (F):	92	MIN TEMP (F):	70

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area near the intersection of NW 14th Avenue and NW 17th St. Collected sediment samples from locations CH-12 (station 22+00), CH-8 (station 14+00 offset due to bridge), CH-6 (station 10+00), CH-4 (station 6+00), and CH-2 (station 2+00) by manually pushing the clear, poly casings into the sediment from the jon-boat and then removing.. Collected 3 cores at each station for a total of 15 cores. Recovery on the cores ranged from 1’ to over 4’. May try to use the plastic slip caps and make a retainer to fit the ends of the 3-inch diameter poly casing. The manatee observer will be on-site on Tuesday, July 1 to begin working with the ARC boat involved in the sediment sampling.

MSA : N/A

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

Checked the integrity and current floating capabilities of the jon-boat.

TAILGATE TOPICS: discussed the sediment sampling protocol that ARC practiced on Sunday; use of DI water/distilled water for deconning equipment; tie the boat off to the creek bank rather than dropping an anchor into the sediment and potentially suspending materials into the water; manatee watch personal from MSA would be on-site on Tuesday; core catchers used with the 3-inch diameter core barrels would need to be deconned after each sampling location

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated. Also, survey crew had blow whistles mounted on their life jackets.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2MHILL	49	14	63
Leah Nation/CH2M HILL	21	-	21
Elizabeth Barclay/TPA	9	13	22
Gabriel DuPree/GNV	1	12	13
Patrick Sawyer/ARC Surveying and Mapping	47.5	11.5	69
Geoff Crews/ARC Surveying and Mapping	47.5	11.5	69
William Rios/ARC Surveying and Mapping	47.5	11.5	69
Michael Kirkland/Milian Swain and Associates	21	-	21
Cian Reger/Milian Swain and Associates	21	-	21

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
jon-boat			
RTK GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

sediment sampling at locations CH-12, CH-8, CH-6, CH-4, and CH-2

Planned Work / Test for Tomorrow:

collect sediment samples between NW 14th Street and NW 11th Street

Planned Work / Test for Next Week:

sediment and surface water sampling within Seybold Canal

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at 200’ increments to match the original locations.

VISITORS AND DISCUSSIONS: Manny/AEM stopped by the site to pick-up the 5-gallon buckets of sediment IDW.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	

			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:	Dan Tomczak/RDU	Signature of Inspector:	
Accumulation / Stockpile Area Inspected:	American Earth Movers yard, Miami		

No of Containers:	9	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the yard of AEM.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Daniel M Tomczak

6/30/08

PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS

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CH2MHILL

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-008
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 1, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	sunny, warm, 70s	PM WEATHER:	partly sunny, light rain later afternoon, 90s	MAX TEMP (F):	90	MIN TEMP (F):	72

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area southeast of the intersection of NW 14th Avenue and NW 12th St. Collected sediment samples from locations CH-22 (station 38+00), CH-23 (station 39+00), CH-24 (station 42+00), CH-24-DUP (station 42+00), and CH-25 (station 43+50) by manually pushing the 3-inch dia, clear, poly casings into the sediment from the jon-boat and then removing. Needed to patch a small hole in the jon-boat that resulted from hitting a rock in the Wagner Creek channel. Collected 3 cores at CH-22, CH-23, and CH-24, but could only collect 1 core at CH-25 (in the center of the channel) due to hitting refusal while advancing the other 2 sample cores. Recovery on the sediment sample cores ranged from 6-inchs to approximately 3 feet. Also, surveyed biologicals, cracks, and debris between NW 15th Ave and NW 17th Ave.

MSA : Discussed the biological concerns of working within the Wagner Creek channel that included manatee, sea turtles, small-tooth sawfish. Conducted manatee observation while sediment sampling was conducted at CH-22, CH-23, CH-24, and CH-25. No manatees were observed within Wagner Creek during the sampling operations.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

Jon-boat had a small leak from a large rock in the creek. ARC patched the hole with a marine patching material and then checked the integrity and floating capabilities of the jon-boat before it went back into the creek.

TAILGATE TOPICS: Discussed the sediment sampling procedures that ARC implemented on Monday; making sure nitrile gloves are always being worn while handling the sampling equipment; need to advance a probing rod to measure the depth of sediment at each sampling location to see how it correlates to the depth of the sample core tube; need to drink water throughout the day to keep hydrated

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated.

Look into the proper shipping of chemical materials (e.g., HCl) that were sent to the site.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	63	14	77
Leah Nation/CH2M HILL/MIA	21	-	21
Elizabeth Barclay/CH2M HILL/TPA	22	13	35
Gabriel DuPree/CH2M HILL/GNV	13	13	26
Patrick Sawyer/ARC Surveying and Mapping	75	11	86
Geoff Crews/ARC Surveying and Mapping	75	10.5	85.5
William Rios/ARC Surveying and Mapping	75	10.5	85.5
Michael Kirkland/Milian Swain and Associates	21	-	21
Cian Reger/Milian Swain and Associates	21	8.5	29.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
Jon-boat			
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

sediment sampling at locations CH-22, CH-23, CH-24, CH-24-DUP, and CH-25

Planned Work / Test for Tomorrow:

collect sediment samples between Hwy 836 (Dolphin Exwy) and NW 11th Street

Planned Work / Test for Next Week:

sediment and surface water sampling within Seybold Canal

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at 200’ increments to correlate to the original locations.

VISITORS AND DISCUSSIONS: Manny/AEM dropped off twenty-five (25) 5-gallon buckets and lids in the morning, then stopped by the site later in the afternoon to pick-up nine (9) 5-gallon buckets of sediment IDW and decon fluids. John Sawyer/ARC Surveying stopped by the site.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Dan Tomczak/RDU		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	9	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

Nine (9) 5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the AEM yard.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Daniel M. Tomczak	7/1/08
PREPARER’S SIGNATURE	DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-011
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 7, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	sunny, warm, 70s	PM WEATHER:	partly sunny, 90s	MAX TEMP (F):	90	MIN TEMP (F):	70

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area east of Wagner Creek and along NW 15th Court. Collected sediment samples from locations CH-20 (station 34+50), CH-18 (station 31+00), CH-16 (station 27+50), CH-14 (station 24+00), CH-14-DUP (station 24+00), CH-13 (station 22+00), CH-11 (station 18+00), and CH-9 (station 15+00) by manually pushing the 3-inch dia, clear, poly casings into the sediment from the jon-boat and then removing. Recovery on the sediment sample cores ranged from 6-inchs to approximately 3.5 feet.

MSA : Michael Kirkland/MSA conducted manatee observation while sediment sampling was conducted at CH-20, CH-18, CH-16, CH-14, CH-9, CH-11, and CH-13. One manatee was observed within Wagner Creek during the sampling operations as far up Wagner Creek as the NW 14th Avenue bridge, but only got to within 100 yards of the sampling team.

Tasks completed: 25 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Street

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

ARC checked the bottom of their small jon-boat.

TAILGATE TOPICS: Discussed the need to have the manatee observer accompany the sampling boat at all times; nitrile gloves need to always being worn while handling the sampling equipment; having a 2-way radio at the staging area and another 2-way radio on the sampling boat; need to contain the smoking by the subcontractors to an area behind where their truck is parked; need to drink water throughout the day to keep hydrated

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated; CH2M HILL crew had a raised tarp to work under to be protected from the sun while working.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	77	14	91
Leah Nation/CH2M HILL/MIA	21	5	26
Elizabeth Barclay/CH2M HILL/TPA	35	13	48
Gabriel DuPree/CH2M HILL/GNV	13	0	26
Carlton Ivery/CH2M HILL/DFB	0	13	13
Patrick Sawyer/ARC Surveying and Mapping	86	11	97
Geoff Crews/ARC Surveying and Mapping	85.5	10.5	96
William Rios/ARC Surveying and Mapping	85.5	10.5	96
Michael Kirkland/Milian Swain and Associates	21	9	30
Cian Reger/Milian Swain and Associates	21	-	29.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
Jon-boat			
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

sediment sampling at locations CH-20, CH-18, CH-16, CH-14, CH-14-DUP, CH-9, CH-11, and CH-13

Planned Work / Test for Tomorrow:

collect sediment samples, elutriate samples, and aqueous samples within the vicinity of the Univ. of Miami Hospital

Planned Work / Test for Next Week:

sediment and surface water sampling within Seybold Canal

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

VISITORS AND DISCUSSIONS: Manny/AEM stopped by the site later in the afternoon to pick-up eleven (11) 5-gallon buckets of sediment IDW and decon fluids.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?	Comment/Reason/Action

			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Dan Tomczak/RDU		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	11	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

Eleven (11) 5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the AEM yard.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Daniel M. Tomczak

7/7/08

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS

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SOP CQMM-017, Final, Rev 0

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-012
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 8, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	sunny, warm, 70s	PM WEATHER:	partly sunny, 90s	MAX TEMP (F):	90	MIN TEMP (F):	70

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area east of Wagner Creek and along NW 15th Court. Collected elutriate water and sediment samples from locations CH-20 (station 35+00) and CH-10 (station 16+50) by sampling 30-1 L bottles of surface water using a peristaltic pump and tubing and sampling from the jon-boat followed by 30-8 oz jars of sediment. In addition, bulk chemistry sediment samples were also collected from CH-10 by manually pushing the 3-inch dia, clear, poly casings into the sediment from the jon-boat and then removing. Recovery on the sediment sample cores ranged from 1 ft to approximately 3.5 feet.

MSA : Cian Reger/MSA conducted manatee observation during the elutriate sampling at CH-20 and CH-10. No manatees were observed within Wagner Creek during the sampling operations. In addition, Michael Kirkland/MSA and Leah Nation/CH2M HILL conducted a biological and structure survey within Wagner Creek between NW 14th Street and NW 11th Street. A total of 62 biological resources, 39 structures, and 9 instances of debris were documented along this section of Wagner Creek.

Tasks completed: 29 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Street

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

ARC checked the bottom of their small jon-boat.

TAILGATE TOPICS: Discussed using a hammer to drive the probe rods further into the sediment; nitrile gloves need to always being worn while handling the sampling equipment; preparing the large boat with the Vibecore to begin sampling in Seybold Canal on Wednesday; need to drink water throughout the day to keep hydrated

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated; CH2M HILL crew had a raised tarp to work under to be protected from the sun while working.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	91	15	106
Leah Nation/CH2M HILL/MIA	26	11	37
Elizabeth Barclay/CH2M HILL/TPA	48	14	62
Gabriel DuPree/CH2M HILL/GNV	13	0	26
Carlton Ivery/CH2M HILL/DFB	13	12	25
Patrick Sawyer/ARC Surveying and Mapping	97	11	108
Geoff Crews/ARC Surveying and Mapping	96	10.5	106.5
William Rios/ARC Surveying and Mapping	96	10.5	106.5
Michael Kirkland/Milian Swain and Associates	30	11	41
Cian Reger/Milian Swain and Associates	29.5	11	40.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
Jon-boat			
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

elutriate water and sediment sampling at locations CH-20 and CH-10

Planned Work / Test for Tomorrow:

collect sediment and elutriate samples within the Seybold Canal area

Planned Work / Test for Next Week:

sediment and surface water sampling within Seybold Canal

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

ARC mistakenly set-up the jon-boat at location CH-20 for the elutriate sampling rather than CH-19. Elutriate sediment and water samples were collected from CH-20.

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150’ to 200’) to correlate to the original locations.

VISITORS AND DISCUSSIONS: Manny/AEM stopped by the site later in the afternoon to pick-up six (6) 5-gallon buckets of sediment IDW and decon fluids.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Dan Tomczak/RDU		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	6	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

Six (6) 5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the AEM yard.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Daniel M. Tomczak

PREPARER’S SIGNATURE

7/8/08

DATE

PHOTOGRAPHS

Subject/Description:	
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SOP CQMM-017, Final, Rev 0

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-013
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 9, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Dan Tomczak/RDU

AM WEATHER:	sunny, warm, 70s	PM WEATHER:	partly sunny, 90s	MAX TEMP (F):	92	MIN TEMP (F):	74

SUMMARY OF WORK PERFORMED TODAY

ARC : Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area near the park near the mouth of the Seybold Canal. The SDI Vibecore and Monarch 24 boat were used for sediment and surface water sample collection within Seybold Canal. Collected elutriate water and sediment samples from location CH-39 (station 70+00) by sampling 30-1 L bottles of surface water using a peristaltic pump and tubing and sampling from the Monarch 24 boat followed by 30-8 oz jars of sediment. Bulk chemistry sediment samples were also collected from locations CH-40 (station 72+00) and CH-42 (station 76+00). The SDI Vibecore was used to advance the 3-inch dia, clear, poly core casings into the sediment. Recovery on the sediment sample cores ranged from 1 ft to approximately 4 feet.

MSA : Cian Reger/MSA conducted manatee observation during the sampling at CH-39, -40, and -42. No manatees were observed within Seybold Canal during the sampling operations. In addition, Michael Kirkland/MSA and Leah Nation/CH2M HILL conducted a biological and structure survey within Seybold Canal. A total of 0 biological resources, 106 structures, and 3 instances of debris were documented along this section of Wagner Creek.

Tasks completed: 29 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Street

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

ARC checked the Monarch 24 boat prior to launching it into Seybold Canal.

TAILGATE TOPICS: Discussed the need to be aware of other boat traffic while collecting samples in the navigable waters of Seybold Canal; nitrile gloves need to always being worn while handling the sampling equipment; everyone on the boat will require a life jacket; need to have a warning device (e.g., blow horn, whistle) on the boat; need to have radio communication with the staging/decon area; have a weather radio to monitor any changes in weather conditions; need to drink water throughout the day to keep hydrated; manatee observer needs to be monitoring on the boat while the boat is moving through the canal and when the Vibecore is in operation

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated; CH2M HILL crew had a raised tarp to work under to be protected from the sun while working.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	91	15	106
Leah Nation/CH2M HILL/MIA	26	11	37
Elizabeth Barclay/CH2M HILL/TPA	48	14	62
Gabriel DuPree/CH2M HILL/GNV	13	0	26
Carlton Ivery/CH2M HILL/DFB	13	12	25
Patrick Sawyer/ARC Surveying and Mapping	97	11	108
Geoff Crews/ARC Surveying and Mapping	96	10.5	106.5
William Rios/ARC Surveying and Mapping	96	10.5	106.5
Michael Kirkland/Milian Swain and Associates	30	11	41
Cian Reger/Milian Swain and Associates	29.5	11	40.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
Monarch 24 boat			

RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

elutriate water and sediment sampling at location CH-39; bulk chemistry sediment sampling at CH-40 and -42

Planned Work / Test for Tomorrow:

continue collecting sediment samples within the Seybold Canal area

Planned Work / Test for Next Week:

complete the sediment and surface water sampling within Wagner Creek

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

VISITORS AND DISCUSSIONS: Manny/AEM stopped by the site later in the afternoon to pick-up nine (9) 5-gallon buckets of sediment IDW and decon fluids.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Dan Tomczak/RDU		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	9	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

Nine (9) 5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the AEM yard.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Daniel M. Tomczak

7/9/08

PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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CH2MHILL

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-014
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 10, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Elizabeth Barclay/TPA

AM WEATHER:	sunny, warm, 70s	PM WEATHER:	sunny, 90s	MAX TEMP (F):	91	MIN TEMP (F):	79

SUMMARY OF WORK PERFORMED TODAY

ARC: Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area near the park near the mouth of the Seybold Canal. The SDI Vibecore and Monarch 24 boat were used for sediment and surface water sample collection within Seybold Canal. Bulk chemistry sediment samples were collected from locations CH-44 (station 44+00), CH-43 (station 78+00), CH-33 (station 58+00), CH-34 (station 60+00), and CH-35 (station 62+00). The SDI Vibecore was used to advance the 3-inch dia, clear, poly core casings into the sediment. Recovery on the sediment sample cores ranged from 0.3 ft to approximately 3.3 feet.

MSA: Cian Reger/MSA conducted manatee observation during the sampling. At stations CH-35, CH-44, and CH-45 there were no manatee sightings. At station 33, one manatee was sighted at 13:15, 10’ off the port side of the boat. There was no need to halt work activities as the boat had just been anchored, and the manatee was swimming upstream, away from operations at a rapid pace, leaving the area of concern. At station 34, there was a manatee sighting at 15:15, 30’ off the port side of the boat. There was no need to halt work activities as the boat was anchored and the coring was just being completed, and again the manatee was seen only as it was departing the area.

In addition, Michael Kirkland/MSA and Leah Nation/CH2M HILL conducted a biological and structure survey within Seybold Canal. The east side of the canal could only be partially completed due to a large volume of private vessels blocking both sight and access to the eastern edge. Photos were taken of both accessible and inaccessible areas however.

Tasks completed: 34 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Steet.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

ARC checked the Monarch 24 boat prior to launching it into Seybold Canal.

TAILGATE TOPICS: Discussed the need to wear hardhats while on the boat; nitrile gloves need to always being worn while handling the sampling equipment; discussed not smoking on the boat; accidental ingestion of contaminants from smoking and or hands in mouth; need to set up smoking area away from sampling and decon areas. Also discussed was shutting off engines for when sampling, and the plan for the remainder of the week.

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated; CH2M HILL crew had a raised tarp to work under to be protected from the sun while working. A cooler with Ice and drinks was put on the ARC Survey boat to prevent dehydration.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	37	7	44
Elizabeth Barclay/CH2M HILL/TPA	62	15	77
Gabriel DuPree/CH2M HILL/GNV	26	13	39
Carlton Ivery/CH2M HILL/DFB	25	13	38
Patrick Sawyer/ARC Surveying and Mapping	108	11	119
Geoff Crews/ARC Surveying and Mapping	106.5	11	117.5
William Rios/ARC Surveying and Mapping	106.5	11	117.5
Michael Kirkland/Milian Swain and Associates	41	5.5	46.5
Cian Reger/Milian Swain and Associates	40.5	10	50.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
Monarch 24 boat			
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Bulk chemistry sediment sampling at CH-33, CH-34, CH-35, CH-43 and CH-44.

Planned Work / Test for Tomorrow:

continue collecting sediment samples within the Seybold Canal area

Planned Work / Test for Next Week:

complete the sediment and surface water sampling within Wagner Creek

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150’ to 200’) to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined.

VISITORS AND DISCUSSIONS: Manny/AEM stopped by the site later in the afternoon to pick-up nine (9) 5-gallon buckets of sediment IDW and decon fluids.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Dan Tomczak/RDU		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	9	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

Nine (9) 5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the AEM yard.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Elizabeth J. Barclay	7/10/08
PREPARER’S SIGNATURE	DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-015
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 11, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Elizabeth Barclay/TPA

AM WEATHER:	sunny, warm, 70s	PM WEATHER:	sunny, 90s	MAX TEMP (F):	90	MIN TEMP (F):	77

SUMMARY OF WORK PERFORMED TODAY

ARC: Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area near the park near the mouth of the Seybold Canal. The SDI Vibecore and Monarch 24 boat were used for sediment sample collection within Seybold Canal. Bulk chemistry and treatability(at the request of David Cole/CH2M) sediment samples were collected from locations CH-36 and CH-36Dup (station 64+00), CH-37 (station66+00), CH-38 (station 68+00) and CH-41 (station 74+00). Collected cross-sections from sta.58+00 south side of 11th St. bridge, South to station 81+50 at the intersection of Seybold Creek and Miami River. The SDI Vibecore was used to advance the 3-inch dia, clear, poly core casings into the sediment. Recovery on the sediment sample cores ranged from 0.3 ft to approximately 3.3 feet.

MSA: Cian Reger/MSA conducted manatee observation during the sampling until 1330, and from then until 1830 he conducted manatee observation for the cross section surveys. No manatees were seen.

Tasks completed: 38 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Street. Cross sections surveys for entire creek and canal system.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

ARC checked the Monarch 24 boat prior to launching it into Seybold Canal.

TAILGATE TOPICS: Discussed the need to wear hardhats while on the boat; nitrile gloves need to always being worn while handling the sampling equipment; discussed not smoking on the boat; need to set up smoking area away from sampling and decon areas. ARC needs to fill out report for bent rod. The importance of staying hydrated and using caution while walking along the seawall and working on VibeCore, being increasingly vigilant when working in canal as two manatees were spotted the previous day. In addition the use of IDW buckets: sample site buckets would be for sample only; washwater in other buckets; gloves tarps and miscellaneous items in another. As well as collecting jars of sample for David Cole at each site. The status of CH-45 was still undetermined at this time.

LOSS PREVENTION OBSERVATIONS: Survey crew had drinking water in the boat while they were collecting cross section measurements along the creek so that the crew would not become dehydrated; CH2M HILL crew had a raised tarp to work under to be protected from the sun while working. A cooler with Ice and drinks was put on the ARC Survey boat to prevent dehydration.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	44	0	44
Elizabeth Barclay/CH2M HILL/TPA	77	16	93
Gabriel DuPree/CH2M HILL/GNV	39	11	50
Carlton Ivery/CH2M HILL/DFB	38	12	50
Patrick Sawyer/ARC Surveying and Mapping	119	13.5	1132.5
Geoff Crews/ARC Surveying and Mapping	117.5	13.5	131
William Rios/ARC Surveying and Mapping	117.5	13.5	131
Michael Kirkland/Milian Swain and Associates	46.5	0	46.5
Cian Reger/Milian Swain and Associates	50.5	11	61.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By

Monarch 24 boat			
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Bulk chemistry sediment sampling at CH-41, CH-38, CH-37, CH-36 and CH-36Dup.

Planned Work / Test for Tomorrow:

Move to continue collecting sediment samples in Wagner Creek area.

Planned Work / Test for Next Week:

Complete the sediment and surface water sampling within Wagner Creek

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150’ to 200’) to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined. Today Russell Short called to relay the message from David Cole that I would identify the sites that seemed to have the most visible contamination and take a transect there and call it CH-45.

Conversation with Kevin Sanders today regarding changes in the sampling plan. The following changes are in effect:

-We will not be taking Elutriate-5 that was indicated on lab sheet.

-There will be only one Trip Blank analyzed. That one is already at the lab.

-Actual TAT on samples is 10working days and 21 days. We will ensure this correction will be made to the COCs.

-Bulk Density samples have not been collected in separate containers, but the geotech lab has enough sample to do these analyses from the Grain size and Specific Gravity sample jars. To avoid any confusion we will add a column for this analysis to the COC, but no extra jars need to be filled to do this.

-A %moisture column will be added to the COCs. This analysis has been done for all previous samples, but the column needs to be added to COCs to avoid any confusion.

-Whether or not I take ERBs is still to be determined.

VISITORS AND DISCUSSIONS: Manny/AEM stopped by the site later in the afternoon to pick-up nine (9) 5-gallon buckets of sediment IDW and decon fluids.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:	Elizabeth J. Barclay/TPA			Signature of Inspector:			
Accumulation / Stockpile Area Inspected:	American Earth Movers yard, Miami, FL						
No of Containers:	10	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

Ten (10) 5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the AEM yard.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Elizabeth J. Barclay	7/10/08
PREPARER’S SIGNATURE	DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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Photo Log No:	
Subject/Description:	
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DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-016
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 12, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Elizabeth Barclay/TPA

AM WEATHER:	sunny, warm, 70s	PM WEATHER:	overcast, 90s	MAX TEMP (F):	88	MIN TEMP (F):	74

SUMMARY OF WORK PERFORMED TODAY

ARC: Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Set-up decon area and sample preparation area near the park near the mouth of the Seybold Canal. The jon boat was used for hand coring 3-in diameter clear poly core casings to collect sediment samples within Wagner Creek. Bulk chemistry and treatability(at the request of David Cole/CH2M) sediment samples were collected from locations CH-21 (station 35+80), CH-19 and CH-19Dup (station 32+80), CH-17 (station 29+25) and CH-15 (station 25+40). Recovery on the sediment sample cores ranged from 0.5 ft to approximately 3.9 feet. Collected most utilities and trees between 20th St and 14th Ave.

MSA: Michael Kirkland/MSA conducted manatee observation during the sampling until 1000, and from then until 1500 he was on standby waiting for ARC to be ready to put in the boat. As ARC secured for bad weather at 1530, the manatee observer left at 1500 when the decision was made. No manatees were seen.

Tasks completed: 42 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Street. Cross sections surveys for entire creek and canal system.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

ARC checked the jon boat prior to launching it into Seybold Canal. CH2M HILL field team wore gloves and all appropriate PPE while on the job.

TAILGATE TOPICS: Discussed the need to wear hardhats while coring; nitrile gloves need to always being worn while handling the sampling equipment; discussed not smoking on the boat. In addition the use of IDW buckets: sample site buckets would be for sample only; washwater in other buckets; gloves tarps and miscellaneous items in another. The status of CH-45 was still undetermined at this time. Goal transects were identified for today and the sites were verified before ARC departed in jon boat.

LOSS PREVENTION OBSERVATIONS: CH2M HILL crew had a raised tarp to work under to be protected from the sun while working. Drinking water and gatoraide was made avaiable to boat crew and MSA crew to prevent dehydration.,

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	44	6	50
Elizabeth Barclay/CH2M HILL/TPA	93	13	96
Gabriel DuPree/CH2M HILL/GNV	50	11	61
Carlton Ivery/CH2M HILL/DFB	50	0	50
Patrick Sawyer/ARC Surveying and Mapping	132.5	6	138.5
Geoff Crews/ARC Surveying and Mapping	131	6	137
William Rios/ARC Surveying and Mapping	131	6	137
Michael Kirkland/Milian Swain and Associates	46.5	8.5	55
Cian Reger/Milian Swain and Associates	61.5	0	61.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
Jon Boat			
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Bulk chemistry sediment sampling at CH-15, CH-17, CH-19, CH-19Dup and CH-21.

Planned Work / Test for Tomorrow:

Tomorrow ARC will Survey alone. On Monday CH2M HILL will be going out to continue field sampling event.

Planned Work / Test for Next Week:

Complete the sediment and surface water sampling within Wagner Creek

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined. Today Russell Short called clarify instructions for CH-45. For this site I am to select the site with the most unconsolidated sediments, based on previous core data, and before sampling confirm the site location with David Cole/CLE.

Conversation with Kevin Sanders today regarding changes in the sampling plan. The following changes are in effect:

-We will not be taking Elutriate-5 that was indicated on lab sheet.

-There will be only one Trip Blank analyzed. That one is already at the lab.

-Actual TAT on samples is 10working days and 21 days. We will ensure this correction will be made to the COCs.

-Bulk Density samples have not been collected in separate containers, but the geotech lab has enough sample to do these analyses from the Grain size and Specific Gravity sample jars. To avoid any confusion we will add a column for this analysis to the COC, but no extra jars need to be filled to do this.

-A %moisture column will be added to the COCs. This analysis has been done for all previous samples, but the column needs to be added to COCs to avoid any confusion.

Based on a conversation with Russell Short/ATL, I will collect ERBs for the core and core-catch as well as the tubing, and send them to the lab with instructions to hold for instructions.

VISITORS AND DISCUSSIONS: Manny/AEM stopped by the site later in the afternoon to pick-up nine (9) 5-gallon buckets of sediment IDW and decon fluids.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Elizabeth J. Barclay/TPA		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	12	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

Ten (10) 5-gallon buckets were all sealed with their lids prior to leaving the site and being taken to the AEM yard.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Elizabeth J. Barclay	7/12/08
PREPARER’S SIGNATURE	DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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Photo Log No:	
Subject/Description:	
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CH2MHILL

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-017
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 13, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Elizabeth Barclay/TPA

AM WEATHER:	rainy, humid 70s	PM WEATHER:	overcast, 80s	MAX TEMP (F):	74	MIN TEMP (F):	86

SUMMARY OF WORK PERFORMED TODAY

ARC: Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Started collecting trees, utilities, structures, cracks and misc planimetrics between NW 15th Court and West East Expressway.

MSA: As no work required the deployment of a boat, no on from MSA was on site today.

CH2M HILL prepared coolers for shipment to the lab via courier.

Tasks completed: 42 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Street. Cross sections surveys for entire creek and canal system.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

CH2M HILL field team wore gloves while handling sample containers.

TAILGATE TOPICS: Discussed the need to stay hydrated. That ARC should stop work for lightning. Also discussed using the buddy system and/or radios to stay in touch. Work plan for ARC is to survey in trees and utilities from 15th Court South

LOSS PREVENTION OBSERVATIONS: ARC crew had water on hand to prevent dehydration.,

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	50	0	50
Elizabeth Barclay/CH2M HILL/TPA	96	10	106
Gabriel DuPree/CH2M HILL/GNV	61	4	65
Carlton Ivery/CH2M HILL/DFB	50	0	50
Patrick Sawyer/ARC Surveying and Mapping	138.5	10.5	149
Geoff Crews/ARC Surveying and Mapping	137	10.5	147.5
William Rios/ARC Surveying and Mapping	137	10.5	147.5
Michael Kirkland/Milian Swain and Associates	55	0	55
Cian Reger/Milian Swain and Associates	61.5	0	61.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

ARC surveyed in points identified by MSA. CH2M HILL prepared samples for delivery via courier, as well as preparing bottleware for tomorrow.

Planned Work / Test for Tomorrow:

CH2M HILL, ARC and MSA will be going out complete the field sampling. ARC will continue surveying.

Planned Work / Test for Next Week:

Complete the sediment and surface water sampling within Wagner Creek

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined. Today Russell Short called clarify instructions for CH-45. For this site I am to select the site with the most unconsolidated sediments, based on previous core data, and before sampling confirm the site location with David Cole/CLE. With a conversation with David Cole/CLE we determined it would be best to sample near CH-1 to CH-5. As long as the sample consists of more silt and clay material, and not sandy material. If we find we are collecting a lot of sandy material we will move on to another location.

Conversation with Kevin Sanders today regarding changes in the sampling plan. The following changes are in effect:

-We will not be taking Elutriate-5 that was indicated on lab sheet.

-There will be only one Trip Blank analyzed. That one is already at the lab.

-Actual TAT on samples is 10working days and 21 days. We will ensure this correction will be made to the COCs.

-Bulk Density samples have not been collected in separate containers, but the geotech lab has enough sample to do these analyses from the Grain size and Specific Gravity sample jars. To avoid any confusion we will add a column for this analysis to the COC, but no extra jars need to be filled to do this.

-A %moisture column will be added to the COCs. This analysis has been done for all previous samples, but the column needs to be added to COCs to avoid any confusion.

Based on a conversation with Russell Short/ATL, I will collect ERBs for the core and core-catch as well as the tubing, and send them to the lab with instructions to hold for instructions.

VISITORS AND DISCUSSIONS:

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Elizabeth J. Barclay/TPA		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	0	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Elizabeth J. Barclay

7/13/08

PREPARER’S SIGNATURE DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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Photo Log No:	
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CH2MHILL

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-018
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 14, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Elizabeth Barclay/TPA

AM WEATHER:	rainy, humid 70s	PM WEATHER:	overcast, 80s	MAX TEMP (F):	80s	MIN TEMP (F):	70s

SUMMARY OF WORK PERFORMED TODAY

ARC: Surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Recorded surface water levels within Wagner Creek/Seybold Canal in the morning and at the end of the day from the 3 tidal gauges. Boat left staging area at 0900 to collect 40 water samples at CH 30, started to lightning and rain approximately at 10:00. Waited with CH2MHill crew on site for while and watched storm on computer. Lightning strikes in vicinity of project mobilized back to room at 1045.

Returned to site at 14:00 and collected biologicals, structures and debris between NW 12th St. and East West Expressway. Went to NW 11th St. launched boat and collected biologicals, structures, cracks and debris. Also collected planimetrics along NW 11th bridge and ran levels through 2 control points. When crew was at Nw 12th Ave and NW 14th st. new utilitiy markings were seen on the SE corner of NW 12th St. and NW 14th Ave. One of the new markings was painted green over the previously located green marked sewer line, but did not identify the new line as sewer. The other new markings were orange and appeared to be for an underground communications line. Tide were read once in the morning. Due to the weather the noon and afternoon readings were not collected.

MSA: Worked as a manatee observer with coring in the morning, and after the rain stopped went in the boat with survey crew. Left work at 1645. No manatees were observed in Wagner Creek/Seybold Canl.

CH2M HILL collected water samples ERB-2 at 0700, moved to staging area for CH-30. Collected and ERB-3, at 0925 collected CH-30 elutriate water. At 1030 Pat Sawyer notified FTL that he would not be able to do any more work and he decided to wait at the hotel for enough clear in the weather for them to work again. Because Carlton Ivery/DFB lives so far away, Elizabeth Barclay/TPA determined CH2M HILL activities would secure for the day after coolers were iced for preservation. Advised Pat Sawyer that if weather cleared the Survey crew could go out, however no more samples would be collected for that day.

Tasks completed: 42 out of the 45 sediment sampling locations; transects, topographic locations, and structures and biologicals have been surveyed from NW 20th Street to NW 11th Street; Cross sections surveys for entire creek and canal system.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

CH2M HILL field team wore gloves while handling samples and sample containers.

TAILGATE TOPICS: Discussed no smoking around the site, wearing gloves whenever handling the cores, being vigilant and watching out for manatees, and wearing lifejackets on the boat. Also discussed using the buddy system and/or radios to stay in touch. Advised the crew to keep an eye on the weather and stop work for lightning.

LOSS PREVENTION OBSERVATIONS: Field crew had water on hand to prevent dehydration.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	50	3.5	53.5
Elizabeth Barclay/CH2M HILL/TPA	106	11	117
Gabriel DuPree/CH2M HILL/GNV	65	7	72
Carlton Ivery/CH2M HILL/DFB	50	5	55
Patrick Sawyer/ARC Surveying and Mapping	149	8	157
Geoff Crews/ARC Surveying and Mapping	147.5	8	155.5
William Rios/ARC Surveying and Mapping	147.5	8	155.5
Michael Kirkland/Milian Swain and Associates	55	0	55

Cian Reger/Milian Swain and Associates	61.5	5.5	67

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

ARC surveyed in points identified by MSA. CH2M HILL sampled and prepared samples for delivery via FedEx.

Planned Work / Test for Tomorrow:

CH2M HILL and ARC will be going out complete the field sampling. ARC will continue surveying.

Planned Work / Test for Next Week:

Complete the sediment and surface water sampling within Wagner Creek.

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined. Today Russell Short called clarify instructions for CH-45. For this site I am to select the site with the most unconsolidated sediments, based on previous core data, and before sampling confirm the site location with David Cole/CLE. With a conversation with David Cole/CLE we determined it would be best to sample near CH-1 to CH-5. As long as the sample consists of more silt and clay material, and not sandy material. If we find we are collecting a lot of sandy material we will move on to another location.   .

Conversation with Kevin Sanders today regarding changes in the sampling plan. The following changes are in effect:

-We will not be taking Elutriate-5 that was indicated on lab sheet.

-There will be only one Trip Blank analyzed. That one is already at the lab.

-Actual TAT on samples is 10 working days and 21 days. We will ensure this correction will be made to the COCs.

-Bulk Density samples have not been collected in separate containers, but the geotech lab has enough sample to do these analyses from the Grain size and Specific Gravity sample jars. To avoid any confusion we will add a column for this analysis to the COC, but no extra jars need to be filled to do this.

-A %moisture column will be added to the COCs. This analysis has been done for all previous samples, but the column needs to be added to COCs to avoid any confusion.

Based on a conversation with Russell Short/ATL, I will collect ERBs for the core and core-catch as well as the tubing, and send them to the lab with instructions to hold for instructions.

Per David Cole/CLE no more Manatee Observer would be on site for the remainder of the field event.

VISITORS AND DISCUSSIONS:

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Elizabeth J. Barclay/TPA		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:		No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.	Elizabeth J. Barclay	7/14/08
	PREPARER’S SIGNATURE	DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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Photo Log No:	
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SOP CQMM-017, Final, Rev 0

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-019
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 15, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Elizabeth Barclay/TPA

AM WEATHER:	rainy, humid 70s	PM WEATHER:	overcast, 80s	MAX TEMP (F):	87	MIN TEMP (F):	73

SUMMARY OF WORK PERFORMED TODAY

ARC: Sediment sampling and surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Those present were Patrick Sawyer, Geoff Crews and William Rios. Launched boat at NW 15th Crt , set up equipment and began collecting cores at CH-45 at 0810. Collected 3 cores at new CH-45 location sta.23+50. Also filled approximately 7 cores to fill two 5 gallon buckets with approximately 2.5 gallons of muck in one and clay in the other. Collected probes at CH-12, CH-8, CH-6, CH-4 and CH-2. Pulled boat, loaded equipment and drove to Burger King on the way to NW 11th St. to meet CH2MHill crew. Rain started at approximately 11:45. Crew went on stand by at site until 1448. No evening tide was read due to weather.

MSA: Due to securing of Manatee Observer (Per D. Cole/CLE) no one from MSA was required on site.

CH2M HILL met for Meeting with D. Cole and ARC at 0600, the plan for the day was discussed as follows: Sample at CH-45, then move to complete last cores required by CH2M HILL at CH-29, CH-29Dup, and CH-30, then the ARC team would be free for the remainder of the day to survey in any remaining work. This included the probing for CH-2, CH-4, CH-6, CH-8, and CH-12. ARC discussed that it would be easier for them to survey in the morning, but due to the cost of keeping the CH2M HILL field team mobilized as well as the cost and man-hours involved in keeping samples iced, it was determined that ARC would complete all Coring first, and then be free to conduct their surveys. Elizabeth Barclay/TPA requested previous days (14July) daily report from Pat Sawyer. 0700 CH2M HILL arrived at staging area for CH-45 at 0700. After the ARC crew completed getting prepared to mobilize in the water an on-site tailgate was held with E. Barclay/TPA, Carlton Ivery/DFB and ARC crew members. The plan for the day was restated, at which time Pat Sawyer/ARC said they would do their surveying and probe work in the morning due to tidal reason. Apparently there is only one high tide per day and it occurs in the morning at which time they must take their probe work, also this would be easiest for them. I reiterated the discussion just an hour ago with D. Cole/CLE present that stressed the importance of CH2M HILL completed the field effort first. Boat launched for sampling at approximately 0800. After collected CH-45 ARC went upstream to probe. 1100 ARC returned with lunch, rain set in and all field work was halted for the remainder of the day. Elizabeth Barclay/TPA asked Pat Sawyer/ARC if he could get previous days daily report done while waiting on rain to pass, he indicated this wasn’t possible because his notes from the previous day were at the hotel. Before ARC secured the site for the day I asked Pat Sawyer/ARC if they team could work in the rain if there was no thunder of lightning, to clarify whether it was a safety issue or a concern for the equipment. I thought if Pat thought the team were safe they could collect without the survey equipment and survey in points later, he was very adamant about the fact that the team is never in the boat if it is raining. CH2M HILL field team secured site at 1545 after icing samples, team would have to return on Wednesday. 1820 sent reminder email to Pat Sawyer/ARC for the previous day’s daily report.

Tasks completed: 43 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed from NW 20th Street to NW 11th Street; biological survey from NW 20th Street to NW 14th Street. Cross sections surveys for entire creek and canal system.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

Field crew wore gloves, sun block was made available. Plenty of water and gatoraide is onsite for the crew.

TAILGATE TOPICS: Discussed the need to stay hydrated and wear appropriate PPE. Also discussed work plan.

LOSS PREVENTION OBSERVATIONS: Everyone had pleanty of water available and used appropriate PPE.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	50	0	50
Elizabeth Barclay/CH2M HILL/TPA	106	13	119
Gabriel DuPree/CH2M HILL/GNV	65	0	65
Carlton Ivery/CH2M HILL/DFB	50	9	59

Patrick Sawyer/ARC Surveying and Mapping	149	9	158
Geoff Crews/ARC Surveying and Mapping	147.5	9	156.5
William Rios/ARC Surveying and Mapping	147.5	9	156.5
Michael Kirkland/Milian Swain and Associates	55	0	55
Cian Reger/Milian Swain and Associates	61.5	0	61.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

CH2M HILL and ARC collected samples for CH-45, then ARC probed upstream sites that they did not do on the day they cored the sites, as per the SOW.

Planned Work / Test for Tomorrow:

CH2M HILL and ARC would still be surveying.

Planned Work / Test for Next Week:

Complete the sediment sampling and survey work within Wagner Creek

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined. Today Russell Short called clarify instructions for CH-45. For this site I am to select the site with the most unconsolidated sediments, based on previous core data, and before sampling confirm the site location with David Cole/CLE. With a conversation with David Cole/CLE we determined it would be best to sample near CH-1 to CH-5. As long as the sample consists of more silt and clay material, and not sandy material. If we find we are collecting a lot of sandy material we will move on to another location. A site located between CH-13 and CH-14 was selected for collection of CH-45. Per David Cole/CLE we collected 2 buckets of sample. One bucket was filled with the mucky surface material, and one with the clayey bottom layer.

Conversation with Kevin Sanders today regarding changes in the sampling plan. The following changes are in effect:

-We will not be taking Elutriate-5 that was indicated on lab sheet.

-There will be only one Trip Blank analyzed. That one is already at the lab.

-Actual TAT on samples is 10working days and 21 days. We will ensure this correction will be made to the COCs.

-Bulk Density samples have not been collected in separate containers, but the geotech lab has enough sample to do these analyses from the Grain size and Specific Gravity sample jars. To avoid any confusion we will add a column for this analysis to the COC, but no extra jars need to be filled to do this.

-A %moisture column will be added to the COCs. This analysis has been done for all previous samples, but the column needs to be added to COCs to avoid any confusion.

Based on a conversation with Russell Short/ATL, I will collect ERBs for the core and core-catch as well as the tubing, and send them to the lab with instructions to hold for instructions.

Per David Cole/CLE no more Manatee Observer would be on site for the remainder of the field event.

VISITORS AND DISCUSSIONS:

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Elizabeth J. Barclay/TPA		Signature of Inspector:			
Accumulation / Stockpile Area Inspected:		American Earth Movers yard, Miami, FL					
No of Containers:	4	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

3 buckets for CH-45: one of mucky top layer, one of clay bottom layer, and one composite. Also one bucket of tarps and plastics

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.	Elizabeth J. Barclay	7/15/08
	PREPARER'S SIGNATURE	DATE

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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Photo Log No:	
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DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SOP CQMM-017, Final, Rev 0

Wagner Creek/Seybold Canal

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-020
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 16, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	Elizabeth Barclay/TPA

AM WEATHER:	humid 70s	PM WEATHER:	overcast/raining, 80s	MAX TEMP (F):	87	MIN TEMP (F):	76

SUMMARY OF WORK PERFORMED TODAY

ARC: Sediment sampling and surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Those present were Patrick Sawyer, Geoff Crews and William Rios. Meet CH2MHill at hotel for planning/safety meetingDrove to site at NW 11th St., launched vessel in Wagner Creek, set up cleaning site and RTK. 050 returned with 6 cores from CH-30 sta.52+50. Collected 3 cores at CH-29 and 3 for CH-29Dup (sta.51+00). Also collected probes and soundings at each location. Collected planimetric locations along NW 11th St. bridge. Meet with David Cole and Drew from MSA and reviewed preliminary maps from field data collected. Discussed aerial photogrammetry and the need for MSA to acquire the tree canopy's of marked trees along project route. Broke down cleaning area, cleaned and returned core pipes and Vibe-Core to vessel Grey Witch for mobilization back to Jacksonville. Pulled jon boat from water and re-launched in Seybold creek to collect headwall P.I.'s and take pictures of flagged areas marked by MSA. Took pictures of s-85 through s-157, debris marks d-28 through d-30. Rain started at approximately 13:30, went on stand by and surveyed between rain storms until approximately 16:30 and called it a day. Launched boat at NW 15th Crt , set up equipment and began collecting cores at CH-45 at 0810.

MSA: Due to securing of Manatee Observer (Per D. Cole/CLE) no one from MSA was required on site.

CH2M HILL met for Meeting with D. Cole and ARC at 0600, the plan for the day was discussed as follows: Sample at CH-30, CH-29, and CH-29Dup. Then move to complete any survey work. E. Barclay/TPA told the crew they could get started as soon as they arrived on site. 0635 E. Barclay/TPA arrives onsite. 0645 ARC arrives onsite. 0723 although approximately 6-10 cores are decontaminated and ready to begin coring, Geoff leaves site in jon boat. When FTL asks Pat Sawyer/ARC whether Geoff is going to core, Pat Sawyer states that 'he is going to do some survey work for me.' Apparently there was a number of items still to survey in upstream of the NW 11th St bridge. I stated that per D. Cole the plan was to core first, and then survey, in order that the CH2M HILL crew is able to complete their field work today, and state that Geoff is not to go out to do survey work, but rather start coring as there are plenty of cores available to begin work. Pat Sawyer tells him to go on, ignoring the requests of FTL, then informing FTL how they were going to get the job done that once all cores were ready (unlike how it's ever been done in the past) then they would go collect cores. This was followed by general disrespect, lecturing, and patronizing behavior towards FTL. FTL calls David Cole to discuss problem with ARC and concerns with not getting the job done for yet another day due to more incoming storms. D. Cole informs FTL that Pat claims to only have sent Geoff off to survey in a control point. FTL asks Pat if Geoff will return immediately when cores are ready. Pat Sawyer/ARC states, 'he will return when I tell him to.' FTLs bigger concern was due to incoming foul weather having yet another day, like the previous day when ARC put their own needs and schedule before that of the client CH2M HILL leaving the field team to have to remobilize for another day of sampling. This was a more blatant example of the disrespect shown the FTL, and is consistant with not just 14July, but also with 3Jul when FTL requested work be done in a specific sequence in order that the CH2M HILL field crew would be busy all morning, and Pat Sawyer/ARC agreed, and then upon departing the site and supervision of FTL proceeded to disregard FTLs request when sampling occurred, without communicating need for or change in plan to FTL.

CH-30, CH-29, and CH-29Dup were collected and containerized. ~0930 ARC survey crew does more survey work in creek upstream of NW 11th Street bridge, likely what Pat had been intending to do in the morning before sampling occurred before D. Cole/CLE called, contrary to request of both D. Cole and FTL made at the morning tailgate meeting. 1410 CH2M HILL Field team departs site, having completed the field sampling event. FTL called Pat Sawyer/ARC to request status of ARC survey crew, because of the rain that had begun about 1/2hour prior. Pat reported that survey crew was sitting in the boat under a bridge taking cover and would return as soon as there is a break in the weather. Apparently planned change as the ARC daily report states that they survey between storms.

Tasks completed: 45 out of the 45 sediment sampling locations; transects, topographic locations, and structures have been surveyed for Wagner Creek; biological survey from NW 20th Street to NW 11th Street. Cross sections surveys for entire creek and canal system.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

Field crew wore gloves, sun block was made available. Plenty of water and gatoraide is onsite for the crew.

TAILGATE TOPICS: Discussed the need to stay hydrated and wear appropriate PPE. Also discussed work plan.

LOSS PREVENTION OBSERVATIONS: Everyone had pleanty of water available and used appropriate PPE.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction

Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	50	0	50
Elizabeth Barclay/CH2M HILL/TPA	119	17	136
Gabriel DuPree/CH2M HILL/GNV	65	0	65
Carlton Ivery/CH2M HILL HILL/DFB	59	8	67
Patrick Sawyer/ARC Surveying and Mapping	158	11	169
Geoff Crews/ARC Surveying and Mapping	156.5	11	167.5
William Rios/ARC Surveying and Mapping	156.5	11	167.5
Michael Kirkland/Milian Swain and Associates	55	0	55
Cian Reger/Milian Swain and Associates	61.5	0	61.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

CH2M HILL and ARC collected samples for CH-30, CH-29, and CH-29Dup. ARC then surveyed ‘between storms’

Planned Work / Test for Tomorrow:

ARC will be surveying.

Planned Work / Test for Next Week:

Complete the survey work within Wagner Creek

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined. Today Russell Short called clarify instructions for CH-45. For this site I am to select the site with the most unconsolidated sediments, based on previous core data, and before sampling confirm the site location with David Cole/CLE. With a conversation with David Cole/CLE we determined it would be best to sample near CH-1 to CH-5. As long as the sample consists of more silt and clay material, and not sandy material. If we find we are collecting a lot of sandy material we will move on to another location. A site located between CH-13 and CH-14 was selected for collection of CH-45. Per David Cole/CLE we collected 2 buckets of sample. One bucket was filled with the mucky surface material, and one with the clayey bottom layer.

Conversation with Kevin Sanders today regarding changes in the sampling plan. The following changes are in effect:

-We will not be taking Elutriate-5 that was indicated on lab sheet.

-There will be only one Trip Blank analyzed. That one is already at the lab.

-Actual TAT on samples is 10working days and 21 days. We will ensure this correction will be made to the COCs.

-Bulk Density samples have not been collected in separate containers, but the geotech lab has enough sample to do these analyses from the Grain size and Specific Gravity sample jars. To avoid any confusion we will add a column for this analysis to the COC, but no extra jars need to be filled to do this.

-A %moisture column will be added to the COCs. This analysis has been done for all previous samples, but the column needs to be added to COCs to avoid any confusion.

Based on a conversation with Russell Short/ATL, I will collect ERBs for the core and core-catch as well as the tubing, and send them to the lab with instructions to hold for instructions.

Per David Cole/CLE no more Manatee Observer would be on site for the remainder of the field event.

Per David Cole ARC was directed not to locate flags set by MSA inside Seybold Creek.

VISITORS AND DISCUSSIONS:

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:	Elizabeth J. Barclay/TPA	Signature of Inspector:	
Accumulation / Stockpile Area Inspected:	American Earth Movers yard, Miami, FL		

No of Containers:	10	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

4ea of washwater, 2ea of tarps/plastic, 1ea for CH-30, CH-29, and CH-29Dup, Iso Bucket from site. Decontamination bins. 1 cooler filled with unpreserved samples for D. Cole, both water and sediment.

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

PREPARER’S SIGNATURE	DATE
Elizabeth J. Barclay	7/16/08

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
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DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

CONTRACT NAME:	Dredging Services for Wagner Creek/Seybold Canal	REPORT NO:	WC-021
CONTRACT NUMBER:	City of Miami/ B-50643	REPORT DATE:	July 17, 2008
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:	Phase 1	PROJECT NAME / LOCATION:	Wagner Creek/Seybold Canal (Miami, FL)
PROJECT NUMBER:	370915	PROJECT DESCRIPTION:	Sediment Characterization and Surveying
PROJECT MANAGER:	David Cole/CLE	PROJECT QC MANAGER:	Eric Burrell/ATL
CONSTRUCTION MANAGER:	Dan Tomczak/RDU	SITE SAFETY MANAGER:	David Cole/CLE

AM WEATHER:		PM WEATHER:		MAX TEMP (F):		MIN TEMP (F):	

SUMMARY OF WORK PERFORMED TODAY

ARC: Sediment sampling and surveying completed by Patrick Sawyer/ARC, Geoff Crews/ARC, and William Rios/ARC. Meet with CH2MHIll at hotel for safety meeting. Those present were Patrick Sawyer, Geoff Crews and William Rios. Launched vessel and set up RTK on Seybold Canal side of NW 11th St. Surveyed in P.I for headwall locations along the East and West sides of canal. Additional data was collected at NW 14th Ave. and NW 15th Court. Collected data to clarify lot line lengths beginning at Lot 1 along NW 15th St. Tied in property corners along the Wagner Creek side of residences near NW 14th St. Drove vessels to ramp and loaded at NW 24th Ave., took William Rios to airport and mobilized back to Jacksonville, Florida.

MSA: Due to securing of Manatee Observer (Per D. Cole/CLE) no one from MSA was required on site.

CH2M HILL met for Meeting with D. Cole and ARC. E. Barclay demobilized: Unloaded supplies for storage in the Miami, office in Coral Gables, FL; Refueled and returned Cargo Van; picked up rental car and returned to TPA.

Tasks completed: 45 out of the 45 sediment sampling locations, all survey work.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

TAILGATE TOPICS:

LOSS PREVENTION OBSERVATIONS:

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
Dan Tomczak/CH2M HILL/RDU	106	0	106
Leah Nation/CH2M HILL/MIA	50	0	50
Elizabeth Barclay/CH2M HILL/TPA	136	8	144
Gabriel DuPree/CH2M HILL/GNV	65	0	65
Carlton Ivery/CH2M HILL HILL/DFB	67	0	67
Patrick Sawyer/ARC Surveying and Mapping	169	13	182
Geoff Crews/ARC Surveying and Mapping	167.5	13	180.5
William Rios/ARC Surveying and Mapping	167.5	13	180.5
Michael Kirkland/Milian Swain and Associates	55	0	55
Cian Reger/Milian Swain and Associates	61.5	0	61.5

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By
RTK-GPS			

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Arc surveyed, CH2M HILL demobilized field event.

Planned Work / Test for Tomorrow:

Field Event is complete.

Planned Work / Test for Next Week:

Field Event is complete.

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

Due to the number of docked boats within Seybold Canal, some of the sampling locations along the transects needed to be adjusted based upon the site conditions and the number of docked boats

The sampling location coordinates were not matching to the project site when plotted by the surveyors. Therefore, sampling locations were arbitrarily placed along the center-line of the creek at increments (150' to 200') to correlate to the original locations.

Sample CH-45 was set in the middle of the Miami River and was determined by PM David Cole that we would not sample in the Miami River, how we make up for this sample is to be determined. Today Russell Short called clarify instructions for CH-45. For this site I am to select the site with the most unconsolidated sediments, based on previous core data, and before sampling confirm the site location with David Cole/CLE. With a conversation with David Cole/CLE we determined it would be best to sample near CH-1 to CH-5. As long as the sample consists of more silt and clay material, and not sandy material. If we find we are collecting a lot of sandy material we will move on to another location. A site located between CH-13 and CH-14 was selected for collection of CH-45. Per David Cole/CLE we collected 2 buckets of sample. One bucket was filled with the mucky surface material, and one with the clayey bottom layer.

Conversation with Kevin Sanders today regarding changes in the sampling plan. The following changes are in effect:

-We will not be taking Elutriate-5 that was indicated on lab sheet.

-There will be only one Trip Blank analyzed. That one is already at the lab.

-Actual TAT on samples is 10working days and 21 days. We will ensure this correction will be made to the COCs.

-Bulk Density samples have not been collected in separate containers, but the geotech lab has enough sample to do these analyses from the Grain size and Specific Gravity sample jars. To avoid any confusion we will add a column for this analysis to the COC, but no extra jars need to be filled to do this.

-A %moisture column will be added to the COCs. This analysis has been done for all previous samples, but the column needs to be added to COCs to avoid any confusion.

Based on a conversation with Russell Short/ATL, I will collect ERBs for the core and core-catch as well as the tubing, and send them to the lab with instructions to hold for instructions.

Per David Cole/CLE no more Manatee Observer would be on site for the remainder of the field event.

Per David Cole ARC was directed not to locate flags set by MSA inside Seybold Creek.

VISITORS AND DISCUSSIONS:

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:				Signature of Inspector:			
Accumulation / Stockpile Area Inspected:							
No of Containers:	0	No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

PREPARER'S SIGNATURE	DATE
Elizabeth J. Barclay	7/17/08

PHOTOGRAPHS

Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
Photo Log No:	
Subject/Description:	
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Appendix B
Tidal Measurements from Wagner Creek/Seybold Canal

Staff Gauge Level Readings
Wagner Creek/Seybold Canal
June 27-July 11, 2008
DATUM N.G.V.D.29

STATION	DATE	TIME		TIDE	CHANGE
NW 14th Avenue bridge					
GAUGE 1	6/27/08	8:15	morning	0.2	
GAUGE 1	6/27/08	11:53	afternoon	0.1	-0.1
GAUGE 1	6/27/08	17:58	Evening	1.6	1.5
GAUGE 1	6/28/08	8:55	morning	0.2	-1.4
GAUGE 1	6/28/08	12:37	afternoon	-0.3	-0.5
GAUGE 1	6/28/08	17:00	Evening	1.8	2.1
GAUGE 1	6/29/08	0:00	morning	0	-1.8
GAUGE 1	6/29/08	11:50	afternoon	-0.7	-0.7
GAUGE 1	6/29/08	14:07	Evening	-0.2	0.5
GAUGE 1	6/30/08	8:30	morning	1.2	1.4
GAUGE 1	6/30/08	0:00	afternoon	0	-1.2
GAUGE 1	6/30/08	18:01	Evening	1.6	1.6
GAUGE 1	7/1/08	7:05	morning	1.8	0.2
GAUGE 1	7/1/08	12:15	afternoon	0	-1.8
GAUGE 1	7/1/08	17:16	Evening	0.8	0.8
GAUGE 1	7/2/08	7:18	morning	1.8	1
GAUGE 1	7/2/08	0:00	afternoon	0	-1.8
GAUGE 1	7/2/08	14:32	Evening	-0.5	-0.5
GAUGE 1	7/3/08	6:55	morning	1.3	1.8
GAUGE 1	7/3/08	0:00	afternoon	0	-1.3
GAUGE 1	7/3/08	14:55	Evening	-0.1	-0.1
GAUGE 1	7/7/08	6:22	morning	0.3	0.4
GAUGE 1	7/7/08	0:00	afternoon	0	-0.3
GAUGE 1	7/7/08	17:14	Evening	0.9	0.9
GAUGE 1	7/8/08	6:12	morning	0.5	-0.4
GAUGE 1	7/8/08	14:05	afternoon	2.1	1.6
GAUGE 1	7/8/08	0:00	Evening	0	-2.1
GAUGE 1	7/9/08	8:41	morning	0	0
GAUGE 1	7/9/08	0:00	afternoon	0	0
GAUGE 1	7/9/08	17;32	Evening	1.4	1.4
GAUGE 1	7/10/08	7:27	morning	0.7	-0.7
GAUGE 1	7/10/08	0:00	afternoon	0	-0.7
GAUGE 1	7/10/08	17:30	Evening	1.8	1.8
GAUGE 1	7/11/08	7:25	morning	0.9	-0.9
GAUGE 1	7/11/08	0:00	afternoon	0	-0.9
GAUGE 1	7/11/08	18:20	Evening	1.7	1.7
S.R. 836 Culvert					
GAUGE 2	6/27/08	8:37	morning	0.1	0.1
GAUGE 2	6/27/08	11:58	afternoon	0.1	0
GAUGE 2	6/27/08	17:37	evening	1.6	1.5
GAUGE 2	6/28/08	8:42	morning	0.3	-1.3
GAUGE 2	6/28/08	12:28	afternoon	-0.4	-0.7
GAUGE 2	6/28/08	17:04	evening	1.7	2.1

Staff Gauge Level Readings
Wagner Creek/Seybold Canal
June 27-July 11, 2008
DATUM N.G.V.D.29

STATION	DATE	TIME		TIDE	CHANGE
GAUGE 2	6/29/08	0:00	morning	0	-1.7
GAUGE 2	6/29/08	11:45	afternoon	-0.7	-0.7
GAUGE 2	6/29/08	14:14	evening	-0.2	0.5
GAUGE 2	6/30/08	8:35	morning	1.1	1.3
GAUGE 2	6/30/08	0:00	afternoon	0	-1.1
GAUGE 2	6/30/08	17:58	evening	1.4	1.4
GAUGE 2	7/1/08	7:23	morning	1.8	0.4
GAUGE 2	7/1/08	12:35	afternoon	-0.1	-1.9
GAUGE 2	7/1/08	17:12	evening	0.6	0.7
GAUGE 2	7/2/08	7:05	morning	1.7	1.1
GAUGE 2	7/2/08	0:00	afternoon	0	-1.7
GAUGE 2	7/2/08	14:37	evening	-0.5	-0.5
GAUGE 2	7/3/08	7:03	morning	1.3	1.8
GAUGE 2	7/3/08	0:00	afternoon	0	-1.3
GAUGE 2	7/3/08	15:00	evening	-0.2	-0.2
GAUGE 2	7/7/08	6:25	morning	0.2	0.4
GAUGE 2	7/7/08	0:00	afternoon	0	-0.2
GAUGE 2	7/7/08	17:09	evening	0.9	0.9
GAUGE 2	7/8/08	6:18	morning	0.5	-0.4
GAUGE 2	7/8/08	14:10	afternoon	2.2	1.7
GAUGE 2	7/8/08	0:00	evening	0	-2.2
GAUGE 2	7/9/08	8:32	morning	0	0
GAUGE 2	7/9/08	0:00	afternoon	0	0
GAUGE 2	7/9/08	17:13	evening	1.4	1.4
GAUGE 2	7/10/08	7:21	morning	0.7	-0.7
GAUGE 2	7/10/08	0:00	afternoon	0	-0.7
GAUGE 2	7/10/08	17:21	evening	1.7	1.7
GAUGE 2	7/11/08	7:06	morning	1	-0.7
GAUGE 2	7/11/08	0:00	afternoon	0	-1
GAUGE 2	7/11/08	18:26	evening	1.7	1.7
Seawall at Confluence of Seybold Canal and Miami River					
GAUGE 3	6/27/08	8:45	morning	0	0
GAUGE 3	6/27/08	11:45	afternoon	-0.1	-0.1
GAUGE 3	6/27/08	17:45	evening	1.5	1.6
GAUGE 3	6/28/08	8:35	morning'	0.4	-1.1
GAUGE 3	6/28/08	12:24	afternoon	-0.3	-0.7
GAUGE 3	6/28/08	17:06	evening	1.6	1.9
GAUGE 3	6/29/08	0:00	morning'	0	-1.6
GAUGE 3	6/29/08	11:40	afternoon	-0.6	-0.6
GAUGE 3	6/29/08	14:19	evening	-0.2	0.4
GAUGE 3	6/30/08	8:40	morning'	1	1.2
GAUGE 3	6/30/08	0:00	afternoon	0	-1
GAUGE 3	6/30/08	17:54	evening	1.3	1.3
GAUGE 3	7/1/08	7:12	morning'	1.7	0.4

Staff Gauge Level Readings
Wagner Creek/Seybold Canal
June 27-July 11, 2008
DATUM N.G.V.D.29

STATION	DATE	TIME		TIDE	CHANGE
GAUGE 3	7/1/08	12:21	afternoon	0	-1.7
GAUGE 3	7/1/08	17:08	evening	0.5	0.5
GAUGE 3	7/2/08	7:10	morning'	1.7	1.2
GAUGE 3	7/2/08	0:00	afternoon	0	-1.7
GAUGE 3	7/2/08	14:45	evening	-0.5	-0.5
GAUGE 3	7/3/08	7:20	morning'	1.4	1.9
GAUGE 3	7/3/08	0:00	afternoon	0	-1.4
GAUGE 3	7/3/08	15:05	evening	-0.1	-0.1
GAUGE 3	7/7/08	6:28	morning'	0.2	0.3
GAUGE 3	7/7/08	0:00	afternoon	0	-0.2
GAUGE 3	7/7/08	17:05	evening	0.9	0.9
GAUGE 3	7/8/08	6:25	morning'	0.4	-0.5
GAUGE 3	7/8/08	14:16	afternoon	2	1.6
GAUGE 3	7/8/08	0:00	evening	0	-2
GAUGE 3	7/9/08	8:25	morning'	0	0
GAUGE 3	7/9/08	0:00	afternoon	0	0
GAUGE 3	7/9/08	17:07	evening	1.4	1.4
GAUGE 3	7/10/08	7:15	morning'	0.7	-0.7
GAUGE 3	7/10/08	0:00	afternoon	0	-0.7
GAUGE 3	7/10/08	17:12	evening	1.7	1.7
GAUGE 3	7/11/08	7:00	morning'	1	-0.7
GAUGE 3	7/11/08	0:00	afternoon	0	-1
GAUGE 3	7/11/08	18:35	evening	1.8	1.8

Appendix C
Photo Log

Stream gauge within Wagner Creek at the NW 14th Avenue bridge.

Manatee observation sign posted near the sampling activities within Wagner Creek.

Measuring sample core depth within Wagner Creek at transect CH-1.

Advancing the probe rod to determine sediment thickness within Wagner Creek at transect CH-14.

Collecting sediment core near NW 11th Street bridge within Wagner Creek at transect CH-32.

Collecting sediment sample with Vibecore within Seybold Canal at location CH-41.

Vibecore advancing into sediment at location CH-41 within Seybold Canal.

Confluence of Seybold Canal with Miami River near transect CH-44.

Appendix D
Sediment Core Logs

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-1A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.1
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 3-Jul-08 START : 0830 END : 0835

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Sand with silt (SM), fine grain sand, black; organic order. Sample has organic debris (leaves, twigs). Gastropods and bi valves.	
			0.6	0.6	
				RECOVERY	
1.0					
		1.3			
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-1B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 0835 END : 0840

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
			0.5	Same as CH-1A (SM) + small lense of sandy clay and algal material at the surface. Color is very dark gray. 0.5	
1.0					
2.0					
3.0		3.0			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-1C**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 0847 END : 0855

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt with sand (OL). Leaves, twigs, plastic cup, gastropods, bivalves, light petroleum odor.	
1.0				1.0	
				Silt with clay (OL) to (OH). Petroleum odor. Has leaves, large gastropod, numerous smaller gastropods, woody debris.	
			1.4	1.4 RECOVERY	
2.0					
		2.7			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-1D

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 0902 END : 0905

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
			0.4	0.4 RECOVERY	
1.0				Note: Did not analyze cross-section because sample was not required. It was not added to materials sent to the lab.	
		1.6			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-2A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) :
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 30-Jun-08 START : 1439 END : 1445

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown fm silty sand, shells, leaves, sticks (SM).	
				0.6	
				Dk gray f silt (OL); slight plasticity	
1.0					
			1.7	1.7	
				Recovery	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-2B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1439 END : 1445

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown fm silty sand (SM)	
				0.8	
1.0				Dk gray f silt (OL); slight petro odors	
2.0					
3.0					
			3.6	3.6 RECOVERY	
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-2C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08
START : 1439
END : 1445

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown fm silty sand (SM); wood debris	
				0.6	
				Dk gray f silt (OL); slight petro odor	
1.0					
2.0					
3.0					
			3.2	3.2 RECOVERY	
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-3A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 0910 END : 0915

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt & clay with fine grain sand (OL); black color; leaves, twigs gastropods; light petroleum odor.	
1.0					
			1.7	1.7	
		1.8		RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-3B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 0918 END : 0920

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.5
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Clay with very fine sand (OH); has organic material on surface: leaves, twigs, gravel, large gastropods; faint petroleum odor.	
1.0					
2.0					
			2.9	2.9	
3.0				RECOVERY	
4.0					
		4.8			
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-3C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay
DATE : 3-Jul-08 START : 0925 END : 0930

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.8
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Urban debris, some gravel. Petroleum odor (medium). Silt with some fine grain sand (OL). black. Organic debris consist of leaves and twigs.	
1.0					
2.0					
			2.1	2.1 RECOVERY	
3.0					
		3.9			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-4A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1449 END : 1505

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f-m silty sand (SM); wood debris, shells; trace gravels; slight petro odor	
				0.8	
1.0				Dk gray f silt (OL); some plasticity; slight organic odor	
2.0					
3.0			3.5	3.5	
				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-4B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1449 END : 1505

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m sand, organics (SP); shells: slight petro odors	
				0.8	
1.0				Dk gray f silt (OL); some plasticity; trace clay	
2.0					
3.0			3.0	3.0	
				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-4C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1449 END : 1305

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m silty sand (SM); organics	
				0.4	
				Dk gray f silt (OL); some plasticity; debris; trace clay; slight petroleum odor	
1.0					
			1.1	1.1	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-5A

PROJECT :	Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :	
PROJECT NUMBER :	370915	TOP OF DECK TO WATER (FT) :	
CONTRACTOR :	ARC Surveying and Mapping Inc	WATER DEPTH (FT) :	3.0
EQUIPMENT :	Manual 3" Core	EASTING :	
LOGGER :	E. Barclay/TPA	NORTHING :	
DATE :	3-Jul-08 START : 1001 END : 1010		

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
			0.3	Organic material; sand with silt and gravel (GM); medium size grains; black color; gastropods. 0.3 RECOVERY	
1.0		1.3			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-5B**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 1001 END : 1010

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Consistent throughout. Silt with fine sand (OL). Top 3" leaves, twigs, gastropods and organic material.	
1.0					
		1.2			
2.0			2.0	2.0 RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-5C

PROJECT :	Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :	
PROJECT NUMBER :	370915	TOP OF DECK TO WATER (FT) :	
CONTRACTOR :	ARC Surveying and Mapping Inc	WATER DEPTH (FT) :	3.6
EQUIPMENT :	Manual 3" Core	EASTING :	
LOGGER :	E. Barclay/TPA	NORTHING :	
DATE :	3-Jul-08 START : 1001 END : 1010		

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Same as CH-5B (OL)	
1.0					
		1.7	1.7	1.7 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-6A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D.Tomczak/RDU
DATE : 30-Jun-08 START : 1315 END : 1335

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m silty sand (SM); organics; wet; loose	
				0.8	
1.0				Dk gray f silt (OL); trace clay and f sand; wet; med loose	
2.0					
			2.2	2.2	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-6B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1315 END : 1335

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m silty sand (SM); trace clay; organics; slight petroleum odors; wet; loose	
				0.7	
				Dk gray f silt (OL); trace clay; wet; med-loose.	
1.0					
			1.6	1.6 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-6C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1315 END : 1335

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m silty sand (SM); organics; wet; loose	
				0.8	
1.0				Dk gray f silt (OL); trace f sand and clay; wet; med-loose	
			1.5		
				RECOVERY 1.5	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-7A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 1135 END : 1145

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.5
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt with fine grain sand (OL); gravel; balck. Putrid petroleum odor. Very large mollusk. Twigs, organic material.	
				0.6	
				Petroleum odor (medium) (OH). Clay with fine grain sands. gravel	
1.0					
			1.5	1.5	
				RECOVERY	
2.0		2.0			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-7B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 4
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay
NORTHING :
DATE : 3-Jul-08 START : 1135 END : 1145

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Same as CH-7A (OL)	
				0.5	
				Same as CH-7A (OH)	
1.0					
			1.4	1.4	
				RECOVERY	
2.0					
3.0					
		3.5			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-7C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 3-Jul-08 START : 1135 END : 1145

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt w/ fine grain sand (OL); black color; leaves & twigs. Organic, faint petroleum odor.	
			0.9	0.9	
1.0				RECOVERY	
		1.5			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-8A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1235 END : 1255

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m silty sand (SM); organics; shell	
				0.5	
				Dk gray f silt (OL); congealed; f sand and clay	
1.0					
			1.1	1.1	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-8B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1235 END : 1255

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m silty sand (SM); organics & shells, tree debris	
				0.7	
				Dk gray f silt (OL); congealed; tr. sand	
1.0					
			1.5	1.5	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-8C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1235 END : 1255

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) :
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION	COMMENTS
				SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	SAMPLE ID, QA/QC, ETC
				Dk brown f m silty sand (SM); shells, tr. med gravel	
				0.7	
				Dk gray f silt (OL); congealed	
1.0					
			1.5	1.5	
				Recovery	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-9A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.6
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak
NORTHING :
DATE : 7-Jul-08 START : 1218 END : 1230

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f silty sand w/organic debris (SM) to (OL); gastropods; loose	
1.0			1.0	1.0 RECOVERY	
2.0					
3.0					
		3.3			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-9B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 7-Jul-08 START : 1218 END : 1230

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f sandy silt (OL); organic rich; loose	
				0.4	
				Blk f sand w/clay (SC); interbedding of organic material; trace silt	
1.0					
				1.6	
				Dk gray f sandy clay (OL) to (OH); some plasticity	
2.0					
			2.6	2.6	
				RECOVERY	
3.0					
4.0					
		4.7			
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-9C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3.0
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak
NORTHING :
DATE : 7-Jul-08 START : 1218 END : 1230

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION	COMMENTS
				SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	SAMPLE ID, QA/QC, ETC
				Blk f sandy silt (OL); organic rich; loose	
				0.9	
1.0					
				Tan f clay (CH) to (OH); some f sand; med stiff	
				1.2	
				Blk fibrous clay w/ sand and silt (OH); organic rich	
2.0					
				2.2	
				Gray f sand w/some clay lenses (SC)	
				2.4	
				Gray f sandy clay (OH); med plasticity; consolidated	
			2.8	2.8	
				RECOVERY	
3.0					
4.0		4.0			
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-10A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 8-Jul-08 START : 1335 END : 1405

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.5
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt w/sand (OL). Gastropods and bivalve. ≈50% organic material - leaves, twigs; black color; loosely consolidated	
1.0					
				1.4	
				Silt with sand (OL); black color. Slightly more consolidated than upper layer. Organic material: twigs, leaves. ≈50% organic material.	
			1.9	1.9	
2.0				RECOVERY	
3.0					
		3.7			
4.0					
7.0					
8.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-10B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling

PROJECT NUMBER : 370915

CONTRACTOR : ARC Surveying and Mapping Inc

EQUIPMENT : Manual 3" Core

LOGGER : E. Barclay/TPA

DATE : 8-Jul-08

START : 1335

END : 1405

TOP OF DECK TO SED SURF (FT) :

TOP OF DECK TO WATER (FT) :

WATER DEPTH (FT) : 3.2

EASTING :

NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt with sand (OL); gastropods and bivalves; ≈ 50% organic material: leaves, twigs; black color; loosely consolidated	
				Sandy clay w/sand (CH) to (OH); black and grades into a tan color; very plastic; cohesive; gets increasingly cohesive and plastic with depth; plastic bag on bottom.	
1.0					
			1.5	1.5 RECOVERY	
2.0					
3.0					
5.0					
		5.4			
6.0					
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-10C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.5
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 8-Jul-08 START : 1335 END : 1405

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Medium sized sand grains. Silt w/sand (OL); gastropods, bivalves; ≈ 50% organic matter: leaves, twigs; balck color; loosely consolidated.	
				0.6	
				Sand w/clay and silt (OL); dark gray; loosely consolidated; low plasticity; coarse to fine sands; grastropods; plastic.	
1.0					
			1.9	1.9	
2.0				RECOVERY	
3.0					
		3.3			
4.0					
7.0					
8.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-11A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay
DATE : 7-Jul-08 START : 1343 END : 1355

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.8
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	**#/TYPE**	**CORE REFUSAL (FT)**	**REC (FT)**	**SEDIMENT DESCRIPTION** SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	**COMMENTS** SAMPLE ID, QA/QC, ETC
				Black silt with f sand (OL); 30% organic material including leaves & twigs; gastropds. Loose material 0.4	
			0.8	Plastic, moderately cohesive silt w/clay, fine grain sand mixed with gravel (OL). Color = gray 0.8	
				RECOVERY	
1.0					
2.0					
3.0					
4.0					
		4.2			
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-11B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 7-Jul-08 START : 1343 END : 1355

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.5
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silt with fine sand (OL); 30% organic material including leaves and twigs; loose material; gastropods.	
				0.6	
				Clay and silt with sand (OL) to (OH); gray with organic material (leaves, twigs); plastic and moderately consolidated.	
1.0					
				1.6	
				Clay with some fine grain sand (CH); tan color; very consolidated and plastic.	
2.0					
			2.6	2.6	
				RECOVERY	
3.0					
5.0					
		5.5			
6.0					
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-11C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 7-Jul-08 START : 1343 END : 1355

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 1.1
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Clay silt and fine grained sand (OL). Black. Organic rich, leaves & twigs. Plastic and mildly consolidated.	
			0.4	0.4 RECOVERY	
1.0		1.0			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-12A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 0.9
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 30-Jun-08 START : 1115 END : 1145

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f silty sand (SM); organics; some m gravel.	
1.0			1.0	1 RECOVERY	
2.0					
3.0					
		3.7			
4.0					
8.0					
9.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-12B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1115 END : 1145

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 1.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m sand (SM); shells	
				0.5	
				Dk brown f gray clayey silt (OH); organics; trees.	
1.0					
			1.5	1.5	
				RECOVERY	
2.0					
		2.8			
3.0					
4.0					
9.0					
10.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-12C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 30-Jun-08 START : 1115 END : 1145

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 1.9
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f m sand (SM).	
				0.5	
				Dk brown f silty sand (SM); trace organics.	
1.0					
				1.9	
2.0				Dk gray f silt (OL); wet; petroleum odor; congealed.	
		2.4	2.4	2.4	
				RECOVERY	
3.0					
4.0					
8.0					
9.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-13A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 7-Jul-08 START : 1450 END : 1500

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.9
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Loosely consolidated, dark gray, silt, clay and sand (OL); low plasticity; gastropods, bivalves; pieces of plastic; organic matter: leaves, fibrous organic matter.	
			0.5	0.5	
				RECOVERY	
1.0					
2.0					
3.0					
5.0					
		5.1			
7.0					
8.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-13B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" core
LOGGER : E. Barclay/TPA
DATE : 7-Jul-08 START : 1450 END : 1500

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.9
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Loosely consolidated, dark gray silt, clay & sand (OL); low plasticity; gastropods, bivalves, pieces of plastic; organic matter: leaves, fibrous organic matter.	
				0.6	
				Silt w/clay and sand (OL) to (OH); leaves and twigs; loosely consolidated; plastic.	
1.0					
				1.6	
				Clay with sand (CH) to (OH); consolidated; high plasticity; modeled balck and tan color.	
2.0					
3.0					
			3.4	3.4 RECOVERY	
4.0					
6.0					
		6.3			
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-13C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3.2
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 7-Jul-08 START : 1450 END : 1500

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Loosely consolidated, dark gray silt clay and sand (OL); low plasticity; gastropods, bivavles, pieces of plastic; organic matter: leaves, fibrous.	
				0.4	
				Silt w/clay and sand (OL); leaves and twigs; loosely consolidated; plastic	
1.0					
2.0					
				2.4	
				Clay with sand (CH) to (OH); consolidated; high plasticity; modeled black and tan color.	
4.0					
			4.4	4.4	
				RECOVERY	
5.0					
6.0					
		6.3			
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-14A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 7-Jul-08 START : 1047 END : 1057

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Sulfur odor; silty, sandy (OL); loosely consolidated; organic debris: twigs, leaves, fibers.	
1.0				1.1	
				Well consolidated clay (OH); gray color; some fine sand interbedded with medium sized sand grains and organic debris.	
2.0					
3.0			3.1	3.1	
4.0					
		4.7			
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-14B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 7-Jul-08 START : 1047 END : 1057

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silt w/sand (OL); organic rich with leaves, twigs, large & small gastropods	
				0.6	
				Clay silt with sand (OL) to (OH); light gray color/black color	
1.0					
				1.4	
				well consildated; grayish white color; clay (CH) to (OH)	
2.0					
			2.4	2.4	
				RECOVERY	
3.0					
4.0					
5.0					
		5.6			
6.0					

SEDIMENT CORE LOG

SHEET 1 **OF** 1

STATION ID:
CH-14C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915	TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc	WATER DEPTH (FT) : 3.0
EQUIPMENT : Manual 3" Core	EASTING :
LOGGER : E. Barclay/TPA	NORTHING :
DATE : 7-Jul-08 START : 1047 END : 1057	

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silt w/sand (OL); organic rich with leaves, twigs, large & small gastropods	
1.0				1.0	
				Clay silt with sand (OL) to (OH); light gray color/black color	
2.0					
				2.2	
				well consildated; grayish white color; clay (CH) to (OH)	
3.0					
			3.2	3.2	
				RECOVERY	
4.0		/ / / / / / / / /			
7.0					
		7.2			
8.0					

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SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-14DupA**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 7-Jul-08 START : 1110 END : 1120

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f clayey silt (OL) some sand and gravel; organic rich; shells; soft	
1.0					
				1.7	
				Blk gray and brown silty clay (OL) to (OH); some sand; slightly plastic; med soft	
2.0					
			2.9	2.9	
3.0				RECOVERY	
4.0					
5.0					
		5.3			
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-14DupB

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 7-Jul-08 START : 1110 END : 1120

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f clayey silt (OL); some sand and gravel; organic rich; shells; soft	
1.0				1.1	
				Blk gray and brown silty clay (OL) to (OM); some sand; slightly plastic; med soft	
			1.6	1.6 RECOVERY	
2.0					
3.0					
4.0					
		4.4			
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-14DupC

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 4.0
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 7-Jul-08 START : 1110 END : 1120

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f clayey silt (OL); some sand and gravel; organic rich; shells; soft.	
1.0					
				1.1	
				Blk gray and brown silty clay (OL) to (OH); some sand; slightly plastic; med soft.	
2.0					
3.0					
		/	3.1	3.1	
		/		RECOVERY	
		/			
		/			
		/			
		/			
		/			
		/			
		/			
5.0					
6.0					
		6.4			
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-15A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.0
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 12-Jul-08 START : 0936 END : 0945

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt with sand (OL); low to moderate plasticity. Twigs, leaves, gastropods. Black. Loosely consolidated.	
			0.5	0.5 RECOVERY	
1.0					
2.0					
		2.8			
3.0					
4.0					
5.0					
6.0					

SHEET 1 OF 1

SEDIMENT CORE LOG

STATION ID:
CH-15B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0936 END : 0945

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.1
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt w/med to fine grain sands (OL); black; organic debirs: leaves, twigs; poorly sorted; gastropods; loosely consolidated; low plasticity.	
				0.6	
				Black clay and sand (OL) to (OH); loosely to moderately consolidated; low plasticity, large piece of plastic on bottom layer; leaves, twigs & organic fibers.	
1.0					
			1.4	1.4	
				RECOVERY	
2.0					
3.0					
		3.2			
4.0					
6.0					
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-15C**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0936 END : 0945

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.9
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Contains seed pods. Silt with medium to fine grain sands (OL); organic debirs (leaves, twigs); black; poorly sorted; gastropods; loosely consolidated; low plasticity. 0.6	
			0.9	Clay w/silt and fine grain sands (OL) to (OH); fresh woody debris; low to mod plasticity and consolidation; balck color. 0.9	
1.0					
2.0					
		2.8			
3.0					
4.0					
7.0					
8.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-16A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.2
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 7-Jul-08 START : 0905 END : 0920

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f silty sand (SM) to (OL); organic rich; shells, leaves; loose to med dense.	
1.0					
				1.8	
2.0				Dk brown f sandy clay (OH); plastic; med soft	
			2.1	2.1	
				RECOVERY	
3.0					
4.0					
		4.5			
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-16B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 7-Jul-08 START : 0905 END : 0920

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f silty sand (OL); organic rich; shells, leaves; loose to med dense.	
1.0					
				1.3	
				Dk brown f sandy clay (OH); plastic; med soft	
2.0					
			2.3	2.3	
				RECOVERY	
3.0					
4.0					
		4.3			
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-16C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 7-Jul-08 START : 0905 END : 0920

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f silty sand (OL); organic rich; shells, leaves; loose to med dense.	
			0.9		
1.0				RECOVERY	
2.0					
		2.1			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-17A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3.5
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 12-Jul-08 START : 0916 END : 0925

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Loosely consolidated silt w/fine grain sand (OL). Twigs, leaves and other material. Black color.	
				0.6	
				Silt with clay and sand (OL)Fiberous organic material, loosely consoilidated, black.	
1.0					
				1.5	
				Clay w/silt and sand (OL) to (OH). Very dark gray. Has gravel (large) moderately consolidated, medium plasticity.	
2.0					
		2.1		2.1	
				Thickness value	
				Thickness valve does not correlate with recovery. Thickness valve used for 17A, 17B and 17C. Recovery = ?	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-17B**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 1-Jul-08 START : 0916 END : 0923

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt with some clay and sand (OL); loosely consolidated; medium plasticity; black; trace organic material, mostly fibers.	
1.0					
2.0				2.0	
				Light brown clay w/fine grain sand (CH); well consolidated; highly plastic	
3.0					
4.0		4.0		4.0	
				Thickness valve Recovery = ?	
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-17C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0916 END : 0925

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.9
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt with some clay and sand (OL); loosely consolidated; medium plasticity; black; trace organic material, mostly fibers.	
1.0					
				1.6	
				Light brown clay with fine grain sands (CH); well consolidated; highly plastic	
2.0					
3.0					
		3.4		3.4	
				Thickness Recovery = ?	
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-18A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : 3" ID Poly Core Tube; Manual
LOGGER : D. Tomczak
DATE : 7-Jul-08 START : 0810 END : 0820

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk black gray clayey sand (SC); some gravel; some plasticity; wet.	
				0.6	
				Dk brown f sandy clay (OH); plastic; cohesive; wet.	
1.0					
2.0					
			2.2	2.2	
				RECOVERY	
3.0					
		3.1			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-18B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 7-Jul-08 START : 0810 END : 0820

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray and tan f sand (SC); plastic cup; leaves; med dense; some clay lenses.	
1.0			1.0	1.0 RECOVERY	
2.0					
		2.2			
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-18C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D.Tomczak/RDU
DATE : 7-Jul-08 START : 0810 END : 0820

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk black f silty sand w/fibrous leaf material (OL); cup; shells.	
				0.5	
				Dk black f silt (OL); organic debris; some clay; shells; slight plasticity.	
1.0					
			1.3	1.3	
				RECOVERY	
		1.8			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-19A**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0816 END : 0825

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silt w/fine grain sand and clay (OL); loosely to unconsolidated, increasingly consolidated with depth; some organic materials: leaves, fibers.	
1.0					
				1.3	
				Med to fine grain sands (SM); light brown; minor organic material; unconsolidated.	
				1.5	
				Clay w/fine grain sand (CL); well consolidated; light brown; highly consolidated.	
2.0					
			2.6	2.6	
				RECOVERY	
3.0					
		3.2			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-19B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0816 END : 0825

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 7.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silt w/fine grain sand and clay (OL); loosely to unconsolidated, increasingly consolidated with depth; some organic material: leaves, fibers.	
				0.5	
				Clay with silt to fine grain sand (OL) to (OH); dark brown; moderate plasticity; moderately consolidated.	
1.0					
2.0				2.0	
				Small amt organic debris. Base of this section black in color (OL).	
				2.2	
		2.3			
				Light brown clay w/very fine grain sand (OH); highly plastic; highly consolidated.	
3.0					
			3.9	3.9	
4.0				RECOVERY	
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 **OF** 1

STATION ID:
CH-19C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0816 END : 0825
TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	**#/TYPE**	**CORE REFUSAL (FT)**	**REC (FT)**	**SEDIMENT DESCRIPTION** SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	**COMMENTS** SAMPLE ID, QA/QC, ETC
				Silt with sand (OL); black; loosely to unconsolidated, increasingly consolidated with depth; some organic material: leaves, fibers.	
				0.8	
1.0				Clay w/silt to fine grain sand (OL) to (OH); dark brown; moderately consolidated; moderate plasticity.	
			1.4	1.4 RECOVERY	
		1.6			
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-19DupA

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0820 END : 0830

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION	COMMENTS
				SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	SAMPLE ID, QA/QC, ETC
				Very loosely consolidated black silt w/fine grain sands (OL); medium plasticity; organic.	
				0.5	
				Silt w/clay and fine grain sand (OL) to (OH); loosely to moderately consolidated; moderate plasticity; black.	
1.0					
				1.6	
				Light brown clay with very fine grain sand (CH) to (OH); highly plastic; well consolidated.	
2.0				At surface of layer 1" of med size sand material. Fibrous organic material at base.	
			2.9	2.9	
3.0					
		3.4			
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-19DupB

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 7.7
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 12-Jul-08 START : 0820 END : 0880

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Very loosely consolidated black silt w/fine grain sands (OL); medium plasticity; organic material.	
1.0				1	
				Silt w/clay and fine grain sand (OL); loosely to moderately consolidated; moderately plastic; black.	
		1.8			
2.0				2.0	
				Light brown clay w/very fine grain sand (CH) to (OH); highly plastic; well consolidated; fibrous organic material.	
				2.9	
3.0				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-19DupC

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0820 END : 0830

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Very loosely consolidated black silt w/fine grain sand (OL); medium plasticity; organic material.	
1.0				1.0	
				Silt w/clay and fine grain sand (OL); loosely to moderately plastic; black color.	
		1.3	1.3	1.3	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-20A**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" core
LOGGER : D. Tomczak/RDU
DATE : 7-Jul-08 START : 0740 END : 0800

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f sandy silt (OL); organic rich; leaves.	
				0.4	
				Dk brown f silty clay (OH); plastic; med stiff.	
1.0					
				1.7	
				Light brown f silty sand (SM); med dense.	
2.0			2.0	2.0	
				RECOVERY	
		2.8			
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-20B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 7-Jul-08 START : 0740 END : 0800

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.1
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f silt w/clay lenses (OL); leaves; very soft.	
				0.7	
1.0					
				Light brown and gray f silty clay (OL) to (OH); med soft; consolidated.	
2.0					
3.0					
		3.6			
4.0			4.0	4	
				RECOVERY	
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-20C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3.9
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 7-Jul-08 START : 0740 END : 0800

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f silty (OL); trace clay; loose; slight plasticity.	
				0.8	
1.0				Blk f silt (OL); loose; shells; slight plasticity.	
			1.2	1.2	
		1.3		RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-20A_elutriate

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 8-Jul-08 START : 1435 END : 1445

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	**#/TYPE**	**CORE REFUSAL (FT)**	**REC (FT)**	**SEDIMENT DESCRIPTION** SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	**COMMENTS** SAMPLE ID, QA/QC, ETC
				Black: organic material; silt with sand, fine grained sand (OL); loosely consolidated; plastic	
				0.6	
				Clay with sand (OL) to (OH); dark brown; plastic; cohesive; consolidated (increasingly so with depth).	
1.0					
			1.6	1.6	
				RECOVERY	
2.0		2.0			
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-20B_elutriate

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 8-Jul-08 START : 1435 END : 1445

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 7.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Plastic cup; black; organic material; silt with sand (OL); fine grain sand; loosely consolidated; plastic.	
1.0					
				1.3	
				Clay with sand (OL) to (OH); dark brown; plastic; cohesive; increasingly consolidated with depth.	
			1.7	1.7	
2.0					
		2.3			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-20C_elutriate

PROJECT :	Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :	
PROJECT NUMBER :	370915	TOP OF DECK TO WATER (FT) :	
CONTRACTOR :	ARC Surveying and Mapping Inc	WATER DEPTH (FT) :	6.9
EQUIPMENT :	Manual 3" Core	EASTING :	
LOGGER :	E. Barclay/TPA	NORTHING :	
DATE :	8-Jul-08 START : 1435 END : 1445		

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black; organic material; silt with sand (OL); fine grain sand; loosely consolidated; plastic.	
			0.9	0.9	
1.0				RECOVERY	
2.0					
3.0					
		3.1			
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-21A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0726 END : 0745

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk silt with medium grain sand (OL); gastropods, glass; loosely consolidated; medium plasticity, Fiberous organic debris; leaves.	
		0.6		0.6	
				Medium grain sand (SP); unconsolidated; broken shell material; well sorted; color is white to gray.	
1.0					
			1.1	1.1	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-21B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 12-Jul-08 START : 0726 END : 0745

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silt w/medium grain sand (OL); gastropods, glass; loosely consolidated; medium plasticity; fibrous organic debris; leaves.	
				0.8	
1.0				Brown, clay lense: highly consolidated, gray, med consolidated. Silt with clay and fine grain sand (OH); organic rich w/leaves, twigs; gastropods; moderate to loosely consolidated; medium plasticity.	
2.0					
			2.1	2.1 RECOVERY	
		2.7			
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-21C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling

PROJECT NUMBER : 370915

CONTRACTOR : ARC Surveying and Mapping Inc

EQUIPMENT : Manual 3" Core

LOGGER : E. Barclay/TPA

DATE : 12-Jul-08 START : 0726 END : 0745

TOP OF DECK TO SED SURF (FT) :

TOP OF DECK TO WATER (FT) :

WATER DEPTH (FT) : 4.4

EASTING :

NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silt w/clay and fine sand (OL); dark gray; organic material; loosely consolidated; medium plasticity.	
				0.8	
1.0				Silty clay with fine grain sand (OL); med consolidated; medium plasticity; brown.	
				1.2	
				Clay w/very fine grain sand (OH); light brown; high plasticity; moderately to highly consolidated.	
				1.4	
				Silty clay with med grain sand (OL); dark gray; med consolidated; medium plasticity; fibrous organic material.	
				1.6	
				Clay w/very fine grain sand (CH) to (OH); highly plastic; light gray color; well consolidated; deposits of med to coarse grain sands.	
2.0					
			2.3	2.3	
				RECOVERY	
3.0					
		3.1			
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-22A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08 START : 1025 END : 1045

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.5
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f silt (OL); wood debris; organic oder; slight plasticity; loose.	
				0.6	
				Dk gray f m silty sand (SM); med dense; tr clay lenses; slight petroleum smell.	
1.0					
			1.8	1.8	
				RECOVERY	
2.0					
		2.6			
3.0					
4.0					
5.0					
6.0					

SHEET 1 OF 1

SEDIMENT CORE LOG

STATION ID:
CH-22B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manulal 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08 START : 1025 END : 1045

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				dk gray f silty (OL); wood debris; some sand; slight organic order; loose.	
				0.6	
				Dk gray f silt (OL); shell, wood debris; some sand.	
1.0				1.0	
				Dk gray silty sand (SM); slight organic odor; loose.	
			1.6	1.6	
				RECOVERY	
2.0					
3.0					
		3.1			
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-22C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08 START : 1025 END : 1045

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f m silty sand (SM); some med gravel; wood debris.	
				0.6	
				Dk gray f silty sand (SM) to (OL); shells and some clay nodules; slight plasticity; slight petro odor.	
1.0					
2.0			2.0	2.0	
				RECOVERY	
		2.8			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-23A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 4.2
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 1-Jul-08 START : 1335 END : 1345

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f m silty sand (OL); wood debris; organic odor; clay lenses; med dense.	
				0.7	
				Dk gray f silty clay (OL); plastic; petroleum odor.	
			0.9	0.9	
1.0				RECOVERY	
		1.1			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-23B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08 START : 1335 END : 1345

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f m silty sand (SM) to (OL); trace shell fragments; med dense.	
1.0					
				1.1	
				Dk gray f silty clay (OL); plastic.	
			1.6	1.6	
				RECOVERY	
2.0					
		2.2			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-23C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08 START : 1333 END : 1345

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray/black f sandy silt (OL); wood debris; shells; sligt petroleum odor.	
			0.7	0.7 RECOVERY	
1.0					
2.0					
3.0					
		3.2			
4.0					
6.0					
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-24A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6.1
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 1-Jul-08 START : 0930 END : 0950

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown f clayey silt (OL); some plasticity; some wood debris; slight sulfide.	
				0.4	
				Dk gray f clayey silt (OL); some plasticity; shells; debris; some f m sand.	
				0.9	
1.0				Dk gray f silty clay (OL): some plasticity.	
			1.7	1.7	
				RECOVERY	
2.0					
3.0					
		3.1			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-24B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08 START : 0930 END : 0950

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f silt (OL); some clay lenses; tr f sands.	
1.0				1	
				Black f silty (OL); shells; slight petroleum odor; organic rich.	
			1.3	1.3 RECOVERY	
		1.6			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-24C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08 START : 0930 END : 0950

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f m silty sand (SM); shells; some clay lenses; wood debris; slight petro odor.	
			0.4	0.4 RECOVERY	
1.0					
2.0					
		2.6			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-24DupA

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6.1
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 2-Jul-08 START : 0949 END : 1005

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f silt (OL); organic odor; slightly plastic; some clay lenses.	
1.0					
			1.3	1.3 RECOVERY	
		1.7			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-24DupB

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 0949 END : 1005

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f silty sand (OL); some plasticity; trace clay; wood debris; organic odor.	
				0.4	
				Dk gray f clayey silt (OL); some plasticity; wood debris; shells.	
		0.9			
1.0					
			1.1	1.1	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-24DupC

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3.6
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 2-Jul-08 START : 0949 END : 1005

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f silty sand (SM); some gravel; wood debris. 0.2	
				Dk gray f silt (OL); wood debris; shells; organic odor.	
			0.7	0.7	
1.0					
2.0					
		2.1			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-25B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 1-Jul-08
START : 1304
END : 1315

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 1.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f m sand (SP); trace gravel; med dense; trace shell fragments.	Only 1 sample core was collected - no recovery at the other 2 locations.
1.0					
			1.6	1.6 RECOVERY	
2.0					
		2.8			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-26A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling

PROJECT NUMBER : 370915

CONTRACTOR : ARC Surveying and Mapping Inc

EQUIPMENT : Manual 3" Core

LOGGER : D. Tomczak/RDU

DATE : 2-Jul-08 START : 1125 END : 1135

TOP OF DECK TO SED SURF (FT) :

TOP OF DECK TO WATER (FT) :

WATER DEPTH (FT) : 3.3

EASTING :

NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk black sandy silt (OL); shells; trace gravel; wood debris.	
				0.5	
				Dk gray silty clay (OL) to (OH); some plasticity.	
				0.7	
				Dk gray sandy silt (OL); shells.	
1.0					
			1.4	1.4	
				RECOVERY	
2.0					
		2.1			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-26B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 1125 END : 1135

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Brown gray f m silty sand (SM) to (OL); med dense; gastropods; shell.	
			0.8	0.8 RECOVERY	
1.0					
2.0		2.0			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-26C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 2-Jul-08 START : 1125 END : 1135

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f silt (OL); some sand; clay lenses; some organics.	
			0.6	0.6 RECOVERY	
1.0					
		1.2			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-27A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 1220 END : 1230

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.1
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f m silty sand (SM) to (OL); organic debris; gravel; shells.	
1.0			1.0	1	
				RECOVERY	
		1.5			
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-27B

PROJECT :	Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :	
PROJECT NUMBER :	370915	TOP OF DECK TO WATER (FT) :	
CONTRACTOR :	ARC Surveying and Mapping Inc	WATER DEPTH (FT) :	4.4
EQUIPMENT :	Manual 3" Core	EASTING :	
LOGGER :	D. Tomczak/RDU	NORTHING :	
DATE :	2-Jul-08 START : 1220 END : 1230		

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk brown gray f silty sand (GM); med to course gravel; shells; slight petro odor.	
1.0			1.0	RECOVERY	
2.0					
3.0		3.0			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-27C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 1220 END : 1230

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.9
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray f silty sand (SM); wood debris; gravel; slight petro odor.	
				0.5	
				Dk gray f clayey sand (SC); some plasticity; wood debris; m-c sand.	
1.0					
		1.1	1.1	1.1	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-28A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 1010 END : 1020

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk coarse gravel w/shells (GM) to (SM); some silty sand; wood debris; slight sulfide and petroleum odor.	
			0.9	0.9	
1.0				RECOVERY	
2.0					
		2.2			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-28B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6.4
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : D. Tomczak/RDU
NORTHING :
DATE : 2-Jul-08 START : 1010 END : 1020

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk coarse gravel w/shells (GM); some silty sand; wood debris.	
1.0			1.0	1 RECOVERY	
		1.6			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-28C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 1010 END : 1020

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	**#/TYPE**	**CORE REFUSAL (FT)**	**REC (FT)**	**SEDIMENT DESCRIPTION** SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	**COMMENTS** SAMPLE ID, QA/QC, ETC
				Blk f m silty sand (SM) to (OL); some gravel; woody debris; slight organic odor; loose.	
1.0					
			1.4	1.4 RECOVERY	
2.0		2.0			
3.0					
4.0					
7.0					
8.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-29A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6.3
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 16-Jul-08 START : 0842 END : 0900

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silty 'muck' with medium to fg sand sized (OL); loose with poorly consolidated bottom 4"; organic rich with twigs & leaves; woody debris.	
1.0					
			1.3	1.3 RECOVERY	
2.0					
		2.1			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-29B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 16-Jul-08 START : 0842 END : 0900

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silty 'muck' with medium to fg sand sized (OL); loose with poorly consolidated bottom 4"; organic rich with twigs & leaves; woody debris.	
			0.9	0.9	
1.0				RECOVERY	
2.0					
		2.4			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-29C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6.0
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 16-Jul-08 START : 0847 END : 0900

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION	COMMENTS
				SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	SAMPLE ID, QA/QC, ETC
				Black silty 'muck' with medium to fg sand sized (OL); loose with poorly consolidated bottom 4"; organic rich with twigs & leaves; woody debris. Gastropods	
1.0					
				1.2	
				Light to medium tan clay with fg sand (CL) to (CH); moderate plasticity; moderately consolidated.	
2.0					
			2.1	2.1	
				RECOVERY	
3.0					
		3.5			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-29DupA

PROJECT :	Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :	
PROJECT NUMBER :	370915	TOP OF DECK TO WATER (FT) :	
CONTRACTOR :	ARC Surveying and Mapping Inc	WATER DEPTH (FT) :	6.3
EQUIPMENT :	Manual 3" Core	EASTING :	
LOGGER :	E. Barclay/TPA	NORTHING :	
DATE :	16-Jul-08 START : 0855 END : 0910		

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silty 'muck' with medium to fg sand sized (OL); loose with poorly consolidated bottom 4"; organic rich with twigs & leaves; woody debris.	
1.0					
			1.3	1.3 RECOVERY	
2.0					
		2.1			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-29DupB

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 16-Jul-08 START : 0855 END : 0910

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silty 'muck' with medium to fg sand sized (OL); loose with poorly consolidated bottom 4"; organic rich with twigs & leaves; woody debris; with about 50% gastropods and bivalves of various sizes.	
			0.8	0.8 RECOVERY	
1.0					
2.0					
		2.4			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-29DupC

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 16-Jul-08 START : 0855 END : 0910

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silty 'muck' with medium to fg sand sized (OL); loose with poorly consolidated bottom 4"; organic rich with twigs & leaves; woody debris; with about 50% gastropods and bivalves of various sizes.	
			0.9	0.9 RECOVERY	
1.0					
2.0					
3.0					
		3.5			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-30A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 16-Jul-08 START : 0750 END : 0810

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.8
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silty muck with sand (OL); highly organic; gastropods, twigs, leaves; some medium to fg sand-sized material; bivalves; plastic cup; black; loose; unconsolidated; low plasticity.	
1.0					
			1.9	1.9 RECOVERY	
2.0					
3.0					
		3.2			
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-30B

PROJECT :	Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :	
PROJECT NUMBER :	370915	TOP OF DECK TO WATER (FT) :	
CONTRACTOR :	ARC Surveying and Mapping Inc	WATER DEPTH (FT) :	6.5
EQUIPMENT :	Manual 3" Core	EASTING :	
LOGGER :	E. Barclay/TPA	NORTHING :	
DATE :	16-Jul-08 START : 0750 END : 0810		

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black silt with sand and mg gravel (OL); organic-rich with twigs and leaves; bivalves and gastropods; loose & low plasticity.	
1.0					
				1.5	
				Tan well-consolidated clay with fg sand (OH) to (CH); moderate plasticity.	
2.0					
		2.2			
			2.3	2.3 RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-30C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 16-Jul-08 START : 0750 END : 0810

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black organic rich silt with medium to fg sand (OL); poorly sorted; loose; unconsolidated; low plasticity; lots of bivalves and gastropods; highly organic - leaves & twigs.	
1.0				1.1	
				Black silt with clay (OL) to (OH); low plasticity; med consolidated.	
			1.3	1.3	
				RECOVERY	
		1.8			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-31A**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 0850 END : 0900

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
			0.3	Bk gray coarse gravel (GM); shells; organic wood debris. 0.3 RECOVERY	
1.0					
2.0					
		2.7			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-31B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 0850 END : 0900

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk f sillt (OL); trace gravel and sand; wood debris.	
				0.4	
				Dk gray sandy silt (SM); organic; slight petroleum odor; loose to med dense.	
			0.9	0.9	
1.0				RECOVERY	
2.0					
		2.2			
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-31C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 0850 END : 0900

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray sandy silt (SM); organic debris; coarse gravel; slight petro odor.	
			0.9	0.9	
1.0				RECOVERY	
		1.9			
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-32A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.9
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : Dan Tomczak/RDU
NORTHING :
DATE : 2-Jul-08 START : 0945 END : 0955

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Dk gray fm silt sand w/shells (SM); wood debris.	
		0.4			
			0.6	0.6 RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-32B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 0945 END : 0955

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blk gravel w/shells (GM); some f silty sand.	
			0.3	0.3 RECOVERY	
		0.8			
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-32C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : D. Tomczak/RDU
DATE : 2-Jul-08 START : 0945 END : 0955

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Bk gray silty sand (SM) to (OL); some gravel; wood debris; slight petroleum odor.	
1.0					
			1.1	RECOVERY	
		1.4			
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-33A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 5.5
EQUIPMENT : Vibecore D
EASTING :
LOGGER : G. Dupree/GNV
NORTHING :
DATE : 10-Jul-08 START : 1240 END : 1300

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SM); bivalves; wood debris; pasty; minor brownish grey sc lens.	
			0.7	0.7 RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-B33

PROJECT : Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915	TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc	WATER DEPTH (FT) : 5.5
EQUIPMENT : Vibecore D	EASTING :
LOGGER : G. Dupree/GNV	NORTHING :
DATE : 10-Jul-08 START : 1240 END : 1300	

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SM); bivalves and gastropods (heavy); wood debris; pasty.	
1.0					
			1.2	1.2 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-33C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1240 END : 1300

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black mucky (OL) to (SM); bivalves and gastropods (heavy); wood debris; pasty; small live fiddler crab.	
			0.8	0.8 RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-34A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1430 END : 1500

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black organic rich muck (OL); wood debris; bivalves, gastropods.	
				0.5	
				Sames as above to a dark olive gray clay (OL) to (OH); pasty; med/high plasticity.	
1.0				1	
				Mostly decayed organic material (OL) to (OH); mixed with clay lense from above.	
			1.4	1.4	
				RECOVERY	
2.0					
3.0					
4.0					
6.0					
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-34B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1430 END : 1500

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL); organic rich; pasty.	
				0.5	
				Same as above, going to a dark brownish gray (OL) to (SC); poorly sorted; pasty.	
1.0					
				1.5	
				Tan to olive gray clay (SC); fg (SC) lenses; pasty; highly plastic.	
2.0					
			2.9	2.9	
3.0				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-34C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1430 END : 1500

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SM); high organic content; black/blackish grey; contains wood debris.	
1.0				1.1	
				Same as above to a mottled tan to dark blackish gray (SC) to (CL); pasty; low/mod plasticity; some bivalves.	
2.0					
			2.4	2.4 RECOVERY	
3.0					
4.0					
6.0					
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-35A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1540 END : 1600

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Minor black muck (OL) to balck/blackish grey sm; fg; ws; bivalves and gastropods; trace wood debris.	
			0.9	0.9	
1.0				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-35B**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1540 END : 1600

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 7.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL); trace organic debris; bivalves.	
				0.5	
				Same as above (OL) to a dark browish grey to blackish grey; (SC); pasty; mod plasticity; w/trace organic debris.	
1.0					
				1.5	
				(SC) to (CL); tannish grey; intermixed w/blackish grey lenses; pasty; mod/high plasticity.	
2.0					
3.0					
			3.2	3.2	
				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-35C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1540 END : 1600

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 7.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black organic muck (SM) to (SP); dark brown decaying organics.	
1.0				1.0	
				(SC) to (CL); dark olive grey to a dark brownish grey pasty; low plasticity; minor organic debris..	
				1.5	
				(CL); mottled, brownish grey to tannish grey to blackish grey; pasty; high plasticity.	
2.0					
3.0					
			3.1	3.1	
				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-36A**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 1119 END : 1150

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SM); organic debris; well consolidated.	
1.0					
			1.1	1.1	
				RECOERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-36B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 1119 END : 1150

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SM); organic debris; well consolidated. Bottom SC.	
				0.6	
				Tannish grey to tan (CL); pasty; high plasticity.	
1.0					
2.0				2.0	
				Same as obove w/ color change to dark brown, w/a dark brownish SC; w/ fg SM from 2.70; minor gravel throughout.	
3.0					
			3.1	3.1	
				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-36C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.8
EQUIPMENT : Vibecore D
EASTING :
LOGGER : G. Dupree/GNV
NORTHING :
DATE : 11-Jul-08 START : 1119 END : 1150

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (SC) to (SM); bivalves, gastropods; organic debris; well consolidated.	
1.0				1.0	
				Clays dark greyish to light tannish grey intermixed w/dark brownish layers (SC) to (CL); bivalves; mod/high plasticity.	
2.0					
				2.5	
				Same as above with color change to a light tannish grey (SC) to (CL); intermixed with dark greyish lenses and fibrous organic material.	
3.0					
4.0					
			4.2	4.2	
				RECOVERY	
5.0					
7.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-36DupA

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 1123 END : 1200

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 2.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SM); organic debris; well consolidated; bivalves; gastropods.	
1.0			1.0	1.0 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-36DupB

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 4.6
EQUIPMENT : Vibecore D
EASTING :
LOGGER : G. Dupree
NORTHING :
DATE : 11-Jul-08 START : 1123 END : 1200

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to darkish grey (SC); organic debris; mod consolidated.	
				0.5	
				Clay (CH); tannish grey to greyish off-white; pasty, mod/high plasticity; intermixed w/brown fibrous material from 2.4 to 2.6.	
1.0					
2.0					
			2.9	2.9	
3.0				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-36DupC

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3.1
EQUIPMENT : Vibecore D
EASTING :
LOGGER : G. Dupree
NORTHING :
DATE : 11-Jul-08 START : 1123 END : 1200

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OH) to (SC); intermittent lenses of SM; mod consolidated; heavy organic debris; minor bivalves.	
1.0					
2.0					
				2.5	
				Clay (SC) to (CH); dark olive gray to a tannish gray; mod/high plasticity; intermittent wood debris. From 4.8 to 5.0 a dark brownish SC/SM lense, fg.	
3.0					
4.0					
5.0					
			5.3	5.3	
				RECOVERY	

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-37A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 1302 END : 1345

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck(OL) to blackish grey(SC/CL); bivalves and gastropods; minor gravel; pasty; low plasticity.	
1.0				1.0	
				Dark brown to tanish brown (SC), w/ fg SM; minor gravel; mod consolidated.	
				1.5	
				Blackish grey (SC) with small bivalves to a light grey (CL); CL has high plasticity; fg SM.	
2.0					
				2.3	
				Dark brown blackish grey (SC)/ (CL); containing fibrous wood debris.	
			2.6	2.6	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-37B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 1302 END : 1345

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL), to dark greyish black (SC); dark brown fibrous wood debris; bivalves and gastropods; mod consolidated.	
1.0			1.0	1.0 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SHEET 1 OF 1

SEDIMENT CORE LOG

STATION ID:
CH-37C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 4
EQUIPMENT : Vibecore D
EASTING :
LOGGER : G. Dupree/GNV
NORTHING :
DATE : 11-Jul-08 START : 1302 END : 1345

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION	COMMENTS
				SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	SAMPLE ID, QA/QC, ETC
	/				
	/			Black muck (OL); blackish grey (SC), w/intermittent fg SM lenses; organic debris; bivalves and gastropods.	
	/				
	/				
	/				
	/				
	/				
	/				
	/				
2.0				2	
				(CL); greyish white - tannish grey; high plasticity; intermittent organic material.	
3.0					
				3.6	
				(SC/CL); above with color change to a dark brownish grey; heavy fibrous debris.	
4.0					
			4.1	4.1	
				RECOVERY	
5.0					
7.0					
8.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-38A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 1016 END : 1045

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.0
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck-like material (OL) to (SC); dark grey/blackish grey; pasty; mod consolidated; few bivalves.	
1.0				1.1	
				Dark brown to dark brownish greay (SC); minor fg SM; minor gravel.	
			1.6	1.6 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: **CH-38B**

PROJECT : Wagner Creek Seybold Canal Sediment Sampling

PROJECT NUMBER : 370915

CONTRACTOR : ARC Surveying and Mapping Inc

EQUIPMENT : Vibecore D

LOGGER : G. Dupree/GNV

DATE : 11-Jul-08 START : 1016 END : 1045

TOP OF DECK TO SED SURF (FT) :

TOP OF DECK TO WATER (FT) :

WATER DEPTH (FT) : 5.2

EASTING :

NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SC); wood debris; bivalves.	
				0.5	
				Same as above to blackish grey (SC); w/fg wood debris.	
1.0					
				1.5	
				SC to clay; dark brown to greyish brown fg lenses of SM; wood debris; low/high plasticity..	
2.0					
				2.5	
				Same as above (CH); color change to a light tannish grey; high plasticity; clay.	
3.0			3.0	3	
				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-38C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 1016 END : 1045

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black (OL) muck, SC, wood debris, bivalves	
				0.5	
				Same as above to blackish gray SC.	
1.0				1	
				SC to CL dark brown to grayish brown, fg, lenses of SM, wood debris, low/high plasticity	
2.0				2.0	
				CL, tannish white, intermixed with dark brown organic layer with mottled dark grayish CL lenses	
3.0					
			3.4	3.4	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-39A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : E. Barclay/TPA
DATE : 9-Jul-08 START : 1230 END : 1240

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black organic rich, fine to medium grain sand and silt (SM) to (OL); bivalves; trace organic material including roots & twigs; poorly consolidated.	
1.0					
				1.9	
2.0				Same as above, but (SM) to (SC).	
				2.5	
				(SC) to (CL); gray to tan; highly plastic; grades to a rust colored; sm-med grained.	
			2.9	2.9	
3.0				RECOVERY	
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-39B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6.6
EQUIPMENT : Vibecore D
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 9-Jul-08 START : 1230 END : 1240

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black organic rich, fine to medium grain sand & silt (SM); bivalves; trace organic material including roots & twigs; poorly consolidated.	
1.0				1	
				Same as above, but (SM) to (SC).	
2.0				2.0	
				(SC) to (SL); mottled dark gray to tan to black; highly plastic; rock at bottom.	
3.0					
			3.2	3.2 RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-39C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 6.2
EQUIPMENT : Vibecore D
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 9-Jul-08 START : 1230 END : 1240

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black organic rich, fine to medium grain sand & silt (SM); bivalves; trace organic material including root & twigs; poorly consolidated.	
				0.5	
				Brown to a light tan clay (SC) to (CL); intermittent wood debris; heavy shells.	
1.0				1.0	
				(SC) to (SM); dark brown to blackish gray; moderate plasticity; trace wood debris; fines, no sand.	
2.0					
			2.5	2.5	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-40A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : E. Barclay/TPA
DATE : 9-Jul-08 START : 1405 END : 1415

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)				SEDIMENT DESCRIPTION	COMMENTS
	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	SAMPLE ID, QA/QC, ETC
				Black organic rich, fine to medium grain sand & silt (SM); bivalves; trace organic matter including roots & twigs; poorly consolidated.	
1.0				1.0	
				SC to clay (CL) dark olive gray to dark gray; low to moderate plasticity; trace gravel; trace organic material - wood & roots.	
2.0					
			2.1	2.1	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-40B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : E. Barclay/TPA
DATE : 9-Jul-08 START : 1405 END : 1415

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 6.1
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	**#/TYPE**	**CORE REFUSAL (FT)**	**REC (FT)**	**SEDIMENT DESCRIPTION** SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	**COMMENTS** SAMPLE ID, QA/QC, ETC
				Black organic rich, fine to medium grain sand & silt (SM); bivalves; trace organics including roots & twigs; poorly consolidated.	
1.0					
				1.5	
				SC to clay(CL); trace gravel; trace organic material - wood & roots; light tanish gray; moderate to high plasticity; piece of plastic.	
2.0					
3.0					
			3.2	3.2	
				RECOVERY	
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-40C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : E. Barclay/TPA
DATE : 9-Jul-08 START : 1405 END : 1415

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 8.6
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black organic rich, fine to menium grained sand & silt (SM); bivalves; trace organic matter incl roots, twigs & leaves; poorly consolidated.	
1.0			1.0	1.0 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-41A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 0850 END : 0930

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to a dark grey SC; organic wood debris; bivalves; gastropods; SM pasty; low plasticity.	
1.0					
			1.2	1.2 RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-41B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore
LOGGER : G. Dupree/GNV
DATE : 11-Jul-08 START : 0850 END : 0930

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.8
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to SM; PS; decaying wood debris; low plasticity; SC.	
				0.5	
				SC/CL, fg, low-mod sorted; decayed organic debris; minor rocks; from dark olive gray to a dark brownish grey to grayish white.	
1.0					
2.0					
				2.3	
				Grayish with clay (CH); pasty; mod/high plasticity.	
			2.7	2.7	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-41C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 3.5
EQUIPMENT : Vibecore
EASTING :
LOGGER : G. Dupree/GNV
NORTHING :
DATE : 11-Jul-08 START : 0850 END : 0930

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Thin layer of black muck (OL) to a dark gray SC; w/minor SM lenses; fg; trace organic debris; minor bivalves; gastropods.	
				0.7	
				SC to CL; dark olive gray to dark gray w/thin layer of grayish white CL; bivalves; gastropods; low/mod plasticity.	
1.0					
			1.8	1.8	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-42A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : E. Barclay/TPA
DATE : 9-Jul-08 START : 1540 END : 1550

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.8
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Sand fg (SP); well sorted; black; trace organic mat'l; bivalves; wood; leaves.	
			0,8	0.8 RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-42B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling	TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915	TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc	WATER DEPTH (FT) : 6.6
EQUIPMENT : Vibecore D	EASTING :
LOGGER : E. Barclay/TPA	NORTHING :
DATE : 9-Jul-08 START : 1540 END : 1550	

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Sand to SM; fine to medium grained; trace wood debris; gastropods & bivalves; moderate to well sorted; black.	
1.0					
				1.5	
				SC to clay; light olive gray to tanish; moderate to high plasticity.	
2.0			2.0	2.0	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-42C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : E. Barclay/TPA
DATE : 9-Jul-08 START : 1540 END : 1550

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Sand to SM; fine to medium grained; trace wood debris; gastropods & bivalves; moderate to well sorted; black.	
1.0					
				1.2	
				SC to CL; light olive gray to tanish; moderate to high plasticity.	
2.0					
			2.4	2.4	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-43A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1037 END : 1100

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 3.5
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				SM; black to blackish gray; organic debris; fg PS; bivalves.	
				0.5	
				SM/SC; brownish gray/light tannish gray; fg PS.	
1.0			1.0	1.0	
				RECOVERY	
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-43B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1037 END : 1100

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.5
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				SM; black to blackish gray; organic debris; fg PS; bivalves; wood debris; urban debris.	
			0.7	0.7 RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-43C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 1037 END : 1100

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.4
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Black muck (OL) to (SM); dark brown/dark gray; organic debris; bivalves.	
			0.4	0.4 RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-44A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 4.5
EQUIPMENT : Vibecore D
EASTING :
LOGGER : G. Dupree/GNV
NORTHING :
DATE : 10-Jul-08 START : 0910 END : 0930

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blackish gray, sandy muck (OL); organic debris; fine grain; silty; moderately sorted.	
			0.7	0.7	
				RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-44B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 0910 END : 0930

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 5.7
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blackish gray, sandy muck (OL); organic debris; fine grains; silty; moderately sorted; woody debris.	
			0.5	0.5	
				RECOVERY	
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID: CH-44C2

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Vibecore D
LOGGER : G. Dupree/GNV
DATE : 10-Jul-08 START : 0910 END : 0930

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.8
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Blackish gray muck (SM) to (SC); wood debris; organic debris; urban debris (minor); poorly sorted.	
1.0				1	
				(SC) to (SL); dark rusty brown to tanish gray; pasty; mod plasticity.	
2.0			2.1	2.1	
				RECOVERY	
3.0					
4.0					
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-45A

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 15-Jul-08 START : 0810 END : 0830

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.2
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silty black muck (OL); organic rich; minor gravel; loose.	
1.0				1.0	
				Same as above (OL); going to SM/SC; fine grained; minor bivalves & gravel; low plasticity; moderately cohesive.	
2.0				2.0	
				Clay (CH) to (OH); dark blackish gray to a brownish-gray; high plasticity; highly cohesive.	
3.0					
			3.4	3.4	
				RECOVERY	
4.0		4.1			
5.0					
6.0					

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-45B

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
PROJECT NUMBER : 370915
CONTRACTOR : ARC Surveying and Mapping Inc
EQUIPMENT : Manual 3" Core
LOGGER : E. Barclay/TPA
DATE : 15-Jul-08 START : 0810 END : 0830

TOP OF DECK TO SED SURF (FT) :
TOP OF DECK TO WATER (FT) :
WATER DEPTH (FT) : 4.3
EASTING :
NORTHING :

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE		COMMENTS SAMPLE ID, QA/QC, ETC
				Top is a silty black muck (OL); organic debris; leaves; wood.	0.2	
				Clay (CH) to (OH); tanish gray/olive gray; moderate to high plasticity.		
1.0			1.0		1.0	
				RECOVERY		
2.0						
3.0						
4.0						
5.0						
		5.4				
6.0						

CH2MHILL

SEDIMENT CORE LOG

SHEET 1 OF 1

STATION ID:
CH-45C

PROJECT : Wagner Creek Seybold Canal Sediment Sampling
TOP OF DECK TO SED SURF (FT) :
PROJECT NUMBER : 370915
TOP OF DECK TO WATER (FT) :
CONTRACTOR : ARC Surveying and Mapping Inc
WATER DEPTH (FT) : 2.6
EQUIPMENT : Manual 3" Core
EASTING :
LOGGER : E. Barclay/TPA
NORTHING :
DATE : 15-Jul-08 START : 0810 END : 0830

DEPTH BELOW SURFACE (FT)	#/TYPE	CORE REFUSAL (FT)	REC (FT)	SEDIMENT DESCRIPTION SEDIMENT TEXTURE, COLOR, RELATIVE DENSITY OR CONSISTENCY, & STRUCTURE	COMMENTS SAMPLE ID, QA/QC, ETC
				Silty black muck (OL); organic debris with leaves & wood; gravel.	
1.0					
				1.5	
				Same as above (OL) with clay (OH).	
				1.9	
2.0			2.0	Silty black muck with some clay (OL); organics & gravel. 2.0	
				RECOVERY	
3.0					
		3.9			
4.0					
5.0					
6.0					

Appendix E

Listing of Constituents and Tests for the Analytical Methods

Appendix E
Listing of Constituents and Tests of Analytical Methods

VOCs	SVOCs	Dioxins
1,1,1,2-TETRACHLOROETHANE	1,2,4-TRICHLOROBENZENE	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-p-DIOXIN
1,1,1-Trichloroethane	1,2-DICHLOROBENZENE	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN
1,1,2,2-Tetrachloroethane	1,3-DICHLOROBENZENE	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN
1,1,2-Trichloroethane	1,4-DICHLOROBENZENE	1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN
1,1-Dichloroethane	1-METHYLNAPHTHALENE	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN
1,1-Dichloroethene	2,2'-OXYBIS(1-CHLORO)PROPANE	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN
1,1-DICHLOROPROPENE	2,4,5-TRICHLOROPHENOL	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN
1,2,3-TRICHLOROBENZENE	2,4,6-TRICHLOROPHENOL	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN
1,2,3-TRICHLOROPROPANE	2,4-DICHLOROPHENOL	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN
1,2,4-TRICHLOROBENZENE	2,4-DIMETHYLPHENOL	1,2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN
1,2,4-TRIMETHYLBENZENE	2,4-DINITROPHENOL	1,2,3,7,8-PENTACHLORODIBENZOFURAN
1,2-DIBROMO-3-CHLOROPROPANE	2,4-DINITROTOLUENE	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	2,6-DINITROTOLUENE	2,3,4,7,8-PENTACHLORODIBENZOFURAN
1,2-Dichlorobenzene	2-CHLORONAPHTHALENE	2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN
1,2-Dichloroethane	2-CHLOROPHENOL	2,3,7,8-TETRACHLORODIBENZOFURAN
1,2-Dichloropropane	2-METHYLNAPHTHALENE	HEPTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	2-METHYLPHENOL (o-CRESOL)	HEPTACHLORINATED DIBENZOFURANS, (TOTAL)
1,3-Dichlorobenzene	2-NITROANILINE	HEXACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)
1,3-DICHLOROPROPANE	2-NITROPHENOL	HEXACHLORINATED DIBENZOFURANS, (TOTAL)
1,4-Dichlorobenzene	3,3'-DICHLOROBENZIDINE	OCTACHLORODIBENZO-p-DIOXIN
2,2-DICHLOROPROPANE	3-NITROANILINE	OCTACHLORODIBENZOFURAN
2-Chloroethyl vinyl ether	4,6-DINITRO-2-METHYLPHENOL	PENTACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)
2-CHLOROTOLUENE	4-BROMOPHENYL PHENYL ETHER	PENTACHLORINATED DIBENZOFURANS, (TOTAL)
2-HEXANONE	4-CHLORO-3-METHYLPHENOL	TETRACHLORINATED DIBENZO-p-DIOXINS, (TOTAL)
4-CHLOROTOLUENE	4-CHLOROANILINE	TETRACHLORINATED DIBENZOFURANS, (TOTAL)
ACETONE	4-CHLOROPHENYL PHENYL ETHER	
ACROLEIN	4-METHYLPHENOL (p-CRESOL)	
ACRYLONITRILE	4-NITROANILINE	
Benzene	4-NITROPHENOL	
BROMOBENZENE	ACENAPHTHENE	
BROMOCHLOROMETHANE	ACENAPHTHYLENE	
Bromodichloromethane	ANILINE (PHENYLAMINE, AMINOBENZENE)	
Bromoform	ANTHRACENE	
Bromomethane	BENZIDINE	
CARBON DISULFIDE	BENZO(a)ANTHRACENE	
Carbon tetrachloride	BENZO(a)PYRENE	
Chlorobenzene	BENZO(b)FLUORANTHENE	
Chloroethane	BENZO(g,h,i)PERYLENE	
Chloroform	BENZO(k)FLUORANTHENE	
Chloromethane	BENZOIC ACID	
cis-1,2-Dichloroethene	BENZYL ALCOHOL	
cis-1,3-Dichloropropene	BENZYL BUTYL PHTHALATE	
Dibromochloromethane	bis(2-CHLOROETHOXY) METHANE	
DIBROMOMETHANE	bis(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	
Dichlorodifluoromethane	bis(2-ETHYLHEXYL) PHTHALATE	
Ethylbenzene	CHRYSENE	
HEXACHLOROBUTADIENE	DI-n-BUTYL PHTHALATE	
IODOMETHANE (METHYL IODIDE)	DI-n-OCTYLPHTHALATE	
ISOPROPYLBENZENE (CUMENE)	DIBENZ(a,h)ANTHRACENE	
m,p-Xylene (sum of isomers)	DIBENZOFURAN	
METHYL ETHYL KETONE (2-BUTANONE)	DIETHYL PHTHALATE	
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	DIMETHYL PHTHALATE	
Methylene chloride	FLUORANTHENE	
n-BUTYLBENZENE	FLUORENE	
n-PROPYLBENZENE	HEXACHLOROBENZENE	
NAPHTHALENE	HEXACHLOROBUTADIENE	
o-Xylene (1,2-Dimethylbenzene)	HEXACHLOROCYCLOPENTADIENE	
P-CYMENE (p-ISOPROPYLTOLUENE)	HEXACHLOROETHANE	
SEC-BUTYLBENZENE	INDENO(1,2,3-c,d)PYRENE	
STYRENE	ISOPHORONE	
t-BUTYLBENZENE	N-NITROSODI-n-PROPYLAMINE	
tert-butyl methyl ether	N-NITROSODIMETHYLAMINE	
Tetrachloroethene (PCE)	N-NITROSODIPHENYLAMINE	
Toluene	NAPHTHALENE	
trans-1,2-Dichloroethene	NITROBENZENE	
trans-1,3-DICHLOROPROPENE	PENTACHLOROPHENOL	
Trichloroethene (TCE)	PHENANTHRENE	
Trichlorofluoromethane	PHENOL	
VINYL ACETATE	PYRENE	
Vinyl chloride		
Xylenes, total		

Appendix E
Listing of Constituents and Tests of Analytical Methods

Herbicides	Pesticides	PCBs
2,4 DB	ALDRIN	PCB-1016 (AROCHLOR 1016)
2,4,5-T (TRICHLOROPHENOXYACETIC ACID)	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	PCB-1221 (AROCHLOR 1221)
2,4-D (DICHLOROPHENOXYACETIC ACID)	ALPHA ENDOSULFAN	PCB-1232 (AROCHLOR 1232)
DALAPON	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	PCB-1242 (AROCHLOR 1242)
DICAMBA	BETA ENDOSULFAN	PCB-1248 (AROCHLOR 1248)
DICHLOROPROP	CHLORDANE	PCB-1254 (AROCHLOR 1254)
DINOSEB	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	PCB-1260 (AROCHLOR 1260)
MCPA	DIELDRIN	
MCPP	ENDOSULFAN SULFATE	
SILVEX (2,4,5-TP)	ENDRIN ALDEHYDE	
	ENDRIN	
	GAMMA BHC (LINDANE)	
	HEPTACHLOR EPOXIDE	
	HEPTACHLOR	
	METHOXYCHLOR	
	p,p'-DDD	
	p,p'-DDE	
	p,p'-DDT	
	TOXAPHENE	

Metals	Geochemistry	Geophysical
ARSENIC	IGNITABILITY	GRAIN SIZE
BARIUM	pH	SPECIFIC GRAVITY
CADMIUM		BULK DENSITY
CHROMIUM, TOTAL		
LEAD		
Mercury		
NICKEL		
SELENIUM		
Silver		

Appendix F
Lab Reports

Submitted on Compact Disc.

Volume 1, Appendix A-2

Historical Sediment Reports

City of Miami

Wagner Creek Renovation Project

DERM File No. CC99-451

Results of Sediment Disposal Characterization Program

Consulting Engineering & Science, Inc.
8925 S.W. 148th Street, #100
Miami, Florida 33176

November 7, 2003

INTRODUCTION

This Sediment Disposal Characterization Program was performed for Phases IV, V and VI (Cedars) of Wagner Creek. The program was implemented in accordance with the DERM letter dated July 15, 2003 and a subsequent letter from Consulting Engineering & Science, Inc. (CES) dated July 23, 2003. Those letters established the criteria for the sampling and testing of the sediments for local hauling and disposal.

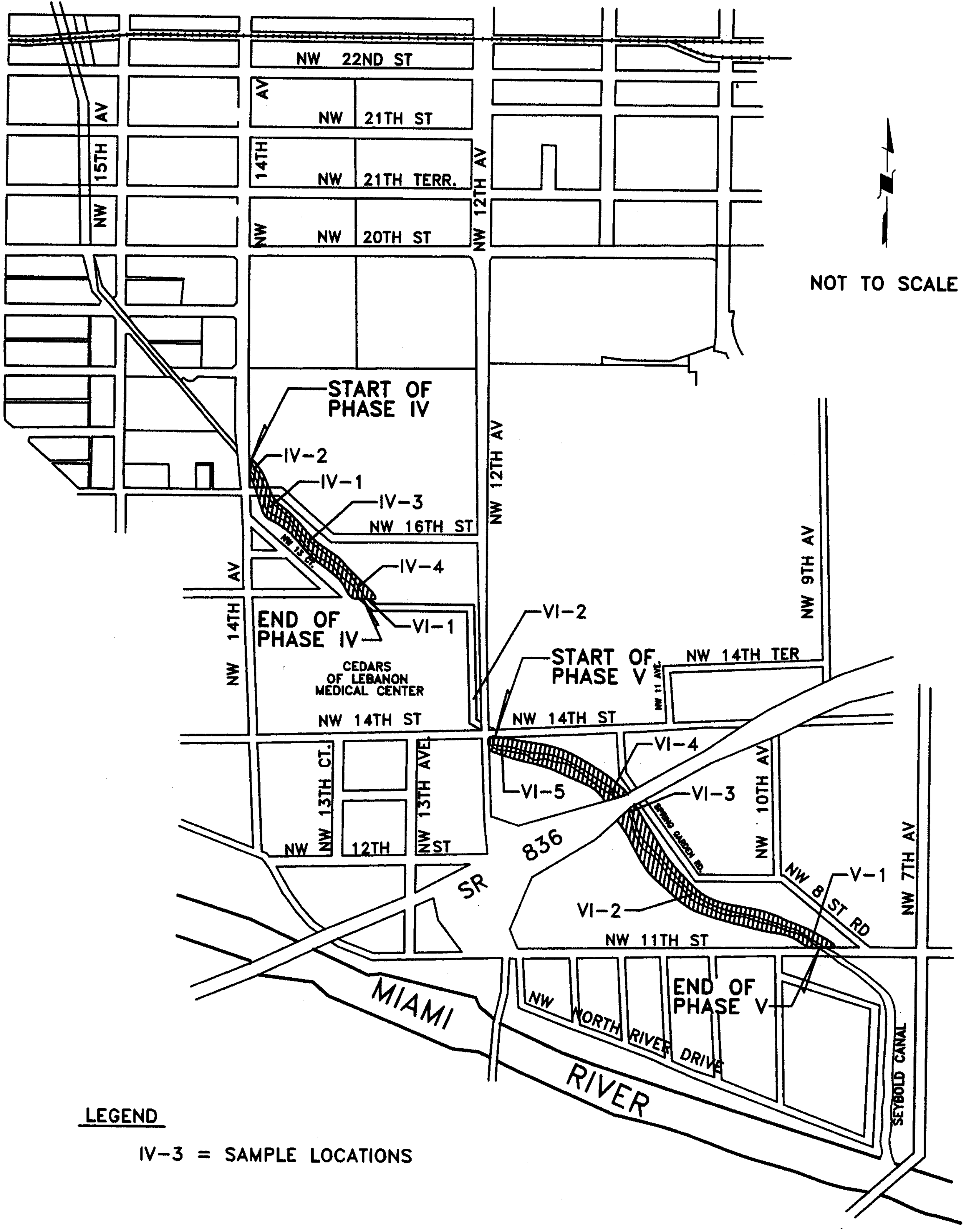
The total volume of material to be removed from these three (3) phases was estimated to be approximately 13,500 cubic yards of wet material or 5,395 tons of dry weight material. According to the landfill disposal criteria for non-hazardous material as contained in Table A of Chapter 62-71, FAC, this total amount of material required the collection and analysis of eleven (11) samples. In an effort to reduce redundant laboratory costs, metals data obtained during the previous sampling event conducted from April 25 to May 5, 2003 was used whenever possible.

Mobilization and sampling operations commenced on August 26, 2003 and were completed on September 5, 2003. The following report details the sampling locations, methodologies and results of the characterization program.

SAMPLING AND ANALYSES

A total eleven (11) sampling stations were selected among phases IV, V and VI(Cedars). Phase IV contained four (4) sampling stations, Phase V contained five (5) sampling stations and Phase VI(Cedars) contained two (2) sampling stations. The locations of these stations are shown on Figure 1, Sampling Locations.

Sediment samples were obtained from representative sites along Wagner Creek from NW 14th Avenue to NW 11th Street and submitted to a certified laboratory for analyses. Samples were obtained using a hammer driven stainless steel core device capable of retrieving continuous sediment core intervals to a maximum sediment depth of six feet. At each sample station, a total of four separate subsample cores were advanced to bedrock. Three of these were equidistance across the creek, perpendicular to the axis of flow and located adjacent to each bank and at the center of the stream. These station subsamples were field composited and submitted for the non-volatile parameters included in the disposal profile



SAMPLING LOCATIONS

CONSULTING ENGINEERING & SCIENCE, INC.
8925 S.W. 148 STREET SUITE 100
MIAMI, FLORIDA 33176 TEL. (305) 378-5555

FIGURE
1

analyses. The remaining fourth core was collected at the location of the thickest sediment lense at the sample station as revealed by the previous three cores advanced. This core was not composited and was submitted to the lab for EPA Method 8260 Volatile Organic compounds.

Sampling was performed in accordance with established protocols as outlined in the Florida Department of Environmental Protection Standard Operating Procedures (DEP-SOP-001/01 revised January 1, 2002, FS 2100-Cleaning Procedures, FS3000-Aquatic Habitat Characterization, FS 4000-Sediment Sampling).

Ancillary field data were also collected at each station and included the following: Time, Cloud Cover, Air Temperature, Tidal Stage, Current Speed, Depth, Sediment Thickness, and GPS Coordinates. This data is presented in Appendix A, Field Data.

Samples were placed on wet ice and transferred to laboratory personnel under Chain of Custody procedures. The analytic parameters specified were based on local landfill and DERM acceptance criteria.

The following analytic parameters were specified:

TCLP* Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver, and Nickel.
EPA Method 8260 Compounds
FL-PRO
Odor
Color
Flash Point
Specific Gravity
pH

The individual laboratory data sheets are presented in Appendix B, Laboratory Data.

*Please note that historic data from the previously conducted *Preliminary Characterization Sampling Plan of Sediments and Surface Water In Wagner Creek*, CES, Inc. 5/23/03, submitted to DERM is used in conjunction with this characterization program. Consequently, the sample station locations have TCLP and Total metals data where applicable as compared to Total Metals concentrations as listed on DEP 62-713, Table B *Total Metals Analysis and TCLP Test Requirements*. These metals data are summarized in Table 1.

Table 1 **Summary of Wagner Creek Historic Total Metals Data and Current TCLP Metals Data From Table B**

Station	As	Ba	Cd	Cr	Pb	Hg	Se	Ag	Ni
IV-1	0.055	0.4	0.005	BDL	0.887	BDL	0.032	BDL	BDL
IV-2	**38.19**	**122.56**	BDL	BDL	0.097	**3.36**	0.04	**30.37**	BDL
IV-3	0.055	0.3	0.025	BDL	0.799	BDL	0.044	BDL	BDL
IV-4	**BDL**	**23.60**	**BDL**	**50.41**	0.035	**BDL**	**BDL**	**BDL**	BDL
V-1	0.058	0.2	0.037	BDL	0.574	BDL	0.040	BDL	BDL
V-2	**4.48**	**18.45**	**5.18**	BDL	0.423	**0.65**	BDL	**3.80**	BDL
V-3	0.038	0.4	BDL	BDL	0.217	BDL	0.035	BDL	BDL
V-4	**10.20**	**37.50**	**5.59**	BDL	0.294	**0.45**	**BDL**	**BDL**	BDL
V-5	0.02	0.2	BDL	BDL	0.22	BDL	0.03	BDL	BDL
VI-1	**16.80**	**29.92**	**18.24**	BDL	0.050	**1.68**	**BDL**	**BDL**	BDL
VI-2	**11.55**	**60.56**	**7.57**	**80.88**	0.152	**1.14**	**BDL**	**BDL**	BDL
Total	100	2000	20	100	100	4	20	100	N/A
TCLP	5.0	100.0	1.0	5.0	5.0	0.2	1.0	5.0	N/A

TCLP Metals data are expressed in mg/l. Total Metals data (Bold) are expressed in mg/kg. Current and historic sample station designations are shown on the following page.

Sampling Station Designations

	Current Designation	Historic Designation*
Phase IV		
	IV-1	
	IV-2	5
	IV-3	
	IV-4	6
Phase VI		
	VI-1	7
	VI-2	8
Phase V		
	V-1	
	V-2	10
	V-3	
	V-4	9
	V-5	

*"Historic" refers to designations assigned to the sampling stations contained in the previously conducted assessment *Preliminary Characterization Sampling Plan of Sediments and Surface Water In Wagner Creek*, CES, Inc. 5/23/03.

RESULTS

Based upon a review of the laboratory data presented in Table 1, none of the target parameters exceeded the current limits for local landfill disposal. Copies of the individual laboratory data sheets are presented in Appendix B, Laboratory Data.

DISCUSSION/SUMMARY

The above data were compared with current available landfill disposal criteria. Based upon the results of this comparison, CES concludes that the Wagner Creek sediments are suitable for local landfill disposal and that such authorizations should be included in the Miami-Dade DERM permits when they are issued for this work.

APPENDIX A

FIELD DATA

Field Data
Project #0052.02 Wagner Creek

Date: 08/26/03

Sampled by: J. Krakoski

Station#:	IV-3	IV-4
GPS Position:	N25^{0}47.413' W80^{0}13.057'	N25^{0}47.370' W80^{0}13.018'
Time:	12:30	14:45
Cloud Cover:	60%	60%
Tidal Stage:	Low/outgoing	Low
Current (ft./min.)	5	< 1
Sediment Thickness (ft.)	6.0	2.0

Field Data
Project #0052.02 Wagner Creek

Date: 08/28/03

Sampled by: J. Krakoski

Station #:	V-1	
GPS Position:	N25^{0}47.057' W80^{0}12.622'	
Time:	10:15	
Cloud Cover:	100%	
Tidal Stage:	Outgoing	
Current (ft./min.)	4	
Sediment Thickness (ft.)	6.0	

Field Data
Project #0052.02 Wagner Creek

Date: 09/05/03

Sampled by: J. Krakoski

Station #:	V-2	
GPS Position:	N25^{0}47.090' W80^{0}12.668'	
Time:	12:15	
Cloud Cover:	50%	
Tidal Stage:	Incoming	
Current (ft./min.)	4	
Sediment Thickness (ft.)	4.0	

Field Data
Project #0052.02 Wagner Creek

Date: 08/28/03

Sampled by: J. Krakoski

Station #:	V-3	
GPS Position:	N25°47.150' W80°12.772'	
Time:	14:30	
Cloud Cover:	100%	
Tidal Stage:	Low	
Current (ft./min.)	< 1	
Sediment Thickness (ft.)	4.5	

Field Data
Project #0052.02 Wagner Creek

Date: 09/04/03

Sampled by: J. Krakoski

Station #:	V-5	
GPS Position:	N25^{0}47.224' W80^{0}12.875'	
Time:	13:15	
Cloud Cover:	20%	
Tidal Stage:	Incoming	
Current (ft./min.)	4	
Sediment Thickness (ft.)	6.0	

Field Data
Project #0052.02 Wagner Creek

Date: 08/27/03

Sampled by: J. Krakoski

Station #:	VI-1	VI-2
GPS Position:	N25^{0}47.356' W80^{0}12.981'	N25^{0}47.265' W80^{0}12.898'
Time:	09:30	13:45
Cloud Cover:	80%	80%
Tidal Stage:	High/outgoing	Outgoing
Current (ft./min.)	5	5
Sediment Thickness (ft.)	3.5	4.0

APPENDIX B

LABORATORY DATA

CONSUL000508
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Consulting Engineer. & Science
8925 SW 148th St, #100
Miami, FL 33176

Page 1
October 6, 2003
Submission # 309000018
Order # 74159
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-1
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	SWEET ORG		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	62.0	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.45		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	BLACK		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.44		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
6010B TCLP RCRA-6 Metals {No PB or Hg} by ICP			MEDF	1			
Arsenic, TCLP	0.055	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Barium, TCLP	0.4	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Cadmium, TCLP	0.005	mg/L	1311/6010B	0.005	09/02/2003	09/04/2003	MG
Chromium, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Selenium, TCLP	0.032	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Silver, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Lead, TCLP	0.887	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Mercury, TCLP (Cold Vapor AA)	BDL	mg/L	1311/7470A	0.0002(I)	09/03/2003	09/05/2003	CJO
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			

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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/02/2003	09/02/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-1
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL

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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-1
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL

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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-1
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/02/2003	09/02/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	5.08	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
DRO (C10-C28) Range	1420	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
TRO (C28-C40) Range	1470	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF

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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-1
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
TOTAL PRO (C8-C40)	2900	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

CONSUL000508
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Consulting Engineer. & Science
8925 SW 148th St, #100
Miami, FL 33176

October 6, 2003
Submission # 309000018
Order # 74160
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-3
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	ORGANIC		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	75.1	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.99		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.83		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
6010B TCLP RCRA-6 Metals {No PB or Hg} by ICP			MEDF	1			
Arsenic, TCLP	0.055	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Barium, TCLP	0.3	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Cadmium, TCLP	0.025	mg/L	1311/6010B	0.005	09/02/2003	09/04/2003	MG
Chromium, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Selenium, TCLP	0.044	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Silver, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Lead, TCLP	0.799	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Mercury, TCLP (Cold Vapor AA)	BDL	mg/L	1311/7470A	0.0002(I)	09/03/2003	09/05/2003	CJO
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-3
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-3
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74160
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-3
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74160
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-3
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	BDL	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
DRO (C10-C28) Range	694	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
TRO (C28-C40) Range	496	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-3
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
TOTAL PRO (C8-C40)	1190	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

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October 6, 2003
Submission # 309000018
Order # 74161
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-1
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74161
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-1
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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Submission # 309000018
Order # 74161
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-1
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
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Order # 74161
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-1
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	BDL	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF
DRO (C10-C28) Range	172	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF
TRO (C28-C40) Range	173	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF

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Site Location/Project
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0052.02 Wagner Creek

Sample I.D.: V-1
Collected: 08/28/03 00:00
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Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
TOTAL PRO (C8-C40)	345	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

October 6, 2003
Submission # 309000018
Order # 74162
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-3
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	HYDROCARB		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	47.9	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.76		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.65		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
6010B TCLP RCRA-6 Metals {No PB or Hg} by ICP			MEDF	1			
Arsenic, TCLP	0.038	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Barium, TCLP	0.4	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Cadmium, TCLP	BDL	mg/L	1311/6010B	0.005	09/02/2003	09/04/2003	MG
Chromium, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Selenium, TCLP	0.035	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Silver, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Lead, TCLP	0.217	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Mercury, TCLP (Cold Vapor AA)	BDL	mg/L	1311/7470A	0.0002(I)	09/03/2003	09/05/2003	CJO
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			

October 6, 2003
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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-3
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74162
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-3
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-3
Collected: 08/28/03 00:00
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Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	BDL	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
DRO (C10-C28) Range	451	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
TRO (C28-C40) Range	425	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV

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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
TOTAL PRO (C8-C40)	876	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

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October 6, 2003
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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-2
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	ORGANIC		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	55.3	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.48		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	LT GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.31		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
Cadmium, TCLP	BDL	mg/L	1311/6010B	0.10	09/02/2003	09/04/2003	MG/CDP
Chromium, TCLP	BDL	mg/L	1311/6010B	0.50	09/02/2003	09/04/2003	MG/CDP
Selenium, TCLP	0.04	mg/L	1311/6010B	0.01	09/02/2003	09/04/2003	MG
Lead, TCLP	0.097	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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FL-DOH Certification# E86349,E86616

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-2
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-2
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Received: 09/02/03 15:30
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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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Site Location/Project
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PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	2.79	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
DRO (C10-C28) Range	88.0	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
TRO (C28-C40) Range	50.7	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF

CONSUL000508
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October 6, 2003
Submission # 309000018
Order # 74163
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-2
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
TOTAL PRO (C8-C40)	141	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

October 6, 2003
Submission # 309000018
Order # 74164
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

CONSUL000508
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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-4
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	SWEET ORG		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	42.6	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.62		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.43		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
Lead, TCLP	0.035	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-4
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

October 6, 2003
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FL-DOH Certification# E86349,E86616

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-4
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
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FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-4
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74164
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: IV-4
Collected: 08/26/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	2.87	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	JRV
DRO (C10-C28) Range	616	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	JRV
TRO (C28-C40) Range	610	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	JRV
TOTAL PRO (C8-C40)	1230	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	JRV

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

CONSUL000508
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October 6, 2003
Submission # 309000018
Order # 74165
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-2
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	ORGANIC		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	62.9	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	8.01		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	LT GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.88		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
Lead, TCLP	0.152	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-2
Collected: 08/27/03 00:00
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Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-2
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

CONSUL000508
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Miami, FL 33176

October 6, 2003
Submission # 309000018
Order # 74165
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-2
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74165
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-2
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	BDL	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
DRO (C10-C28) Range	6.61	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
TRO (C28-C40) Range	6.30	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF
TOTAL PRO (C8-C40)	12.9	mg/Kg	FL-PRO	2.000	09/10/2003	09/10/2003	SMF

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

CONSUL000508
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October 6, 2003
Submission # 309000018
Order # 74166
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-2
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	SWEET ORG		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	51.1	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.61		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.41		SM 2710F	0.1	09/10/2003	09/10/2003	SN
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-2
Collected: 08/28/03 00:00
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Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74166
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-2
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74166
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-2
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74166
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-2
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	BDL	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
DRO (C10-C28) Range	307	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
TRO (C28-C40) Range	174	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
TOTAL PRO (C8-C40)	481	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

CONSUL000508
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October 6, 2003
Submission # 309000018
Order # 74167
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-5
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	ORGANIC		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	60.5	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.74		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	BLACK		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.65		SM 2710F	0.1	09/10/2003	09/10/2003	SN
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-5
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

CONSUL000508
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Consulting Engineer. & Science
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Miami, FL 33176

October 6, 2003
Submission # 309000018
Order # 74167
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-5
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74167
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-5
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74167
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: V-5
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	BDL	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF
DRO (C10-C28) Range	164	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF
TRO (C28-C40) Range	169	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF
TOTAL PRO (C8-C40)	333	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	SMF

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

CONSUL000508
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Consulting Engineer. & Science
8925 SW 148th St, #100
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October 6, 2003
Submission # 309000018
Order # 74168
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-1
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	SWEET ORG		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	63.5	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	7.50		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	2.92		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
Chromium, TCLP	BDL	mg/L	1311/6010B	0.05	09/02/2003	09/04/2003	MG
Lead, TCLP	0.050	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			
Acetone	BDL	mg/Kg	5030/8260B	1.000	09/03/2003	09/03/2003	SKL
Acrolein	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Acrylonitrile	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl Ethyl Ketone	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dichlorodifluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Vinyl Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
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FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-1
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Bromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichlorofluoromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methylene Chloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Methyl-Tert-Butyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,2-Dichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chloroform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Carbon Tetrachloride	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Benzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trichloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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Page 53
October 6, 2003
Submission # 309000018
Order # 74168
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-1
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromodichloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chloroethylvinyl Ether	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromomethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Cis-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Toluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Trans-1,3-Dichloropropene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2-Trichloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tetrachloroethene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Dibromochloromethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dibromoethane (EDB)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Chlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Ethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,1,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
m & p-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
o-Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74168
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-1
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Total Xylene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Styrene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Isopropylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Bromoform	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,1,2,2-Tetrachloroethane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichloropropane	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3,5-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
2-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
4-Chlorotoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Tert-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trimethylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Sec-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
P-Isopropyltoluene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,3-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,4-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-Butylbenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
n-PropylBenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2-Dichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL

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October 6, 2003
Submission # 309000018
Order # 74168
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

Sample I.D.: VI-1
Collected: 08/27/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
1,2-Dibromo-3-Chloropropane (DBCP)	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,4-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Hexachlorobutadiene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
Naphthalene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
1,2,3-Trichlorobenzene	BDL	mg/Kg	5030/8260B	0.100	09/03/2003	09/03/2003	SKL
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	BDL	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
DRO (C10-C28) Range	231	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
TRO (C28-C40) Range	228	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV
TOTAL PRO (C8-C40)	459	mg/Kg	FL-PRO	2.000	09/10/2003	09/11/2003	JRV

BDL: Indicates Analyte is Below Detection LimitMEDF: Matrix Effect Dilution Factor***
Work Subcontracted to Outside Labs Denoted by HRS Cert ID in Analyst Field
Qualifier following result conforms to FAC 62-160 Table 7***Unless otherwise noted, mg/Kg denotes wet weight***
***62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.
Certs:FL=E86349, AL=41180,CT=PH0217, MD.=#271, MA.=#M-FL535,PR=FL00535 SC=96023,TN=TN02836
*Tests results meet all the requirements of NELAC, unless identified as "certification in-process" coded by (01).Tests coded (02) we are not currently seeking certification by NELAC for.
For any inquiries,please contact the representative who signed this report, or the QA department.

* MATRIX INTERFERES WITH SURROGATE

Cynthia Patterson-Bruce
QA Specialist/Dep. Organics Tech. Dir

CONSULTING ENGINEERING
& SCIENCE, INC.
8925 S.W. 148th Street, Suite 100
MIAMI, FLORIDA 33176

(305) 378-5555

LETTER OF TRANSMITTAL

LS

HAND DELIVERED

DATE: 02/13/04 JOB NO. 0052.02

[redacted]

RE: Wagner Creek Renovation Project
Corrective Action Plan

TO Miami-Dade DERM
Pollution Remediation Section
33 S.W. 2nd Avenue, 7th Floor
Miami, Florida 33130

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via ______ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change Order ☒ Other

COPIES	DATE	NO.	DESCRIPTION
2	02/13/04	---	Signed and sealed copies of Corrective Action Plan

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval

☒ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution

☒ As requested ☐ Returned for corrections ☐ Return ____ corrected prints

☐ For review and comment ☐ ______

☐ FOR BIDS DUE ______ 19 ____ ☐ PRINTS RETURNED AFTER LOAN TO

REMARKS

As per your request.

Should you have any questions, please call.

RECEIVED
FEB 13 2004
DERM
POLLUTION REMEDIATION
SECTION

COPY TO City of Miami CIP

SIGNED:

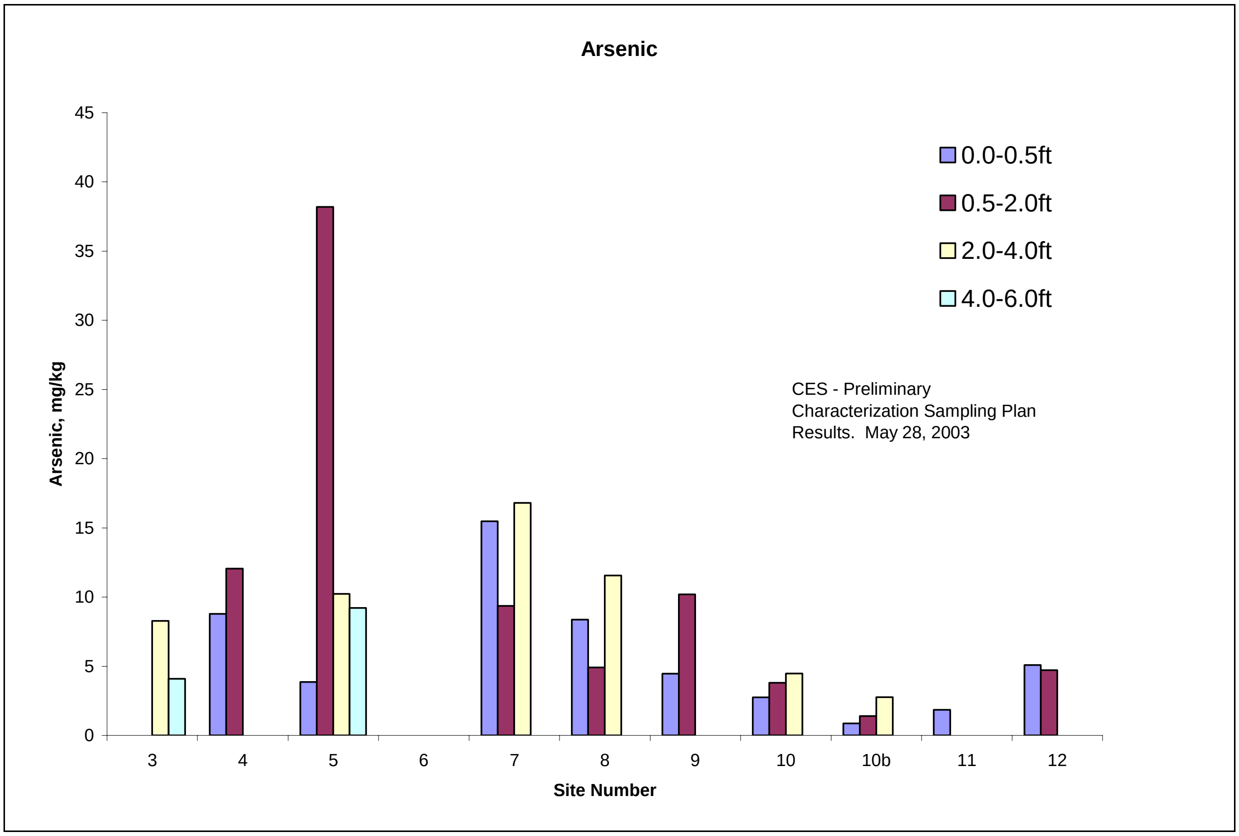
CONSUL000508
John Guttman
Consulting Engineer. & Science
8925 SW 148th St, #100
Miami, FL 33176

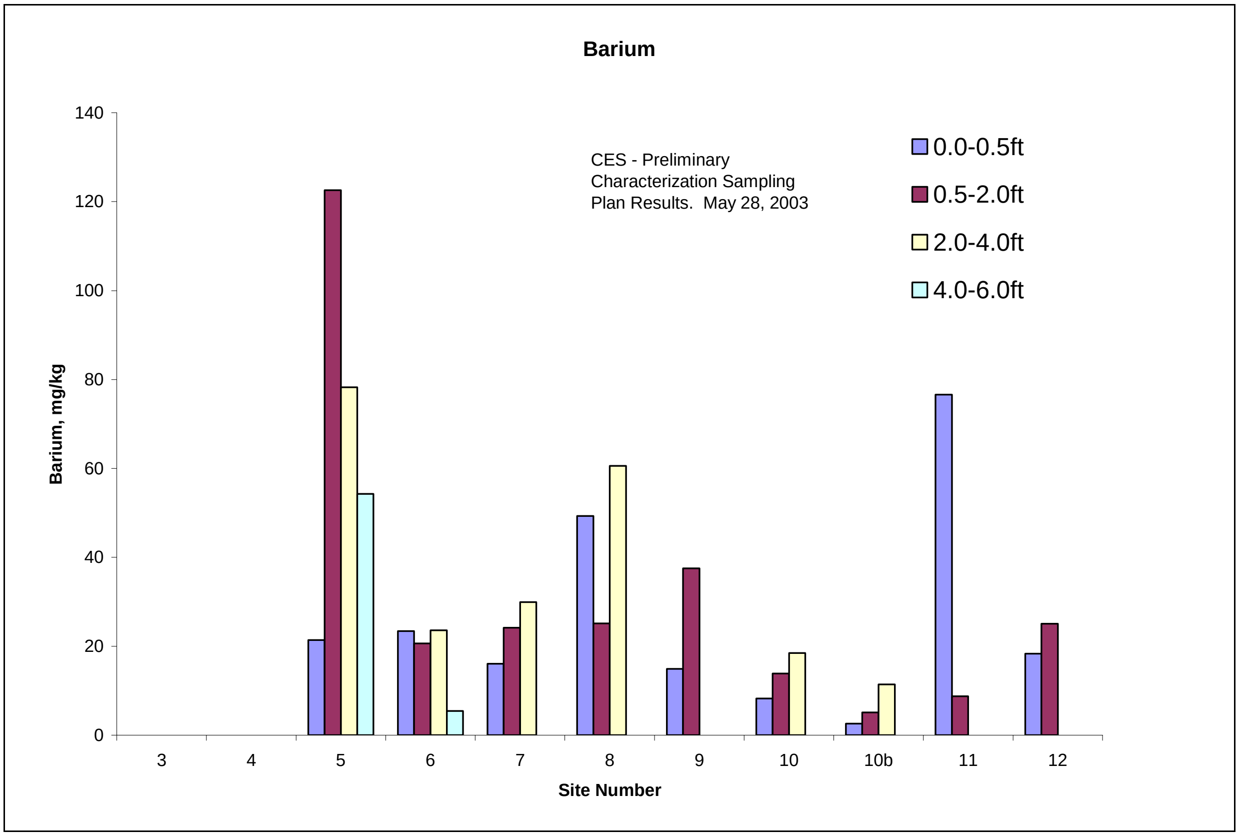
October 6, 2003
Submission # 309000018
Order # 74161
FDEP CompQAP# 990102
FL-DOH Certification# E86349,E86616

Site Location/Project
Wagner Creek, Miami, Fl.
0052.02 Wagner Creek

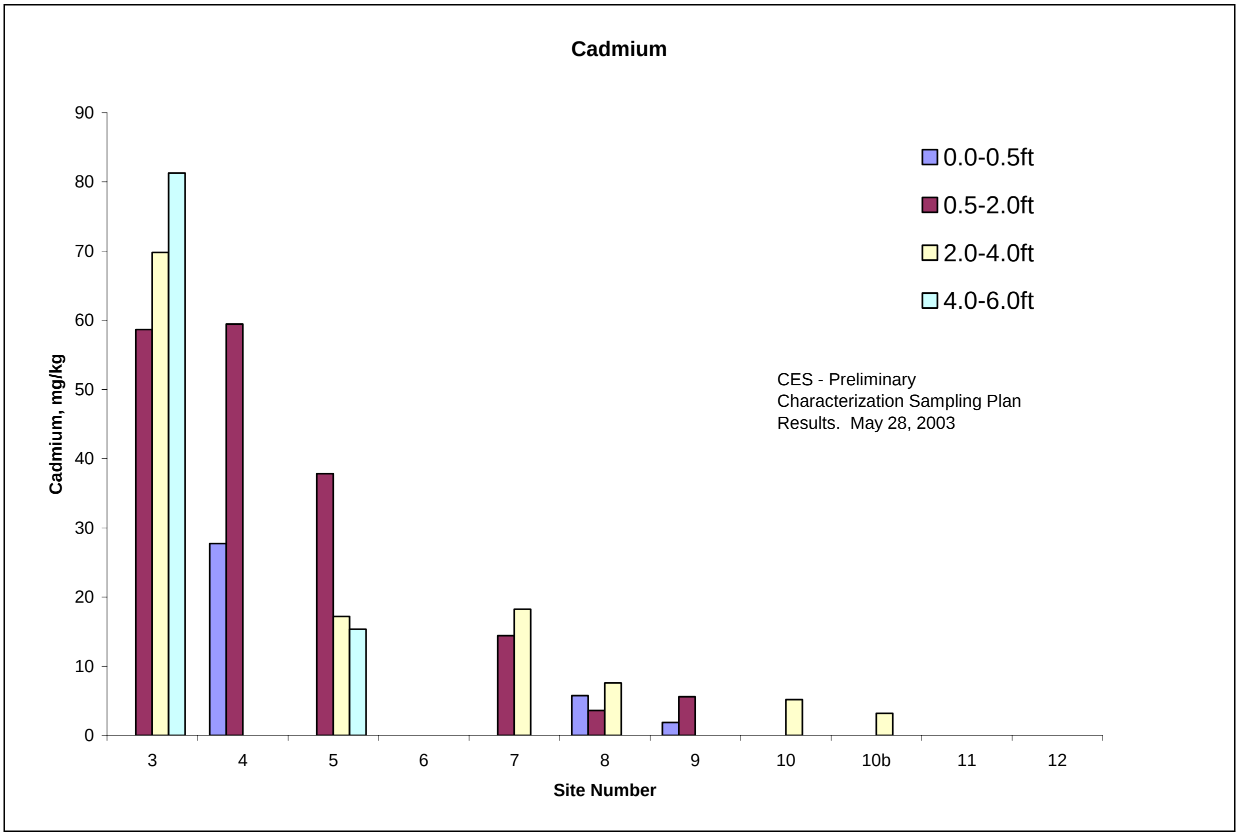
Sample I.D.: V-1
Collected: 08/28/03 00:00
Received: 09/02/03 15:30
Collected by: J. Krakoski

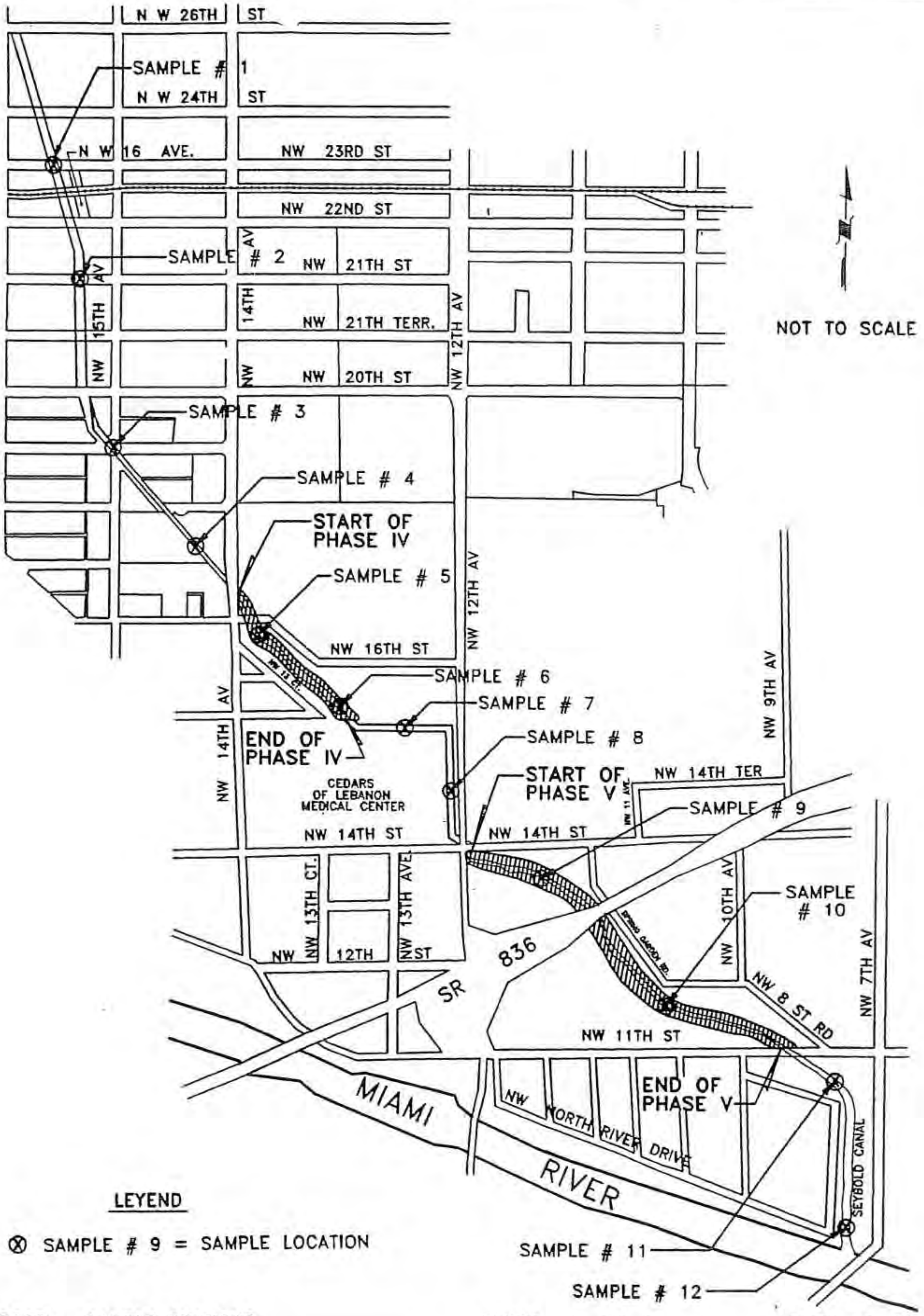
PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT-RQL	DATE EXT.	DATE ANALY.	ANALYST
Odor in Solids	ORGANIC		140.1		09/10/2003	09/10/2003	PR/ED/
Percent Solids	57.9	%	160.3(ASTM-D221	0.10	09/03/2003	09/04/2003	YD
pH	9.87		EPA 9045C	1.0	09/11/2003	09/11/2003	YD
Color	GREY		Description		09/11/2003	09/11/2003	YD
Flashpoint (40 CFR 261.21)	>200	Degree F	EPA1010	70	09/09/2003	09/09/2003	PR
Specific Gravity @60°F	1.57		SM 2710F	0.1	09/10/2003	09/10/2003	SN
TCLP Extraction Procedure	FL=2		1311 Extraction		09/02/2003	09/02/2003	NJB
6010B TCLP RCRA-6 Metals {No PB or Hg} by ICP			MEDF	1			
Arsenic, TCLP	0.058	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Barium, TCLP	0.2	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Cadmium, TCLP	0.037	mg/L	1311/6010B	0.005	09/02/2003	09/04/2003	MG
Chromium, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Selenium, TCLP	0.040	mg/L	1311/6010B	0.010	09/02/2003	09/04/2003	MG
Silver, TCLP	BDL	mg/L	1311/6010B	0.100	09/02/2003	09/04/2003	MG
Lead, TCLP	0.574	mg/L	1311/7421	0.005	09/02/2003	09/04/2003	MG
Mercury, TCLP (Cold Vapor AA)	BDL	mg/L	1311/7470A	0.0002(I)	09/03/2003	09/05/2003	CJO
Nickel, TCLP	BDL	mg/L	1311/7520	0.10	09/02/2003	09/04/2003	RP
8260.B Volatile Org.in Solids & Waste by GC/MS			MEDF	1			


Arsenic
45
40
35
30
25
20
15
10
5
0
Arsenic, mg/kg
3
4
5
6
7
8
9
10
10b
11
12
Site Number
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling Plan
Results. May 28, 2003



CES - Preliminary
Characterization Sampling
Plan Results. May 28, 2003

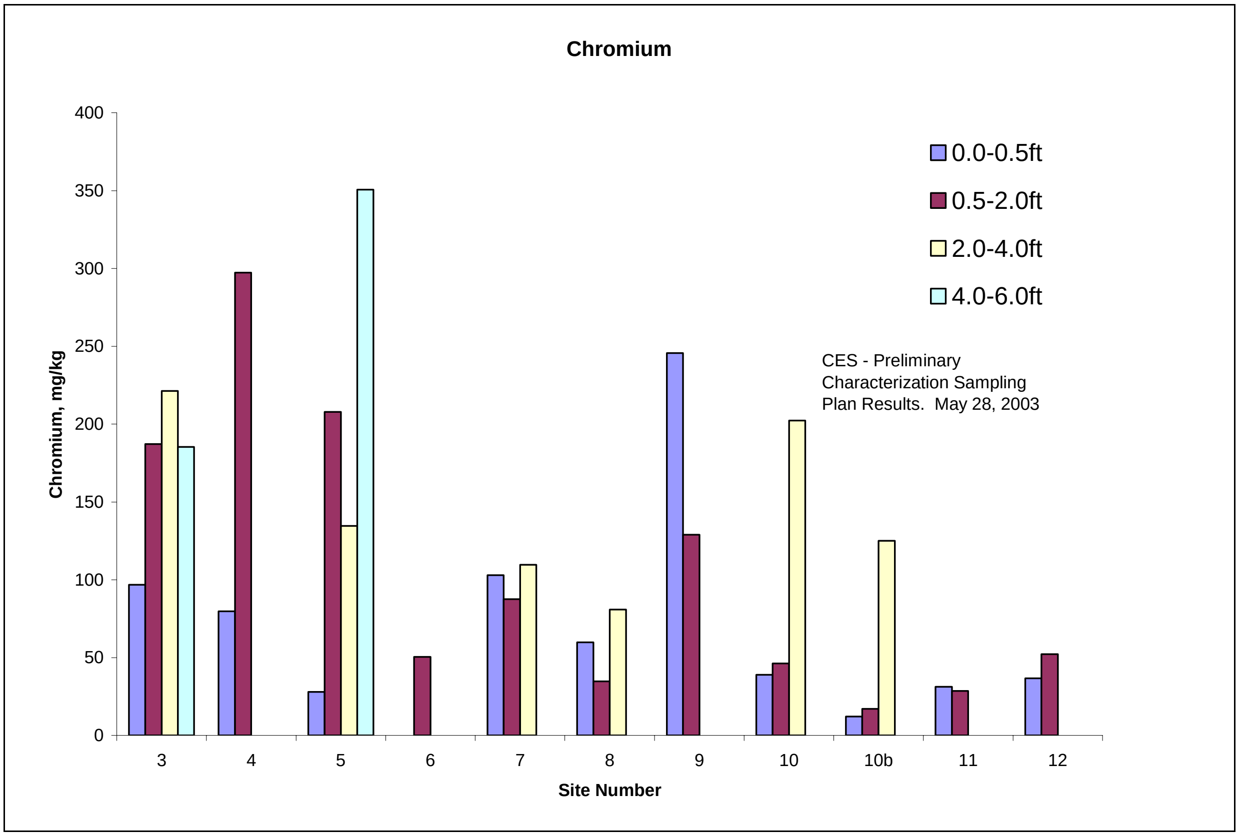

Cadmium
Cadmium, mg/kg
0
10
20
30
40
50
60
70
80
90
3
4
5
6
7
8
9
10
10b
11
12
Site Number
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling Plan
Results. May 28, 2003



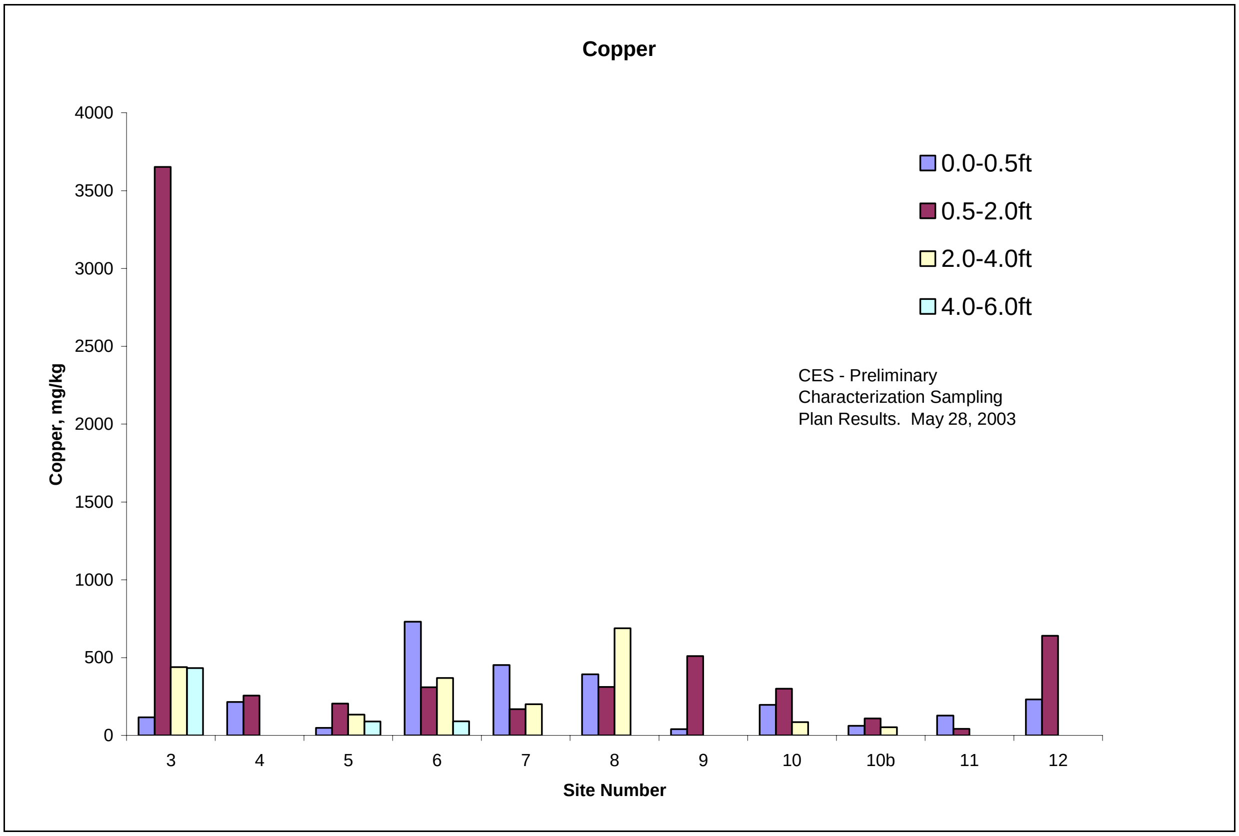
PURPOSE: SAMPLE STATIONS

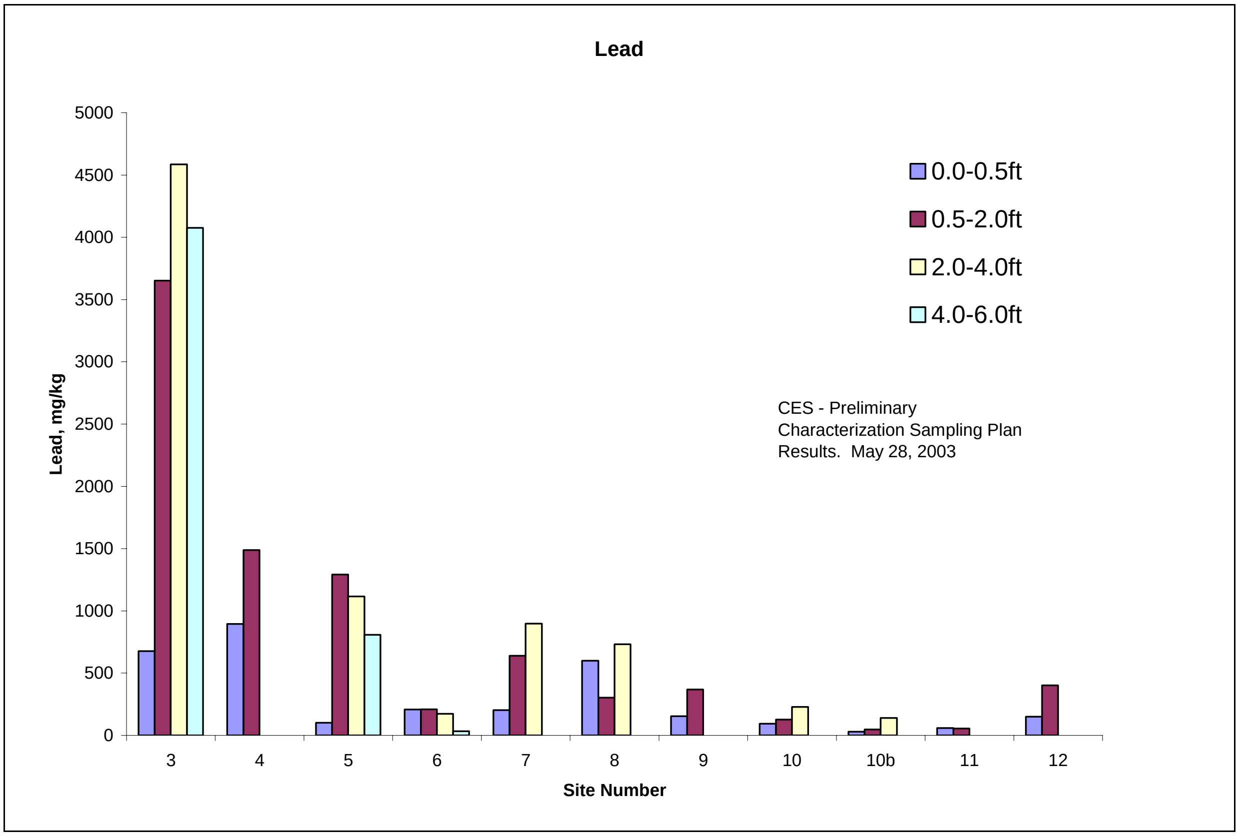
SHEET 1 OF 1

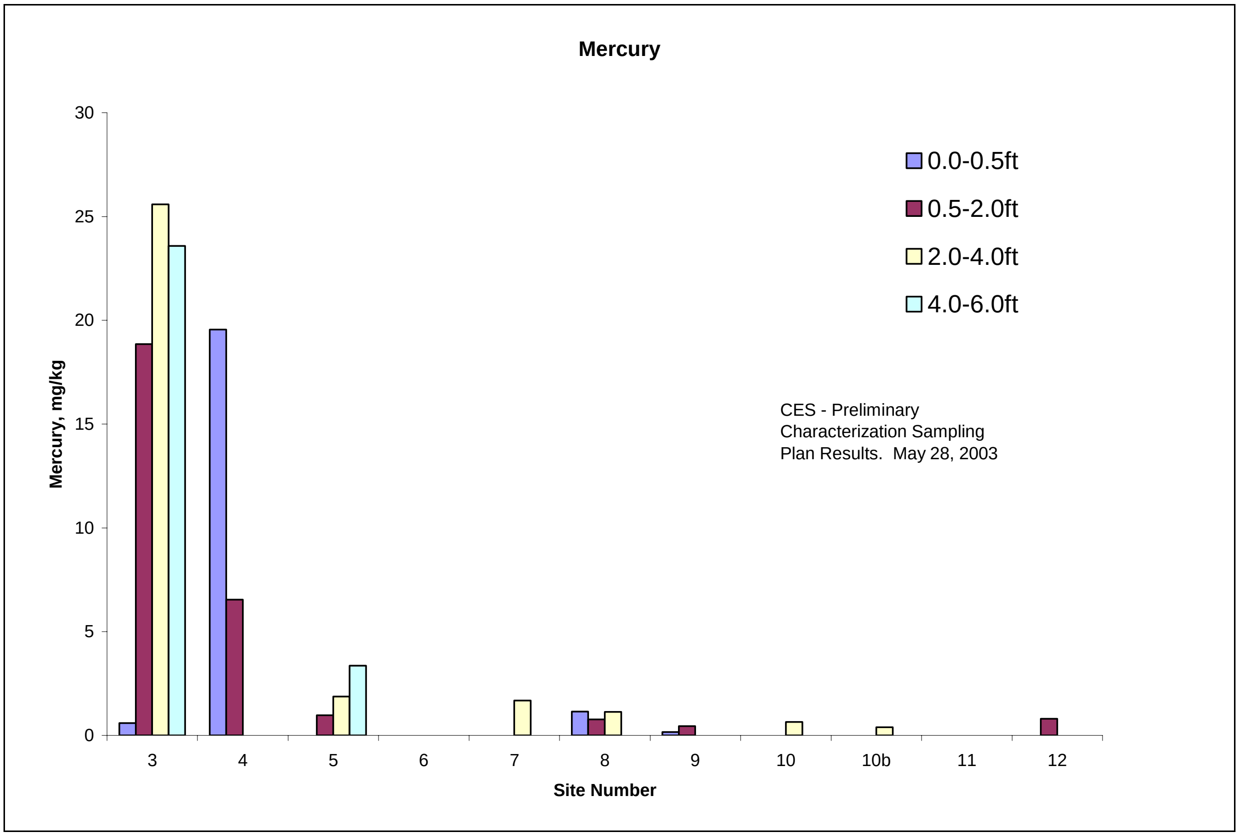
DATE: 03-25-03

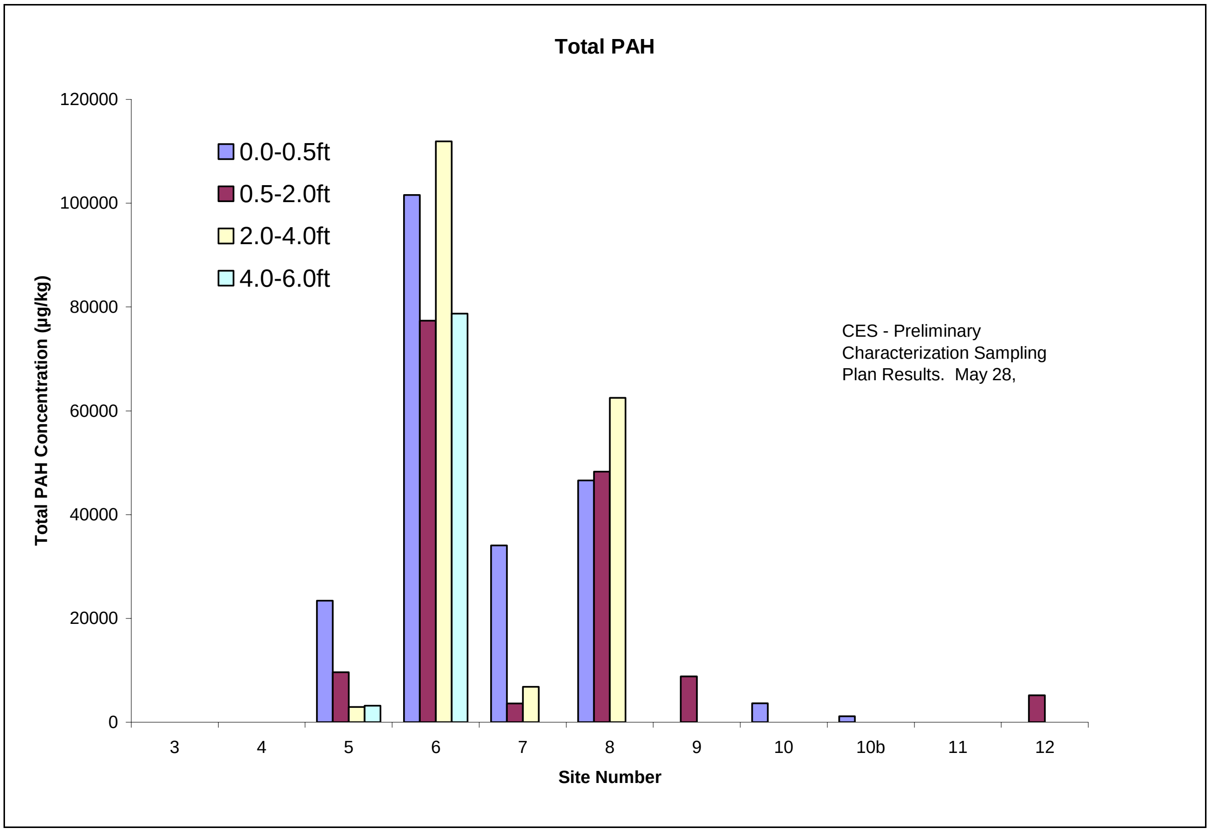


CES - Preliminary Characterization Sampling Plan Results. May 28, 2003

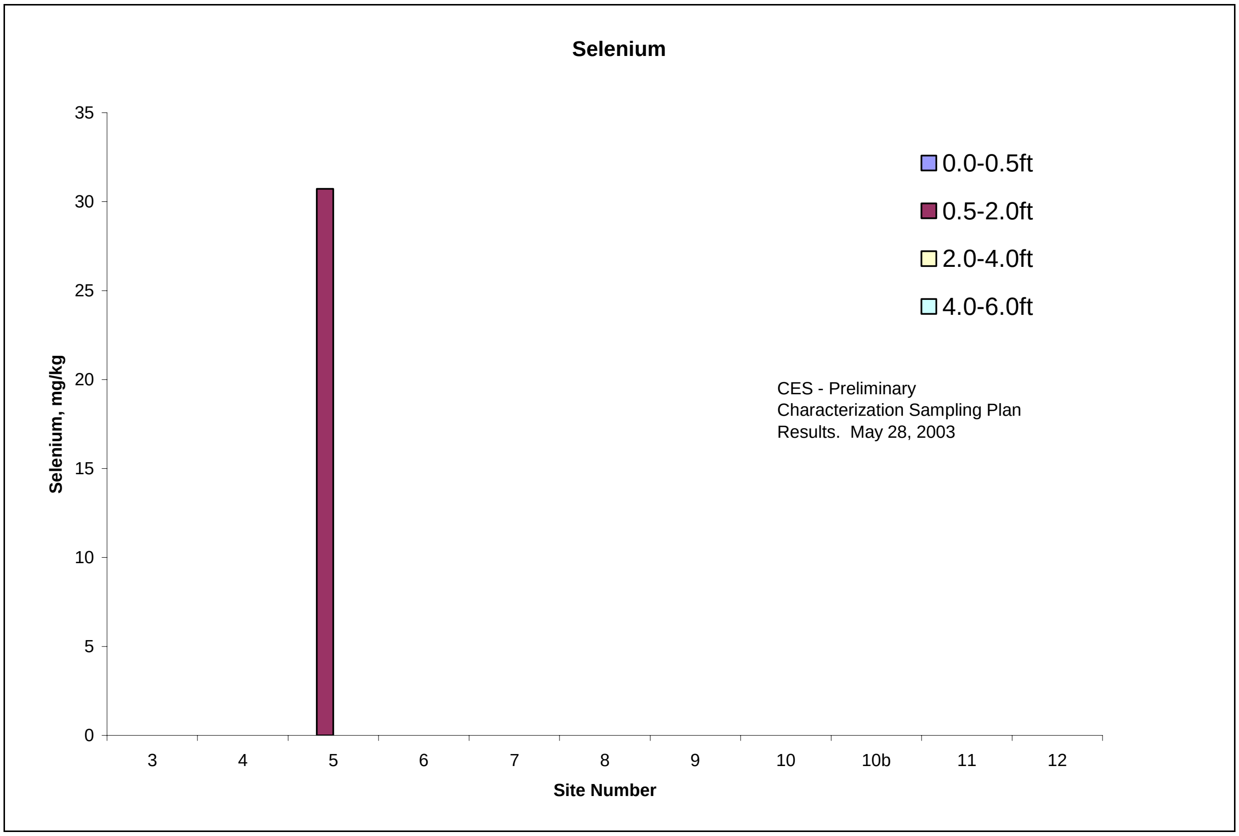

Copper
4000
3500
3000
2500
2000
1500
1000
500
0
Copper, mg/kg
3
4
5
6
7
8
9
10
10b
11
12
Site Number
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling
Plan Results. May 28, 2003

Lead
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Lead, mg/kg
3
4
5
6
7
8
9
10
10b
11
12
Site Number
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling Plan
Results. May 28, 2003

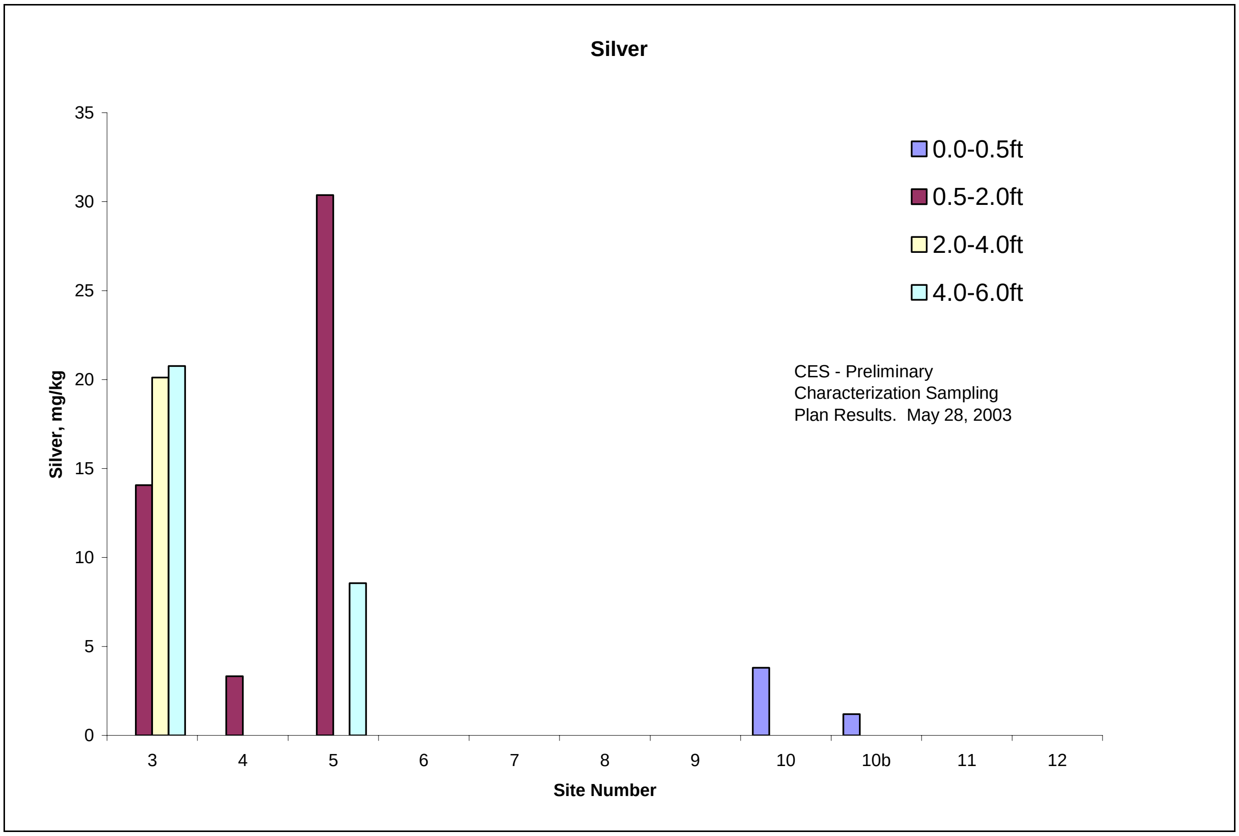

Mercury
30
25
20
15
10
5
0
Mercury, mg/kg
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling
Plan Results. May 28, 2003
3
4
5
6
7
8
9
10
10b
11
12
Site Number

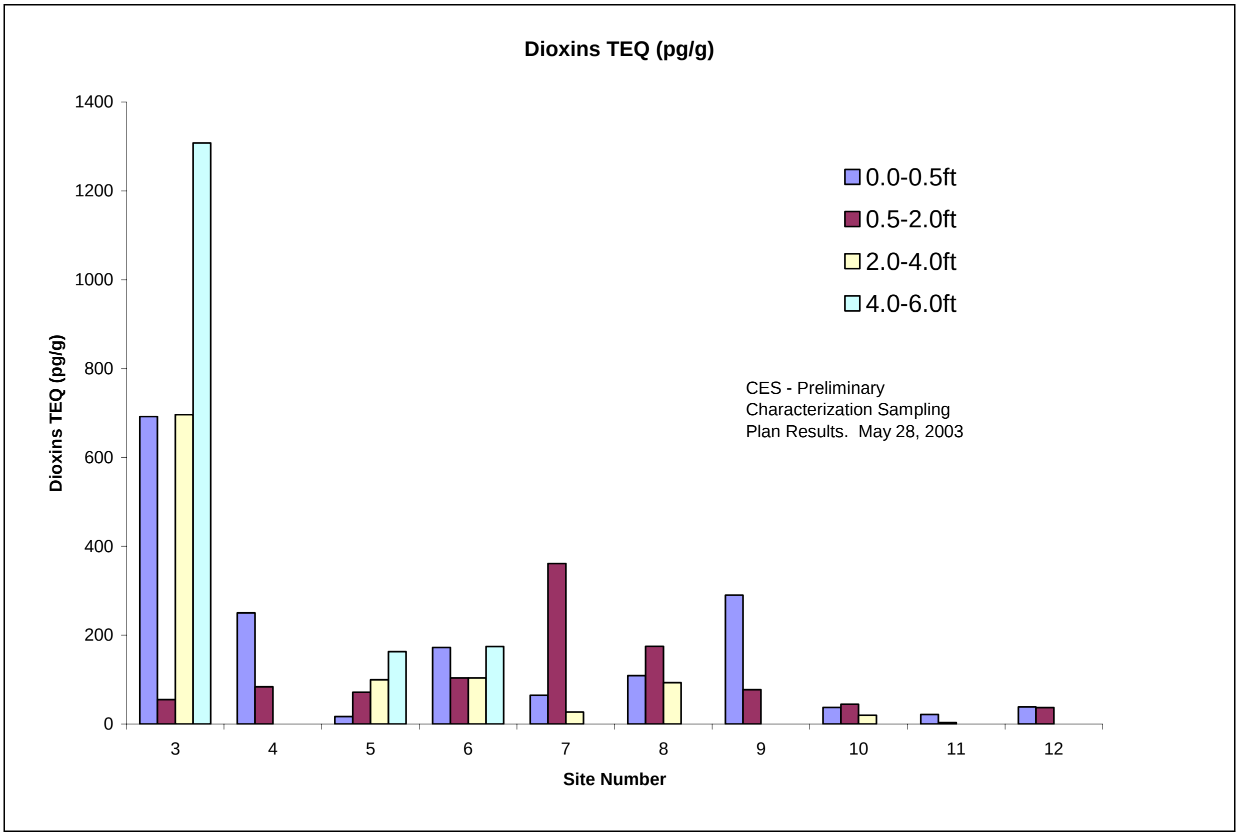


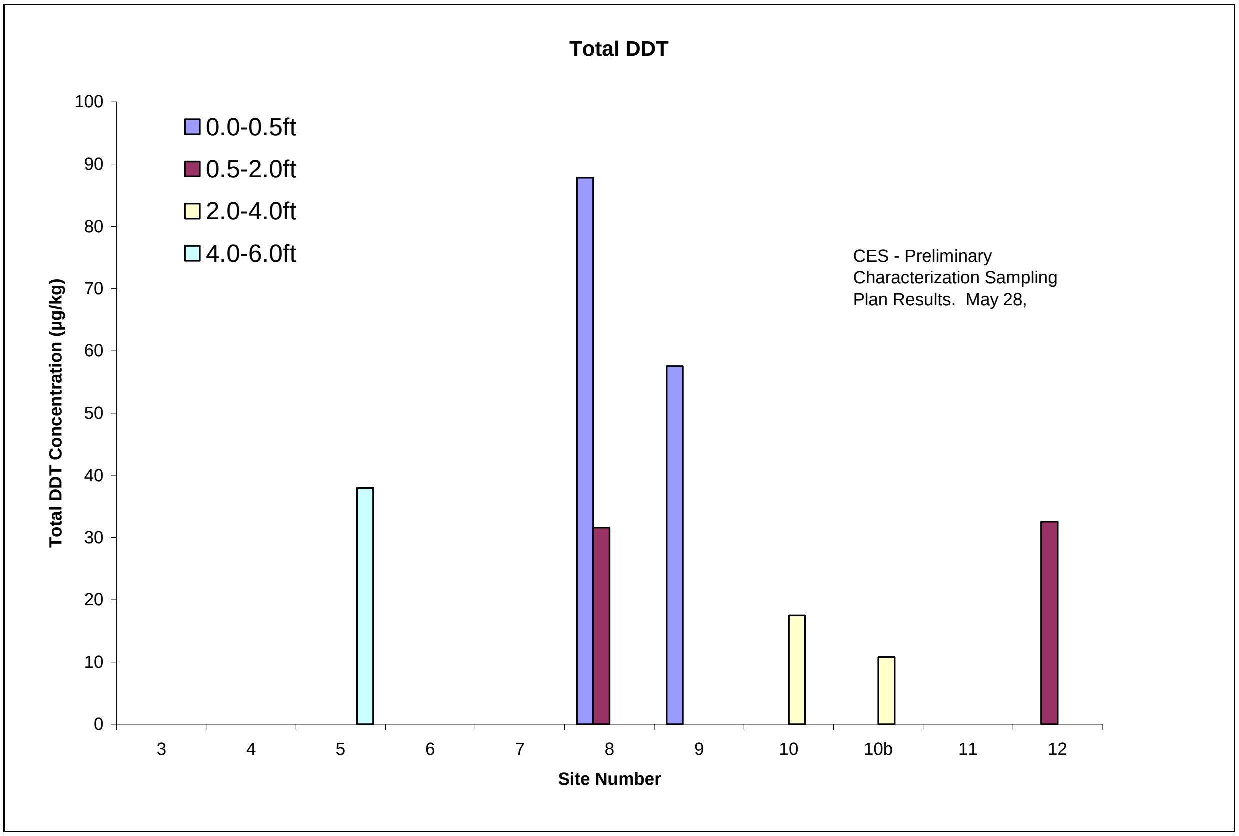
CES - Preliminary
Characterization Sampling
Plan Results. May 28,

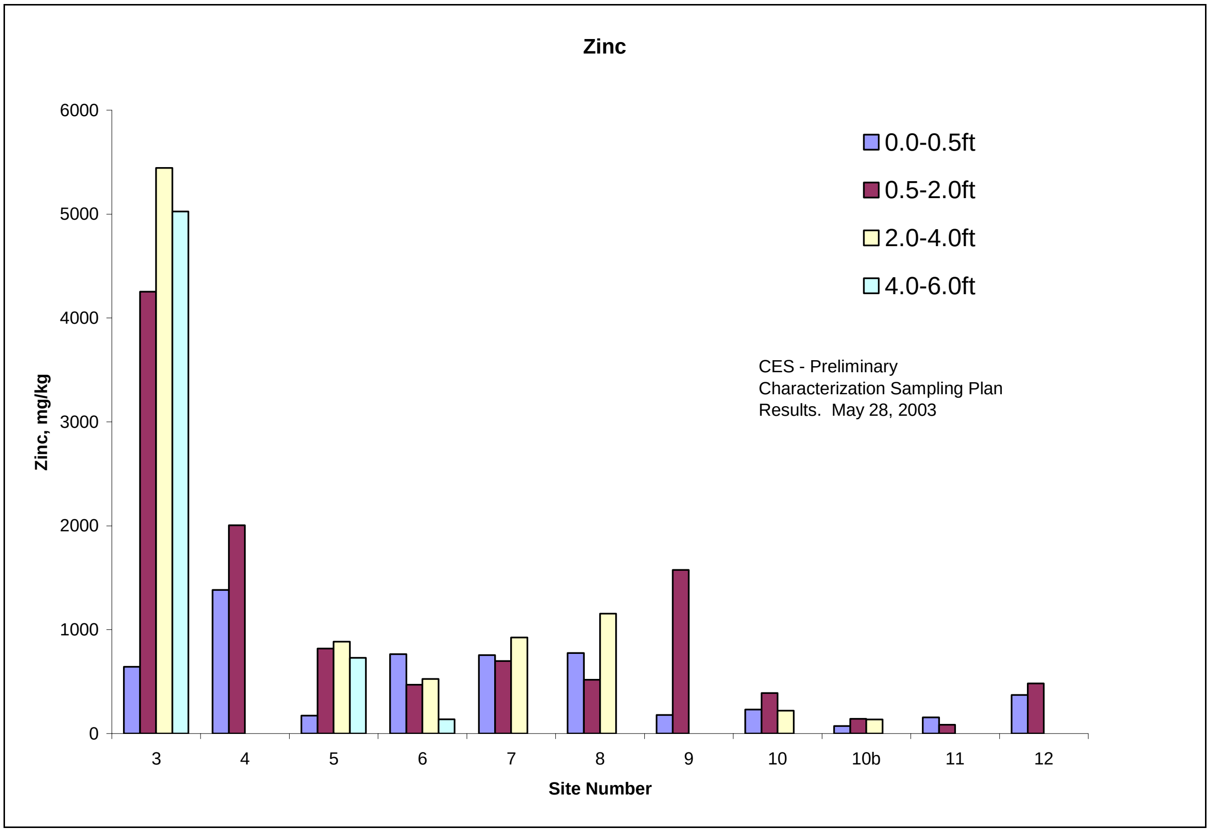


CES - Preliminary Characterization Sampling Plan Results. May 28, 2003


Silver
35
30
25
20
15
10
5
0
Silver, mg/kg
3
4
5
6
7
8
9
10
10b
11
12
Site Number
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling
Plan Results. May 28, 2003


Dioxins TEQ (pg/g)
1400
1200
1000
800
600
400
200
0
Dioxins TEQ (pg/g)
3
4
5
6
7
8
9
10
11
12
Site Number
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling
Plan Results. May 28, 2003

Total DDT
Total DDT Concentration (µg/kg)
100
90
80
70
60
50
40
30
20
10
0
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary Characterization Sampling Plan Results. May 28,
3
4
5
6
7
8
9
10
10b
11
12
Site Number


Zinc
6000
5000
4000
3000
2000
1000
0
Zinc, mg/kg
3
4
5
6
7
8
9
10
10b
11
12
Site Number
0.0-0.5ft
0.5-2.0ft
2.0-4.0ft
4.0-6.0ft
CES - Preliminary
Characterization Sampling Plan
Results. May 28, 2003

LS

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POLLUTION REMEDIATION
SECTION

Technical Report

CONSULTING ENGINEERS
CONSTRUCTION MANAGERS
4100 NE 2^{nd} Avenue, Suite 310
Miami, Florida 33137
Tel: 305.573.2240
Fax: 305.573.2276

LETTER OF TRANSMITTAL

HWR-549| File-19958

TO:	DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT POLLUTION CONTROL DIVISION	TRANSMITTAL DATE:	JUNE 4, 2004
	33 S.W. 2^{ND} AVENUE, SUITE 800	ATTENTION:	WILBUR MAYORGA, P.E. Chief Pollution Remediation Section
	MIAMI, FL, 33130	PROJECT NO.	
		PROJECT NAME	Wagner Creek Phase III and Lawrence Waterway

WE ARE SENDING YOU: ATTACHED ☒ UNDER SEPARATE COVER ☐

THE FOLLOWING ITEM(S): ☐
SHOP DRAWINGS ☐ SET OF PRINTS ☐ SET OF PLANS ☐ SAMPLES ☐ SPECIFICATIONS ☐
COPY OF LETTER ☐ CHANGE ORDER ☐ INVOICES ☐ OTHER ☐

DESCRIPTION OF ITEMS	ORIGINALS	COPIES
ANALYTICAL REPORTS FOR WAGNER CREEK AND LAWRENCE WATERWAY		1

THESE ARE TRANSMITTED AS CHECKED BELOW:

FOR APPROVAL ☐ APPROVED AS SUBMITTED ☐ RESUBMIT ☐ COPIES FOR APPROVAL ☐
FOR YOUR USE ☐ APPROVED AS NOTED ☐ SUBMIT ☐ COPIES FOR DISTRIBUTION ☐
AS REQUESTED ☐ RETURNED FOR CORRECTION ☐ RETURN ☐ CORRECTED PRINTS ☐
FOR REVIEW AND COMMENT ☐ OTHER ☐

REMARKS: *IN RESPONSE TO YOUR LETTER DATED 05-20-04 PLEASE FIND ATTACHED DOCUMENTS SUBMITTED BY US BIOSYSTEMS.*

US Biosystems, Inc.

Level I QA

PHS Engineering Corp.

Project: Wagner Creek Dredging

Log# L85130

19 pages (including cover sheet)

US BIOSYSTEMS, INC.

SW846 6010 TCLP BATCH QC REPORT

Blank, LCS, LCSD, MS, MSD

Analyst SB/VR

Workgroup ID 123103TTA

MSAMP ID L85129-1

Instrument: TRACE ICP

Log#s: L85130

	Analyte concentrations, mg/L									Recoveries, %							
COMPOUNDS	RDL	Blank	Blank	LCS	LCSD	MS	MSD	MSAMP*	T.VALUE	LCS	LCSD	MS	MSD	Rec limits	% RPD	%RPD limits	Flags
Arsenic	0.010	BDL	N/A	1.050	1.044	1.011	1.010	0.000	**1.0**	**105.0**	**104.4**	**101.1**	**101.0**	50-150	0.16	20	
Barium	0.010	BDL	N/A	0.936	0.949	1.108	1.109	0.188	**1.0**	**93.6**	**94.9**	**92.0**	**92.1**	50-150	0.022	20	
Cadmium	0.0050	BDL	N/A	1.038	1.045	0.959	0.966	0.000	**1.0**	**103.8**	**104.5**	**95.9**	**96.6**	50-150	0.76	20	
Chromium	0.0050	BDL	N/A	0.987	0.997	0.936	0.943	0.000	**1.0**	**98.7**	**99.7**	**93.6**	**94.3**	50-150	0.72	20	
Lead	0.0050	BDL	N/A	0.948	1.000	0.895	0.943	0.000	**1.0**	**94.8**	**100.0**	**89.5**	**94.3**	50-150	5.2	20	
Selenium	0.010	N/A	BDL	1.016	1.073	0.989	1.046	0.011	**1.0**	**101.6**	**107.3**	**97.8**	**103.5**	50-150	5.7	20	
Silver	0.010	BDL	N/A	0.968	0.985	0.975	0.981	0.000	**1.0**	**96.8**	**98.5**	**97.5**	**98.1**	50-150	0.59	20	
										Comments/Explanations:							
Run ID (Clock ID)		2T010204ME	4T010204ME	2T010204ME	2T010204ME	2T010204ME	2T010204ME	2T010204ME									
Date analyzed		01/02/04	01/02/04	01/02/04	01/02/04	01/02/04	01/02/04	01/02/04									
Time Analyzed		10:32	12:03	10:37	10:42	10:58	11:02	10:51									
Date prepared		12/31/03	12/31/03	12/31/03	12/31/03	12/31/03	12/31/03	12/31/03									
Time prepared		10:00	10:00	10:00	10:00	10:00	10:00	10:00									

KEY: **DL**= Detection Limit, **BDL** = below reporting limit, **RDL** =Reportable Detection Limit, **MDL** =Method Detection Limit, **LCS(D)**= Laboratory Control Spike (Duplicate), **MS(D)**= Matrix Spike (Duplicate),

MSAMP= Matrix Sample spiked, **AVE=Average, RPD**= Relative Percent Difference, **Workgroup**= Batch, **Run ID (Clock ID)**= Calibration Check Standards(instrument checks),

Flags = QC has not met criteria, **J4** = **MI** = matrix interference, **I** = result between the MDL and PQL, **V** = present in blank, **J1** = surrogate exceeded limits, **IL** = In-house limits.

* LCS/LCSD recovered within limits; data reported.

Detection Limits(DL) based on Blanks.

US Biosystems, Inc.

SW 846 7470 TCLP BATCH QC REPORT

Blank, LCS, LCSD, MS, MSD

Analyst: EB/WM

Workgroup ID: 010204HGTA

MSAMP ID: L85129-1

Instrument: PS-200

Log#s: L85130

	Analyte concentrations, mg/L								Recoveries, %							
COMPOUNDS	RDL	Blank	LCS	LCSD	MS	MSD	MSAMP*	T.VALUE	LCS	LCSD	MS	MSD	Rec limits	% RPD	%RPD limits	Flags
Mercury	0.00020	BDL	0.00205	0.00201	0.00205	0.00204	0.00000	0.0020	**102.5**	**100.5**	**102.5**	**102.0**	70-130	0.5	20	
									Comments/Explanations:							
Run ID (Clock ID)		4P010204ME	4P010204ME	4P010204ME	4P010204ME	4P010204ME	4P010204ME									
Date analyzed		01/02/04	01/02/04	01/02/04	01/02/04	01/02/04	01/02/04									
Time Analyzed		11:22	11:25	11:27	11:31	11:33	11:29									
Date prepared		01/02/04	01/02/04	01/02/04	01/02/04	01/02/04	01/02/04									
Time prepared		8:30	8:30	8:30	8:30	8:30	8:30									

KEY: **RDL**=Reportable Detection Limit, **MDL**=Method Detection Limit, **LCS(D)**= Laboratory Control Spike (Duplicate), **MS(D)**= Matrix Spike (Duplicate), **MSAMP**= Matrix Sample spiked, **AVE**=Average
RPD= Relative Percent Difference, **Workgroup**= Batch, **Run ID (Clock ID)**= Calibration Check Standards(instrument checks), **Flags**= QC has not met criteria.
A/S= analytical spike, **BDL** = below detection limit, **MI** = matrix interference, **I** = result between the MDL and PQL, **V** = present in blank, **J1** = surrogate exceeded limits

US Biosystems, Inc.

8260 TCLP BATCH QC REPORT

EXTRACTION BLANKS, MS, MSD

Analyst SV

MSAMP ID L80001-1

Log#s: L85130

Workgroup ID 122403VMC

	TCLP BLANK	TCLP BLANK	MS	MSD	MSAMP*
Run ID (Clock ID)	2B122403VM	2B122403VM	2B122403VM	2B122403VM	2B122403VM
Extr. Workgroup ID	122303VMZ	122403VMZ	122303VMZ	122303VMZ	122303VMZ
Date analyzed	12/25/03	12/25/03	12/25/03	12/25/03	12/25/03
Time Analyzed					
Date prepared	12/23/03	12/24/03	12/23/03	12/23/03	12/23/03
Time prepared					

Comments:

LCS passed for 1,4-Dichlorobenzene

SURROGATE RECOVERIES, %

COMPOUNDS	TCLP BLANK	TCLP BLANK	MS	MSD	MSAMP*	Rec limits
Dibromofluoromethane	113	98	102	83	0	68-145
Toluene-d8	92	80	86	61	0	62-133
4-Bromofluorobenzene	103	83	83	58	0	56-135

		Analyte concentrations, mg/L						Recoveries, %					
COMPOUNDS	RDL	TCLP BLANK	TCLP BLANK	MS	MSD	MSAMP*	T.VALUE	MS	MSD	AVE MS/MSD	Rec limits	% RPD	%RPD limits
Vinyl Chloride	0.10	BDL	BDL	1.52	1.50	0	2.0	76	75	76	50-177	1.1	30
1,1-Dichloroethene	0.10	BDL	BDL	1.88	1.86	0	2.0	94	93	93	60-133	1.0	30
Methyl Ethyl Ketone	1.0	BDL	BDL	2.25	2.16	0	2.0	112	108	110	18-187	4.0	30
Chloroform	0.10	BDL	BDL	2.49	2.41	0	2.0	125	121	123	82-134	3.3	30
1,2-Dichloroethane	0.10	BDL	BDL	2.69	2.62	0	2.0	135	131	133	72-137	2.9	30
Carbon Tetrachloride	0.10	BDL	BDL	2.42	2.33	0	2.0	121	117	119	57-136	3.6	30
Benzene	0.10	BDL	BDL	2.11	1.98	0	2.0	105	99	102	62-138	6.2	30
Trichloroethene	0.10	BDL	BDL	1.90	1.72	0	2.0	95	86	90	67-137	10	30
Tetrachloroethene	0.10	BDL	BDL	1.59	1.29	0	2.0	80	65	72	62-126	21	30
Chlorobenzene	0.10	BDL	BDL	1.66	1.43	0	2.0	83	72	77	61-143	14	30
1,4-Dichlorobenzene	0.10	BDL	BDL	1.50	1.08	0	2.0	75	54	64	59-135	32	30

** 0 =BDL*

KEY: RDL=Reportable Detection Limit, **MDL**=Method Detection Limit, LCS(D)= Laboratory Control Spike (Duplicate), **MS(D)**= Matrix Spike (Duplicate), **MSAMP**= Matrix Sample spiked, **AVE**=Average
RPD= Relative Percent Difference, **Workgroup**= Batch, **Run ID (Clock ID)**= Calibration Check Standards(instrument checks), **Flag**=QC has not met criteria.

US Biosystems, Inc.

EPA 8260/624 LIQUID METHOD BLANK REPORT

Analyst: SV

Entered by: GG

Method ##	8260
	624

		Clock ID				
		1B122403VM	2B122403VM			
	Surrogate Limits:	*Surrogate Recoveries, %*				
Dibromofluoromethane	68-145	99	109			
Toluene-D8	62-133	85	88			
4-Bromofluorobenzene	56-135	93	95			
Date Analyzed		12/24/03	12/25/03			
Time Analyzed		16:21	9:11			
Date Prepared						
Time Prepared						

Compounds	*RDL ug/L*	*Conctn. ug/L*	*Conctn. ug/L*	*Conctn. ug/L*	*Conctn. ug/L*	*Conctn. ug/L*
Dichlorodifluoromethane	1.0	BDL	BDL			
Chloromethane	1.0	BDL	BDL			
Vinyl chloride	1.0	BDL	BDL			
Bromomethane	2.0	BDL	BDL			
Chloroethane	1.0	BDL	BDL			
Trichlorofluoromethane	1.0	BDL	BDL			
Acrolein	50	BDL	BDL			
Acetone	10	BDL	BDL			
1,1-Dichloroethene	1.0	BDL	BDL			
Iodomethane	1.0	BDL	BDL			
Acrylonitrile	1.0	BDL	BDL			
Methylene chloride	5.0	BDL	BDL			
Carbon disulfide	1.0	BDL	BDL			
trans-1,2-Dichloroethene	1.0	BDL	BDL			
MTBE	1.0	BDL	BDL			
Vinyl acetate	1.0	BDL	BDL			
1,1-Dichloroethane	1.0	BDL	BDL			
MEK (2-Butanone)	10	BDL	BDL			
cis-1,2-Dichloroethene	1.0	BDL	BDL			
Bromochloromethane	1.0	BDL	BDL			
Chloroform	1.0	BDL	BDL			
2,2-Dichloropropane	1.0	BDL	BDL			
1,2-Dichloroethane	1.0	BDL	BDL			
1,1,1-Trichloroethane	1.0	BDL	BDL			
n-Butanol	500	BDL	BDL			
1,1-Dichloropropene	1.0	BDL	BDL			
Carbon tetrachloride	1.0	BDL	BDL			
Benzene	1.0	BDL	BDL			

Clock ID		1B122403VM	2B122403VM			
Compounds	**RDL ug/L**	**Conctn. ug/L**	**Conctn. ug/L**	**Conctn. ug/L**	**Conctn. ug/L**	**Conctn. ug/L**
Dibromomethane	1.0	BDL	BDL			
1,2-Dichloropropane	1.0	BDL	BDL			
Trichloroethene	1.0	BDL	BDL			
Bromodichloromethane	0.60	BDL	BDL			
2-Chloroethylvinyl ether	10	BDL	BDL			
cis-1,3-Dichloropropene	0.20	BDL	BDL			
4-Methyl-2-pentatone (MIBK)	1.0	BDL	BDL			
trans-1,3-Dichloropropene	0.20	BDL	BDL			
1,1,2-Trichloroethane	1.0	BDL	BDL			
Toluene	1.0	BDL	BDL			
1,3-Dichloropropane	1.0	BDL	BDL			
2-Hexanone	10	BDL	BDL			
Dibromochloromethane	0.40	BDL	BDL			
1,2-Dibromoethane (EDB)	1.0	BDL	BDL			
Tetrachloroethene	1.0	BDL	BDL			
1,1,1,2-Tetrachloroethane	1.0	BDL	BDL			
Chlorobenzene	1.0	BDL	BDL			
Ethylbenzene	1.0	BDL	BDL			
Total xylenes	2.0	BDL	BDL			
Bromoform	1.0	BDL	BDL			
cis-1,4-Dichloro-2-butene	1.0	BDL	BDL			
Styrene	1.0	BDL	BDL			
1,1,2,2-Tetrachloroethane	0.20	BDL	BDL			
1,2,3-Trichloropropane	0.20	BDL	BDL			
trans-1,4-Dichloro-2-butene	1.0	BDL	BDL			
Isopropylbenzene	1.0	BDL	BDL			
Bromobenzene	1.0	BDL	BDL			
n-Propylbenzene	1.0	BDL	BDL			
2-Chlorotoluene	1.0	BDL	BDL			
4-Chlorotoluene	1.0	BDL	BDL			
1,3,5-Trimethylbenzene	1.0	BDL	BDL			
tert-Butylbenzene	1.0	BDL	BDL			
1,2,4-Trimethylbenzene	1.0	BDL	BDL			
sec-Butylbenzene	1.0	BDL	BDL			
1,3-Dichlorobenzene	1.0	BDL	BDL			
1,4-Dichlorobenzene	1.0	BDL	BDL			
4-Isopropyltoluene	1.0	BDL	BDL			
1,2-Dichlorobenzene	1.0	BDL	BDL			
n-Butylbenzene	1.0	BDL	BDL			
1,2-Dibromo-3-chloropropane	1.0	BDL	BDL			
1,2,4-Trichlorobenzene	1.0	BDL	BDL			
Naphthalene	1.0	BDL	BDL			
Hexachlorobutadiene	1.0	BDL	BDL			
1,2,3-Trichlorobenzene	1.0	BDL	BDL			

US Biosystems, Inc.

EPA 8260/624 LIQUID METHOD BLANK REPORT

Analyst: SV

Entered by: SV

Method ##	8260
	624

		Clock ID				
		1B123103VM	2B123103VM			
	Surrogate Limits:	*Surrogate Recoveries, %*				
Dibromofluoromethane	68-145	105	108			
Toluene-D8	62-133	128	126			
4-Bromofluorobenzene	56-135	125	125			
Date Analyzed		12/31/03	01/01/04			
Time Analyzed		18:58	3:15			
Date Prepared						
Time Prepared						

Compounds	*RDL ug/L*	*Conctn. ug/L*	*Conctn. ug/L*	*Conctn. ug/L*	*Conctn. ug/L*	*Conctn. ug/L*
Dichlorodifluoromethane	1.0	BDL	BDL			
Chloromethane	1.0	BDL	BDL			
Vinyl chloride	1.0	BDL	BDL			
Bromomethane	2.0	BDL	BDL			
Chloroethane	1.0	BDL	BDL			
Trichlorofluoromethane	1.0	BDL	BDL			
Acrolein	50	BDL	BDL			
Acetone	10	BDL	BDL			
1,1-Dichloroethene	1.0	BDL	BDL			
Iodomethane	1.0	BDL	BDL			
Acrylonitrile	1.0	BDL	BDL			
Methylene chloride	5.0	BDL	BDL			
Carbon disulfide	1.0	BDL	BDL			
trans-1,2-Dichloroethene	1.0	BDL	BDL			
MTBE	1.0	BDL	BDL			
Vinyl acetate	1.0	BDL	BDL			
1,1-Dichloroethane	1.0	BDL	BDL			
MEK (2-Butanone)	10	BDL	BDL			
cis-1,2-Dichloroethene	1.0	BDL	BDL			
Bromochloromethane	1.0	BDL	BDL			
Chloroform	1.0	BDL	BDL			
2,2-Dichloropropane	1.0	BDL	BDL			
1,2-Dichloroethane	1.0	BDL	BDL			
1,1,1-Trichloroethane	1.0	BDL	BDL			
n-Butanol	500	BDL	BDL			
1,1-Dichloropropene	1.0	BDL	BDL			
Carbon tetrachloride	1.0	BDL	BDL			
Benzene	1.0	BDL	BDL			

Clock ID		1B123103VM	2B123103VM			
Compounds	**RDL** **ug/L**	**Conctn.** **ug/L**	**Conctn.** **ug/L**	**Conctn.** **ug/L**	**Conctn.** **ug/L**	**Conctn.** **ug/L**
Dibromomethane	1.0	BDL	BDL			
1,2-Dichloropropane	1.0	BDL	BDL			
Trichloroethene	1.0	BDL	BDL			
Bromodichloromethane	0.60	BDL	BDL			
2-Chloroethylvinyl ether	10	BDL	BDL			
cis-1,3-Dichloropropene	0.20	BDL	BDL			
4-Methyl-2-pentatone (MIBK)	1.0	BDL	BDL			
trans-1,3-Dichloropropene	0.20	BDL	BDL			
1,1,2-Trichloroethane	1.0	BDL	BDL			
Toluene	1.0	BDL	BDL			
1,3-Dichloropropane	1.0	BDL	BDL			
2-Hexanone	10	BDL	BDL			
Dibromochloromethane	0.40	BDL	BDL			
1,2-Dibromoethane (EDB)	1.0	BDL	BDL			
Tetrachloroethene	1.0	BDL	BDL			
1,1,1,2-Tetrachloroethane	1.0	BDL	BDL			
Chlorobenzene	1.0	BDL	BDL			
Ethylbenzene	1.0	BDL	BDL			
Total xylenes	2.0	BDL	BDL			
Bromoform	1.0	BDL	BDL			
cis-1,4-Dichloro-2-butene	1.0	BDL	BDL			
Styrene	1.0	BDL	BDL			
1,1,2,2-Tetrachloroethane	0.20	BDL	BDL			
1,2,3-Trichloropropane	0.20	BDL	BDL			
trans-1,4-Dichloro-2-butene	1.0	BDL	BDL			
Isopropylbenzene	1.0	BDL	BDL			
Bromobenzene	1.0	BDL	BDL			
n-Propylbenzene	1.0	BDL	BDL			
2-Chlorotoluene	1.0	BDL	BDL			
4-Chlorotoluene	1.0	BDL	BDL			
1,3,5-Trimethylbenzene	1.0	BDL	BDL			
tert-Butylbenzene	1.0	BDL	BDL			
1,2,4-Trimethylbenzene	1.0	BDL	BDL			
sec-Butylbenzene	1.0	BDL	BDL			
1,3-Dichlorobenzene	1.0	BDL	BDL			
1,4-Dichlorobenzene	1.0	BDL	BDL			
4-Isopropyltoluene	1.0	BDL	BDL			
1,2-Dichlorobenzene	1.0	BDL	BDL			
n-Butylbenzene	1.0	BDL	BDL			
1,2-Dibromo-3-chloropropane	1.0	BDL	BDL			
1,2,4-Trichlorobenzene	1.0	BDL	BDL			
Naphthalene	1.0	BDL	BDL			
Hexachlorobutadiene	1.0	BDL	BDL			
1,2,3-Trichlorobenzene	1.0	BDL	BDL			

US Biosystems, Inc.

EPA 1311/8260 TCLP BLANK REPORT

Analyst: BL *Workgroup ID:* 100702VMZ

Entered by: BL *Analytical Clock ID:* 1Z100702VM

		Extraction Clock ID				
		1Z123003VMZ				
	Surrogate Limits:	Surrogate Recoveries, %				
Dibromofluoromethane	68-145	101				
Toluene-D8	62-133	122				
4-Bromofluorobenzene	56-135	119				
Date Analyzed		12/31/03				
Time Analyzed		22:17				
Date Prepared		12/30/03				
Time Prepared		17:00				

Compounds	RDL ug/L	Conctn. ug/L	Conctn. ug/L	Conctn. ug/L	Conctn. ug/L	Conctn. ug/L
Dichlorodifluoromethane	100	BDL				
Chloromethane	100	BDL				
Vinyl chloride	100	BDL				
Bromomethane	100	BDL				
Chloroethane	100	BDL				
Trichlorofluoromethane	100	BDL				
Acrolein	100	BDL				
Acetone	100	BDL				
1,1-Dichloroethane	100	BDL				
Iodomethane	100	BDL				
Acrylonitrile	100	BDL				
Methylene chloride	500	BDL				
Carbon disulfide	100	BDL				
trans-1,2-Dichloroethene	100	BDL				
MTBE	100	BDL				
Vinyl Acetate	100	BDL				
1,1-Dichloroethene	100	BDL				
MEK (2-Butanone)	100	BDL				
cis-1,2-Dichloroethene	100	BDL				
Bromochloromethane	100	BDL				
Chloroform	100	BDL				
2,2-Dichloropropane	100	BDL				
1,2-Dichloroethane	100	BDL				
1,1,1-Trichloroethane	100	BDL				
1,1-Dichloropropene	100	BDL				
Carbon tetrachloride	100	BDL				
Benzene	100	BDL				

Clock ID		1Z123003VMZ				
Compounds	**RDL ug/L**	**Conctn. ug/L**	**Conctn. ug/L**	**Conctn. ug/L**	**Conctn. ug/L**	**Conctn. ug/L**
1,2-Dichloropropane	100	BDL				
Trichloroethene	100	BDL				
Bromodichloromethane	60	BDL				
2-Chloroethylvinyl ether	1000	BDL				
cis-1,3-Dichloropropene	20	BDL				
4-Methyl-2-pentatone	100	BDL				
trans-1,3-Dichloropropene	20	BDL				
1,1,2-Trichloroethane	100	BDL				
Toluene	100	BDL				
1,3-Dichloropropane	100	BDL				
2-Hexanone	100	BDL				
Dibromochloromethane	40	BDL				
1,2-Dibromoethane (EDB)	100	BDL				
Tetrachloroethene	100	BDL				
1,1,1,2-Tetrachloromethane	100	BDL				
Chlorobenzene	100	BDL				
Ethylbenzene	100	BDL				
m,p-Xylene	100	BDL				
Bromoform	100	BDL				
cis-1,4-Dichloro-2-butene	100	BDL				
Styrene	100	BDL				
1,1,2,2-Tetrachloroethane	20	BDL				
o-Xylene	100	BDL				
1,2,3-Trichloropropane	20	BDL				
trans-1,4-Dichloro-2-butene	100	BDL				
Isopropylbenzene	100	BDL				
Bromobenzene	100	BDL				
n-Propylbenzene	100	BDL				
2-Chlorotoluene	100	BDL				
4-Chlorotoluene	100	BDL				
1,3,5-Trimethylbenzene	100	BDL				
tert-Butylbenzene	100	BDL				
1,2,4-Trimethylbenzene	100	BDL				
sec-Butylbenzene	100	BDL				
1,3-Dichlorobenzene	100	BDL				
1,4-Dichlorobenzene	100	BDL				
4-Isopropyltoluene	100	BDL				
1,2-Dichlorobenzene	100	BDL				
n-Butylbenzene	100	BDL				
1,2-Dibromo-3-chloropropane	100	BDL				
1,2,4-Trichlorobenzene	100	BDL				
Naphthalene	100	BDL				
Hexachlorobutadiene	100	BDL				
1,2,3-Trichlorobenzene	100	BDL				

US Biosystems, Inc.

TCLP by 8270 BATCH QC REPORT

BLANK(S), LCS, MS, MSD

Log#s: L85130

Analyst LN

Workgroup ID 122703SMA

Extracted by VK

MSAMP ID L85200-1

	Analyte concentrations, mg/L								Recoveries, %						
COMPOUNDS	RDL	Blank (1)	Blank (2)	LCS	MS	MSD	MSAMP*	T.VALUE	LCS	MS	MSD	AVE MS/MSD	Rec limits	% RPD	% RPD limits
Pyridine	0.40	BDL	BDL	0.068	0.071	0.067	0.0	0.25	27	28	27	28	16-47	5.8	30
2-Methylphenol	0.050	BDL	BDL	0.133	0.132	0.135	0.0	0.25	53	53	54	53	25-93	2.2	30
3&4-Methylphenol	0.050	BDL	BDL	0.231	0.228	0.226	0.0	0.50	46	46	45	45	10-107	0.9	30
Hexachloroethane	0.050	BDL	BDL	0.076	0.088	0.090	0.0	0.25	30	35	36	36	15-109	2.2	30
Nitrobenzene	0.050	BDL	BDL	0.144	0.156	0.164	0.0	0.25	58	62	66	64	10-123	5.0	30
Hexachlorobutadiene	0.050	BDL	BDL	0.067	0.079	0.073	0.0	0.25	27	32	29	30	19-126	7.9	30
2,4,6-Trichlorophenol	0.050	BDL	BDL	0.198	0.183	0.187	0.0	0.25	79	73	75	74	44-117	2.2	30
2,4,5-Trichlorophenol	0.050	BDL	BDL	0.210	0.199	0.200	0.0	0.25	84	80	80	80	42-135	0.5	30
2,4-Dinitrotoluene	0.050	BDL	BDL	0.131	0.129	0.146	0.0	0.25	52	52	58	55	14-131	12	30
Hexachlorobenzene	0.050	BDL	BDL	0.142	0.150	0.163	0.0	0.25	57	60	65	63	35-140	8.3	30
Pentachlorophenol	0.25	BDL	BDL	0.227	0.210	0.241	0.0	0.25	91	84	96	90	20-151	14	30

		SURROGATE RECOVERIES, %						Rec limits
2-Fluorophenol		28	34	32	32	33	32	10-115
Phenol-d5		16	18	20	20	20	18	10-137
Nitrobenzene-d5		65	58	54	56	60	62	28-128
2-Fluorobiphenyl		56	51	48	49	54	60	45-126
2,4,6-Tribromophenol		56	53	60	59	59	60	51-134
Terphenyl-d14		61	57	53	49	57	48	50-146
Run ID (Clock ID)		2C010204SM	1C010204SM	2C010204SM	2C010204SM	2C010204SM	1C010204SM	
Date Analyzed		01/03/04	01/03/04	01/03/04	01/03/04	01/03/04	01/02/04	
Time Analyzed								
Date Extracted		01/02/04	01/02/04	01/02/04	01/02/04	01/02/04	01/02/04	
Time Extracted								
Date Leached		12/30/03	12/30/03	12/30/03	12/30/03	12/30/03	12/30/03	

Comments:

** 0 .0= BDL*

KEY: RDL=Reportable Detection Limit, **MDL**=Method Detection Limit, **LCS(D)**= Laboratory Control Spike (Duplicate), **MS(D)**= Matrix Spike (Duplicate), **MSAMP**= Matrix Sample spiked, **AVE**=Average
RPD= Relative Percent Difference, **Workgroup**= Batch, **Run ID (Clock ID)**= Calibration Check Standards(instrument checks), **Flags**= QC has not met criteria.

L85130

Method 8280 - Blank Results

LMB

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	100				
1,2,3,7,8-PeCDD	ND	100				
1,2,3,4,7,8-HxCDD	ND	250				
1,2,3,6,7,8-HxCDD	ND	250				
1,2,3,7,8,9-HxCDD	ND	250				
1,2,3,4,6,7,8-HpCDD	ND	250				
OCDD	ND	500				
2,3,7,8--TCDF	ND	100				
1,2,3,7,8-PeCDF	ND	100				
2,3,4,7,8-PeCDF	ND	100				
1,2,3,4,7,8-HxCDF	ND	250				
1,2,3,6,7,8-HxCDF	ND	250				
2,3,4,6,7,8-HxCDF	ND	250				
1,2,3,7,8,9-HxCDF	ND	250				
1,2,3,4,6,7,8-HpCDF	ND	250				
1,2,3,4,7,8,9-HpCDF	ND	250				
OCDF	ND	500				
Total TCDDs	ND	100				
Total PeCDDs	ND	100				
Total HxCDDs	ND	250				
Total HpCDDs	ND	250				
Total TCDFs	ND	100	73.1			I
Total PeCDFs	ND	100				
Total HxCDFs	ND	250				
Total HpCDFs	ND	250				
TEQ (ND=0)	0.000		0.000			ITEF
TEQ (ND=½)	199		199			ITEF

Sample Information

Matrix: Sediment
Weight / Volume: 10.00 Grams
Solids / Lipids: 100 %
Original pH : NA
Batch ID: WG10131

Laboratory Information

Sample ID: LMB10131-A

Extraction Date: 06-Jan-04
Analysis Date: 07-Jan-04

Filename: 0107506
Retchk: 0107501
Begin ConCal: 0107502
End ConCal: 0107518
Initial Cal: m8280-5042903

Method 8280 - Blank Results

LMB

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	44.0	88.0	24:44	0.74	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	45.1	90.2	30:22	1.26	
$^{13}C_{12}$-OCDD	100	74.0	74.0	35:38	0.89	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	40.3	80.7	24:05	0.79	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	94.4	94.4	31:52	1.07	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	22.3	89.3	24:44		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:14	0.82	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:33	1.26	

Sample Information

Matrix:	Sediment	
Weight / Volume:	10.00	Grams
Solids / Lipids:	100	%
Original pH :	NA	
Batch ID:	WG10131	
Filename:	0107506	
Retchk:	0107501	
Begin ConCal:	0107502	
End ConCal:	0107518	
Initial Cal:	m8280-5042903	

Laboratory Information

Sample ID: LMB10131-A

Extraction Date: 06-Jan-04
Analysis Date: 07-Jan-04

Analyzed by: JWP
Date: 01-12-04

Reviewed by:
Date: 1/12/04

L85130

Analytical Results
for
Ongoing Precision Result (OPR)

Analyte	Spiked pg/ul	AMT pg/ul	REC %	Range % *		Flag
				Lower	Upper	
2,3,7,8-TCDD	100	101	101	70.0	130	
1,2,3,7,8-PeCDD	500	552	110	70.0	130	
1,2,3,4,7,8-HxCDD	500	477	95.4	70.0	130	
1,2,3,6,7,8-HxCDD	500	544	109	70.0	130	
1,2,3,7,8,9-HxCDD	500	495	99.0	70.0	130	
1,2,3,4,6,7,8-HpCDD	500	537	107	70.0	130	
OCDD	1000	1156	116	70.0	130	
2,3,7,8-TCDF	100	107	107	70.0	130	
1,2,3,7,8-PeCDF	500	586	117	70.0	130	
2,3,4,7,8-PeCDF	500	598	120	70.0	130	
1,2,3,4,7,8-HxCDF	500	479	95.9	70.0	130	
1,2,3,6,7,8-HxCDF	500	537	107	70.0	130	
2,3,4,6,7,8-HxCDF	500	545	109	70.0	130	
1,2,3,7,8,9-HxCDF	500	491	98.2	70.0	130	
1,2,3,4,6,7,8-HpCDF	500	533	107	70.0	130	
1,2,3,4,7,8,9-HpCDF	500	506	101	70.0	130	
OCDF	1000	1136	114	70.0	130	

= Outside range limits
* = Ion Ratio Out

QC Information

OPR Project No: OPR10131
Extraction Date: 06-Jan-04
Analysis Date: 7-JAN-04
Method: 8280

File Information

OPR Filename : 0107504
Retchk: 0107501
Begin ConCal: 0107502
End ConCal: 0107518
Initial Cal: m8280-5042903

Sample Information

Matrix: Sediment

Analytical Results
for
Ongoing Precision Result (OPR)

Labeled Standard	Spiked pg/ul	AMT pg/ul	REC %	Range pg/ul Lower	Range pg/ul Upper	Flag
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	500	436	87.2	25.0	150	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	500	498	99.6	25.0	150	
$^{13}C_{12}$-OCDD	1000	828	82.8	25.0	150	
$^{13}C_{12}$-2,3,7,8-TCDF	500	430	86.1	25.0	150	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1000	989	98.9	25.0	150	
Cleanup Standards						
$^{37}C_{14}$-2,3,7,8-TCDD	250	210	83.9	70.0	130	

QC Information

OPR Project No:	OPR10131
Extraction Date:	06-Jan-04
Analysis Date:	7-JAN-04
Method:	8280

File Information

OPR Filename :	0107504
Retchk:	0107501
Begin ConCal:	0107502
End ConCal:	0107518
Initial Cal:	m8280-5042903

Sample Information

Matrix: Sediment

Reviewed by: ________

Date Reviewed: 1/12/04

L86150

Method 8280 - Blank Results

LMB

Analytical Data Summary Sheet

nalyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-T DD	ND	100				
1,2,3,7,8 CDD	ND	100				
1,2,3,4,7 HxCDD	ND	250				
1,2,3,6,7 HxCDD	ND	250				
1,2,3,7,8 HxCDD	ND	250				
1,2,3,4,6 3-HpCDD	ND	250				
OCDD	ND	500				
2,3,7,8-- DF	ND	100				
1,2,3,7,8 CDF	ND	100				
2,3,4,7,8- CDF	ND	100				
1,2,3,4,7 HxCDF	ND	250				
1,2,3,6,7 -HxCDF	ND	250				
2,3,4,6,7 -HxCDF	ND	250				
1,2,3,7,8 HxCDF	ND	250				
1,2,3,4,6 3-HpCDF	ND	250				
1,2,3,4,7 9-HpCDF	ND	250				
OCDF	ND	500				
Total T Ds	ND	100				
Total Pe DDs	ND	100				
Total Hx DDs	ND	250				
Total H DDs	ND	250				
Total T Fs	ND	100	50.1			I
Total P DFs	ND	100				
Total H DFs	ND	250				
Total H DFs	ND	250				
TEQ (-0)	0.000		0.000			ITEF
TEQ (½)	199		199			ITEF

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	10.00	Grams
Solids / Lipids:	100	%
Original pH :	NA	
Batch ID:	WG10138	
Filename:	0114506	
Retchk:	0114501	
Begin ConCal:	0114502	
End ConCal:	0114507	
Initial Cal:	m8280-5042903	

Labora y Information

Sample :	LMB10138-A
Extraction Date:	09-Jan-04
Analysis Date:	14-Jan-04

Method 8280 - Blank Results

LMB

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	48.7	97.3	24:44	0.75	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	47.8	95.6	30:22	1.25	
$^{13}C_{12}$-OCDD	100	83.3	83.3	35:39	0.92	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	44.8	89.6	24:04	0.79	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	95.8	95.8	31:52	1.07	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	23.4	93.4	24:44		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:13	0.81	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:33	1.27	

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	10.00	Grams
Solids / Lipids:	100	%
Original pH :	NA	
Batch ID:	WG10138	

Laborato Information

Sample II LMB10138-A

Extractio te: 09-Jan-04

Analysis e: 14-Jan-04

Analyzed : JWP

D : 01-15-04

Filename:	0114506
Retchk:	0114501
Begin ConCal:	0114502
End ConCal:	0114507
Initial Cal:	m8280-5042903

Reviewed by:

Date: 1/15/04

Analytical Results
for
Ongoing Precision Result (OPR)

Analyte	Spiked pg/ul	AMT pg/ul	REC %	Range % * Lower	Upper	Flag
2,3,7,8-TCDD	100	100	100	70.0	130	
1,2,3,7,8-PeCDD	500	545	109	70.0	130	
1,2,3,4,7,8-HxCDD	500	471	94.2	70.0	130	
1,2,3,6,7,8-HxCDD	500	499	99.9	70.0	130	
1,2,3,7,8,9-HxCDD	500	458	91.7	70.0	130	
1,2,3,4,6,7,8-HpCDD	500	544	109	70.0	130	
OCDD	1000	1065	106	70.0	130	
2,3,7,8-TCDF	100	103	103	70.0	130	
1,2,3,7,8-PeCDF	500	552	110	70.0	130	
2,3,4,7,8-PeCDF	500	557	111	70.0	130	
1,2,3,4,7,8-HxCDF	500	461	92.1	70.0	130	
1,2,3,6,7,8-HxCDF	500	499	99.7	70.0	130	
2,3,4,6,7,8-HxCDF	500	524	105	70.0	130	
1,2,3,7,8,9-HxCDF	500	497	99.4	70.0	130	
1,2,3,4,6,7,8-HpCDF	500	515	103	70.0	130	
1,2,3,4,7,8,9-HpCDF	500	521	104	70.0	130	
OCDF	1000	1075	108	70.0	130	

= Outside range limits
* = Ion Ratio Out

QC Information

OPR Project No:	OPR10138
Extraction Date:	09-Jan-04
Analysis Date:	14-JAN-04
Method:	8280

File Information

OPR Filename :	0114504
Retchk:	0114501
Begin ConCal:	0114502
End ConCal:	0114507
Initial Cal:	m8280-5042903

Sample Information

Matrix: Soil

Analytical Results
for
Ongoing Precision Result (OPR)

Labeled Standard	Spiked pg/ul✓	AMT pg/ul	REC %	Range pg/ul		Flag
				Lower	Upper	
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	500	457	91.3	25.0	150	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	500	514	103	25.0	150	
$^{13}C_{12}$-OCDD	1000	881	88.1	25.0	150	
$^{13}C_{12}$-2,3,7,8-TCDF	500	470	93.9	25.0	150	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1000	1014	101	25.0	150	
Cleanup Standards						
$^{37}C_{14}$-2,3,7,8-TCDD	250	220	88.0	70.0	130	

QC Information

OPR Project No: OPR10138
Extraction Date: 09-Jan-04
Analysis Date: 14-JAN-04
Method: 8280

File Information

OPR Filename : 0114504
Retchk: 0114501
Begin ConCal: 0114502
End ConCal: 0114507
Initial Cal: m8280-5042903

Sample Information

Matrix: Soil

Reviewed by: ________

Date Reviewed: 1/15/04

Additional Information for Sampling Procedures for Client PHS Projects: L85129 & L85130

- Sampling Locations were not flagged by client with a Global Positioning System (GPS).

USB Field Sampling Team located 6 sampling sites determined by geographical reference of the canal. See attached field notes for a more detailed description of each sampling point.

- The depth of each sampling point varied from 2.25 feet to 5.6 feet. The number of sub-samples was one sample per a foot of sediment.
- Six samples, evenly dispersed throughout the canal, each consisting of the entire vertical thickness of sediment, from the surface to the bedrock at each location.

Please see existing documentation & US Biosystems Field Sampling Log sheets (003902).

US BIOSYSTEMS Field Sampling Log

Arrived on Site Date 12/26/03 Time: 12:30 Departed Site 12/26/03 Time: 14:45
Sampler's Signature Phill Taylor Jr. Sampler's Name(Printed) Phill Taylor, Jr.

CLIENT NAME: PHS Engineers PROJECT NAME: Wagner Creek
CLIENT Contact: Stanley Lewis SITE Contact:
Personnel on Site; U.S. Biosystems / Phill Taylor, Jr. / Brad Blackman / Eric Cassivant
SITE Location: Miami
Ambient Conditions:
Brief Description of Field Activities: Sediment Sampling

Field Equipment to be utilized: Sampling Boat & Soil Collector; Tape Measure

Decon Procedures: [✓ Yes] / No If Yes. Please describe Three to four rinses after each sample.

Field Filtering: Yes / [✓ No] If Yes, Please describe NO

Sample Matrix: DW GW WW SU STW SO [✓ SE] ML Other:
Physical Characteristics of Sample: trash, weeds
Sampling Method: GRAB ______ COMPOSITE ✓
For Composite Sampling; Document Sampling Procedure for Collecting a Representative Sample : Vertical thickness of sediment
QC Blanks: __PreCleaned EQB __ Field Cleaned EQB __ Field Blanks __ Trip Blanks
QC Samples: ___ Duplicate ___ Replicate Samples ___ Split Samples (explain below)
More Details;

Sx. Location	*Date and Time*	*Parameters*	*Appearance Odor*	*Other*
WC 6		Total metals, dioxins		
WC 5	122603 12:55	TCLP Cd, Cr, Pb, Hg	none	Wet
WC 4	13:15			
WC 3	13:30			
WC 2	13:45			
WC 1	14:00			

14:15

Calibration of Meters

Meter	Y / N	Standard	Slope	Variance	Temp(If Applicable)	Value
N/A						

Other Notation's or Anomalies: N/A

Wagner Creek

12-2603

MC 6 @ 12:55 Depth 3.10

TAKin between Bridge walkway on pipe across canal

MC5 @ 13:15 Depth 2.80

TAKIN @ 1st white condo (ON left hand side) across from 1story flatroof bldg

MC4 @ 13:30 Depth 3.50

TAKIN @ 2nd white cond on left by steak w/ORANge tape

MC3 @ 13:45 Depth 3.26

Talking past power lines @ concrete onleft - gaurd rail on Right

MC 2 @ 14:00 Depth 2.43

TAKin where canal slightly curves - birdcages hanging on Fence

MC1 @ 14:15 Depth 2.80

TAKin @ End @ bridge

USBiosystems

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 1 of 5
Date: 01/13/2004
Log #: L85130-1

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-1
Date Sampled: 12/26/2003
Time Sampled: 14:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Extraction Date							
TCLP Extraction	12/30	date	1311 EXTR				EB
TCLP ZHE Extraction	12/30	date	1311 ZHE				SV
TCLP Volatile Organic Compounds							
Acetone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromodichloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromoform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
sec-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
tert-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Disulfide	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Tetrachloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromo-3-Chloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromoethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,4-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
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Attn: Stanley Lewis

Page: Page 2 of 5
Date: 01/13/2004
Log #: L85130-1

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-1
Date Sampled: 12/26/2003
Time Sampled: 14:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Dichlorodifluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Ethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Hexachlorobutadiene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Hexanone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Isopropyl Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Isopropyl Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MEK(2-Butanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Methylene Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MIBK(4-Methyl-2-Pentanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
MTBE	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Naphthalene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Propylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Styrene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Tetrachloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Total Xylenes	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichlorofluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3,5-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Vinyl Acetate	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 3 of 5
Date: 01/13/2004
Log #: L85130-1

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-1
Date Sampled: 12/26/2003
Time Sampled: 14:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Vinyl Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dilution Factor	1.0		5030/8260		01/01	01/01	SV
Surrogate Recoveries:							
Dibromofluoromethane	99	%	5030/8260	68-145	01/01	01/01	SV
Toluene-D8	98	%	5030/8260	62-133	01/01	01/01	SV
4-Bromofluorobenzene	92	%	5030/8260	56-135	01/01	01/01	SV
TCLP 8270 Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Aniline	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Phenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Chlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	5.0	01/02	01/02	GM
Benzyl Alcohol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Methylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Chloroisopropyl) Ether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
3&4-Methylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachloroethane	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Nitrobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Isophorone	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Nitrophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4-Dimethylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Chloroethoxy)methane	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzoic Acid	BDL	ug/l	3510/8270	50	01/02	01/02	GM
2,4-Dichlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Naphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Chloroaniline	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachlorobutadiene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Chloro-3-Methylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Methylnaphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1-Methylnaphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachlorocyclopentadiene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4,6-Trichlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4,5-Trichlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 4 of 5
Date: 01/13/2004
Log #: L85130-1

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-1
Date Sampled: 12/26/2003
Time Sampled: 14:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
2-Chloronaphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Nitroaniline	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Dimethylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Acenaphthylene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
3-Nitroaniline	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Acenaphthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4-Dinitrophenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Dibenzofuran	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Nitrophenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Diethylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Fluorene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Nitroaniline	BDL	ug/l	3510/8270	50	01/02	01/02	GM
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Pentachlorophenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Anthracene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Phenanthrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Carbazole	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Di-N-Butylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Fluoranthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzidine	BDL	ug/l	3510/8270	80	01/02	01/02	GM
Pyrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Butylbenzylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[a]anthracene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	20	01/02	01/02	GM
Chrysene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Ethylhexyl)Phthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Di-N-Octylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[b]fluoranthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[k]fluoranthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[a]pyrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Indeno[1,2,3-cd]pyrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Dibenzo[a,h]Anthracene	BDL	ug/l	3510/8270	10	01/02	01/02	GM

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Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 5 of 5
Date: 01/13/2004
Log #: L85130-1

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-1
Date Sampled: 12/26/2003
Time Sampled: 14:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
Benzo[g,h,i]perylene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Dilution Factor	1.0		3510/8270		01/02	01/02	GM
Surrogate Recoveries:							
2-Fluorophenol	36	%	3510/8270	10-115	01/02	01/02	GM
Phenol-d5	20	%	3510/8270	10-137	01/02	01/02	GM
Nitrobenzene-d5	63	%	3510/8270	18-128	01/02	01/02	GM
2-Fluorobiphenyl	57	%	3510/8270	45-126	01/02	01/02	GM
2,4,6-Tribromophenol	65	%	3510/8270	51-134	01/02	01/02	GM
Terphenyl-d14	45	%	3510/8270	50-146	01/02	01/02	GM
Subcontracted Services							
Subcontract Lab 1	E87634		8280				SUB
TCLP Metals							
Arsenic	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Barium	0.18	mg/l	3010/6010	0.010	12/31	01/02	SB
Cadmium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Chromium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Lead	0.0077	mg/l	3010/6010	0.0050	12/31	01/02	SB
Selenium	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Silver	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Mercury	BDL	mg/l	7470	0.00020	01/02	01/02	WM
Field Services							
Sampling Method 1	Composite		All		12/26	12/26	PT

All analyses were performed using EPA, ASTM, NIOSH, USGS, or Standard Methods and certified to meet NELAC requirements.
Flags: BDL or U-below reporting limit; DL-diluted out; IL-meets internal lab limits; MI-matrix interference; NA-not appl.
Flags: CFR-Pb/Cu rule; ND-non detect(RL estimated); NFL-no free liquids; dw-dry wt; ww-wet wt; C(#)-see attached USB code
FLDEP Flags: J(#)-estimated 1:surr. fail 2:no known QC req. 3:QC fail %R or %RPD; 4:matrix int. 5:improper fld. protocol
FLDEP Flags: L-exceeds calibration; Q-holding time exceeded; T-value < MDL; V-present in blank
FLDEP Flags: Y-improper preservation; B-colonies exceed range; I-result between MDL and PQL

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
USACE
VA CERT# 00395

DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240

NC CERT# 444
IL CERT# 200020

Respectfully submitted,

LouAnn Jones
Project Manager

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 1 of 5
Date: 01/13/2004
Log #: L85130-2

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-2
Date Sampled: 12/26/2003
Time Sampled: 14:00
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Extraction Date							
TCLP Extraction	12/30	date	1311 EXTR				EB
TCLP ZHE Extraction	12/30	date	1311 ZHE				SV
TCLP Volatile Organic Compounds							
Acetone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromodichloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromoform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
sec-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
tert-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Disulfide	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Tetrachloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromo-3-Chloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromoethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,4-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
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Page: Page 2 of 5
Date: 01/13/2004
Log #: L85130-2

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-2
Date Sampled: 12/26/2003
Time Sampled: 14:00
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Dichlorodifluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Ethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Hexachlorobutadiene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Hexanone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Isopropyl Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Isopropyl Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MEK(2-Butanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Methylene Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MIBK(4-Methyl-2-Pentanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
MTBE	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Naphthalene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Propylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Styrene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Tetrachloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Total Xylenes	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichlorofluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3,5-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Vinyl Acetate	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
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Attn: Stanley Lewis

Page: Page 3 of 5
Date: 01/13/2004
Log #: L85130-2

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-2
Date Sampled: 12/26/2003
Time Sampled: 14:00
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Vinyl Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dilution Factor	1.0		5030/8260		01/01	01/01	SV
Surrogate Recoveries:							
Dibromofluoromethane	101	%	5030/8260	68-145	01/01	01/01	SV
Toluene-D8	104	%	5030/8260	62-133	01/01	01/01	SV
4-Bromofluorobenzene	100	%	5030/8260	56-135	01/01	01/01	SV
TCLP 8270 Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Aniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Chlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzyl Alcohol	BDL	ug/l	3510/8270	6.5	01/02	01/02	GM
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroisopropyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3&4-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachloroethane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Nitrobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Isophorone	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitrophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dimethylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethoxy)methane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzoic Acid	BDL	ug/l	3510/8270	65	01/02	01/02	GM
2,4-Dichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Naphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloroaniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobutadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloro-3-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorocyclopentadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,6-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,5-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Date: 01/13/2004
Log #: L85130-2

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-2
Date Sampled: 12/26/2003
Time Sampled: 14:00
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
2-Chloronaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dimethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Acenaphthylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Acenaphthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dibenzofuran	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Diethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluorene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Pentachlorophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenanthrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Carbazole	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Butylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzidine	BDL	ug/l	3510/8270	100	01/02	01/02	GM
Pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Butylbenzylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	26	01/02	01/02	GM
Chrysene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Ethylhexyl)Phthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Octylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[b]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[k]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Indeno[1,2,3-cd]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dibenzo[a,h]Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM

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Page: Page 5 of 5
Date: 01/13/2004
Log #: L85130-2

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-2
Date Sampled: 12/26/2003
Time Sampled: 14:00
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
Benzo[g,h,i]perylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dilution Factor	1.3		3510/8270		01/02	01/02	GM
Surrogate Recoveries:							
2-Fluorophenol	35	%	3510/8270	10-115	01/02	01/02	GM
Phenol-d5	19	%	3510/8270	10-137	01/02	01/02	GM
Nitrobenzene-d5	74	%	3510/8270	18-128	01/02	01/02	GM
2-Fluorobiphenyl	64	%	3510/8270	45-126	01/02	01/02	GM
2,4,6-Tribromophenol	67	%	3510/8270	51-134	01/02	01/02	GM
Terphenyl-d14	52	%	3510/8270	50-146	01/02	01/02	GM
Subcontracted Services							
Subcontract Lab 1	E87634		8280				SUB
TCLP Metals							
Arsenic	0.010	mg/l	3010/6010	0.010	12/31	01/02	SB
Barium	0.30	mg/l	3010/6010	0.010	12/31	01/02	SB
Cadmium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Chromium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Lead	0.012	mg/l	3010/6010	0.0050	12/31	01/02	SB
Selenium	0.010	mg/l	3010/6010	0.010	12/31	01/02	SB
Silver	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Mercury	BDL	mg/l	7470	0.00020	01/02	01/02	WM
Field Services							
Sampling Method 1	Composite		All		12/26	12/26	PT

All analyses were performed using EPA, ASTM, NIOSH, USGS, or Standard Methods and certified to meet NELAC requirements.
Flags: BDL or U-below reporting limit; DL-diluted out; IL-meets internal lab limits; MI-matrix interference; NA-not appl.
Flags: CFR-Pb/Cu rule; ND-non detect(RL estimated); NFL-no free liquids; dw-dry wt; ww-wet wt; C(#)-see attached USB code
FLDEP Flags: J(#)-estimated 1:surr. fail 2:no known QC req. 3:QC fail %R or %RPD; 4:matrix int. 5:improper fld. protocol
FLDEP Flags: L-exceeds calibration; Q-holding time exceeded; T-value < MDL; V-present in blank
FLDEP Flags: Y-improper preservation; B-colonies exceed range; I-result between MDL and PQL

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
USACE
VA CERT# 00395

DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240

NC CERT# 444
IL CERT# 200020

Respectfully submitted,

LouAnn Jones
Project Manager

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 1 of 5
Date: 01/13/2004
Log #: L85130-3

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-3
Date Sampled: 12/26/2003
Time Sampled: 13:45
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Extraction Date							
TCLP Extraction	12/30	date	1311 EXTR				EB
TCLP ZHE Extraction	12/30	date	1311 ZHE				SV
TCLP Volatile Organic Compounds							
Acetone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromodichloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromoform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
sec-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
tert-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Disulfide	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Tetrachloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromo-3-Chloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromoethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,4-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

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Date: 01/13/2004
Log #: L85130-3

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-3
Date Sampled: 12/26/2003
Time Sampled: 13:45
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Dichlorodifluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Ethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Hexachlorobutadiene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Hexanone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Isopropyl Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Isopropyl Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MEK(2-Butanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Methylene Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MIBK(4-Methyl-2-Pentanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
MTBE	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Naphthalene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Propylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Styrene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Tetrachloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Total Xylenes	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichlorofluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3,5-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Vinyl Acetate	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
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Date: 01/13/2004
Log #: L85130-3

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-3
Date Sampled: 12/26/2003
Time Sampled: 13:45
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Vinyl Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dilution Factor	1.0		5030/8260		01/01	01/01	SV
Surrogate Recoveries:							
Dibromofluoromethane	104	%	5030/8260	68-145	01/01	01/01	SV
Toluene-D8	108	%	5030/8260	62-133	01/01	01/01	SV
4-Bromofluorobenzene	106	%	5030/8260	56-135	01/01	01/01	SV
TCLP 8270 Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Aniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Chlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	6.5	01/02	01/02	GM
Benzyl Alcohol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroisopropyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3&4-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachloroethane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Nitrobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Isophorone	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitrophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dimethylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethoxy)methane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzoic Acid	BDL	ug/l	3510/8270	65	01/02	01/02	GM
2,4-Dichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Naphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloroaniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobutadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloro-3-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorocyclopentadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,6-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,5-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
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Miami, FL 33137
Attn: Stanley Lewis

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Date: 01/13/2004
Log #: L85130-3

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-3
Date Sampled: 12/26/2003
Time Sampled: 13:45
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
2-Chloronaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dimethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Acenaphthylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Acenaphthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dibenzofuran	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Diethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluorene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Pentachlorophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenanthrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Carbazole	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Butylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzidine	BDL	ug/l	3510/8270	100	01/02	01/02	GM
Pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Butylbenzylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	26	01/02	01/02	GM
Chrysene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Ethylhexyl)Phthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Octylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[b]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[k]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Indeno[1,2,3-cd]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dibenzo[a,h]Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
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Date: 01/13/2004
Log #: L85130-3

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-3
Date Sampled: 12/26/2003
Time Sampled: 13:45
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
Benzo[g,h,i]perylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dilution Factor	1.3		3510/8270		01/02	01/02	GM
Surrogate Recoveries:							
2-Fluorophenol	36	%	3510/8270	10-115	01/02	01/02	GM
Phenol-d5	21	%	3510/8270	10-137	01/02	01/02	GM
Nitrobenzene-d5	75	%	3510/8270	18-128	01/02	01/02	GM
2-Fluorobiphenyl	68	%	3510/8270	45-126	01/02	01/02	GM
2,4,6-Tribromophenol	67	%	3510/8270	51-134	01/02	01/02	GM
Terphenyl-d14	60	%	3510/8270	50-146	01/02	01/02	GM
Subcontracted Services							
Subcontract Lab 1	E87634		8280				SUB
TCLP Metals							
Arsenic	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Barium	0.61	mg/l	3010/6010	0.010	12/31	01/02	SB
Cadmium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Chromium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Lead	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Selenium	0.019	mg/l	3010/6010	0.010	12/31	01/02	SB
Silver	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Mercury	BDL	mg/l	7470	0.00020	01/02	01/02	WM
Field Services							
Sampling Method 1	Composite		All		12/26	12/26	PT

All analyses were performed using EPA, ASTM, NIOSH, USGS, or Standard Methods and certified to meet NELAC requirements.
Flags: BDL or U-below reporting limit; DL-diluted out; IL-meets internal lab limits; MI-matrix interference; NA-not appl.
Flags: CFR-Pb/Cu rule; ND-non detect(RL estimated); NFL-no free liquids; dw-dry wt; ww-wet wt; C(#)-see attached USB code
FLDEP Flags: J(#)-estimated 1:surr. fail 2:no known QC req. 3:QC fail %R or %RPD; 4:matrix int. 5:improper fld. protocol
FLDEP Flags: L-exceeds calibration; Q-holding time exceeded; T-value < MDL; V-present in blank
FLDEP Flags: Y-improper preservation; B-colonies exceed range; I-result between MDL and PQL

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
USACE
VA CERT# 00395

DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240

NC CERT# 444
IL CERT# 200020

Respectfully submitted,

LouAnn Jones
Project Manager

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

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Date: 01/13/2004
Log #: L85130-4

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-4
Date Sampled: 12/26/2003
Time Sampled: 13:30
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Extraction Date							
TCLP Extraction	12/30	date	1311 EXTR				EB
TCLP ZHE Extraction	12/30	date	1311 ZHE				SV
TCLP Volatile Organic Compounds							
Acetone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromodichloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromoform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
sec-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
tert-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Disulfide	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Tetrachloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromo-3-Chloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromoethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,4-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
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Date: 01/13/2004
Log #: L85130-4

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-4
Date Sampled: 12/26/2003
Time Sampled: 13:30
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Dichlorodifluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Ethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Hexachlorobutadiene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Hexanone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Isopropyl Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Isopropyl Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MEK(2-Butanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Methylene Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MIBK(4-Methyl-2-Pentanone)	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
MTBE	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Naphthalene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Propylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Styrene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Tetrachloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Total Xylenes	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichlorofluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3,5-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Vinyl Acetate	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

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Date: 01/13/2004
Log #: L85130-4

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-4
Date Sampled: 12/26/2003
Time Sampled: 13:30
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	**Results**	**Units**	**Method**	**Reportable Limit**	**Extr. Date**	**Anly. Date**	**Analyst**
TCLP Volatile Organic Compounds	**(continued)**						
Vinyl Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dilution Factor	1.0		5030/8260		01/01	01/01	SV
Surrogate Recoveries:							
Dibromofluoromethane	103	%	5030/8260	68-145	01/01	01/01	SV
Toluene-D8	103	%	5030/8260	62-133	01/01	01/01	SV
4-Bromofluorobenzene	93	%	5030/8260	56-135	01/01	01/01	SV
TCLP 8270 Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Aniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Chlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzyl Alcohol	BDL	ug/l	3510/8270	6.5	01/02	01/02	GM
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroisopropyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3&4-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachloroethane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Nitrobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Isophorone	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitrophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dimethylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethoxy)methane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzoic Acid	BDL	ug/l	3510/8270	65	01/02	01/02	GM
2,4-Dichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Naphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloroaniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobutadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloro-3-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorocyclopentadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,6-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,5-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
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Date: 01/13/2004
Log #: L85130-4

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-4
Date Sampled: 12/26/2003
Time Sampled: 13:30
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
2-Chloronaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dimethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Acenaphthylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Acenaphthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dibenzofuran	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Diethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluorene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Pentachlorophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenanthrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Carbazole	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Butylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzidine	BDL	ug/l	3510/8270	100	01/02	01/02	GM
Pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Butylbenzylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Chrysene	BDL	ug/l	3510/8270	26	01/02	01/02	GM
Bis(2-Ethylhexyl)Phthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Octylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[b]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[k]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Indeno[1,2,3-cd]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dibenzo[a,h]Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
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Attn: Stanley Lewis

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Date: 01/13/2004
Log #: L85130-4

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-4
Date Sampled: 12/26/2003
Time Sampled: 13:30
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
Benzo[g,h,i]perylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dilution Factor	1.3		3510/8270		01/02	01/02	GM
Surrogate Recoveries:							
2-Fluorophenol	34	%	3510/8270	10-115	01/02	01/02	GM
Phenol-d5	22	%	3510/8270	10-137	01/02	01/02	GM
Nitrobenzene-d5	65	%	3510/8270	18-128	01/02	01/02	GM
2-Fluorobiphenyl	60	%	3510/8270	45-126	01/02	01/02	GM
2,4,6-Tribromophenol	64	%	3510/8270	51-134	01/02	01/02	GM
Terphenyl-d14	52	%	3510/8270	50-146	01/02	01/02	GM
Subcontracted Services							
Subcontract Lab 1	E87634		8280				SUB
TCLP Metals							
Arsenic	0.013	mg/l	3010/6010	0.010	12/31	01/02	SB
Barium	0.27	mg/l	3010/6010	0.010	12/31	01/02	SB
Cadmium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Chromium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Lead	0.0056	mg/l	3010/6010	0.0050	12/31	01/02	SB
Selenium	0.011	mg/l	3010/6010	0.010	12/31	01/02	SB
Silver	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Mercury	BDL	mg/l	7470	0.00020	01/02	01/02	WM
Field Services							
Sampling Method 1	Composite		All		12/26	12/26	PT

All analyses were performed using EPA, ASTM, NIOSH, USGS, or Standard Methods and certified to meet NELAC requirements.
Flags: BDL or U-below reporting limit; DL-diluted out; IL-meets internal lab limits; MI-matrix interference; NA-not appl.
Flags: CFR-Pb/Cu rule; ND-non detect(RL estimated); NFL-no free liquids; dw-dry wt; ww-wet wt; C(#)-see attached USB code
FLDEP Flags: J(#)-estimated 1:surr. fail 2:no known QC req. 3:QC fail %R or %RPD; 4:matrix int. 5:improper fld. protocol
FLDEP Flags: L-exceeds calibration; Q-holding time exceeded; T-value < MDL; V-present in blank
FLDEP Flags: Y-improper preservation; B-colonies exceed range; I-result between MDL and PQL

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
USACE
VA CERT# 00395

DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240

NC CERT# 444
IL CERT# 200020

Respectfully submitted,

LouAnn Jones
Project Manager

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 1 of 5
Date: 01/13/2004
Log #: L85130-5

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-5
Date Sampled: 12/26/2003
Time Sampled: 13:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Extraction Date							
TCLP Extraction	12/30	date	1311 EXTR				EB
TCLP ZHE Extraction	12/30	date	1311 ZHE				SV
TCLP Volatile Organic Compounds							
Acetone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromodichloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromoform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
sec-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
tert-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Disulfide	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Tetrachloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromo-3-Chloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromoethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,4-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
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Page: Page 2 of 5
Date: 01/13/2004
Log #: L85130-5

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-5
Date Sampled: 12/26/2003
Time Sampled: 13:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Dichlorodifluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Ethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Hexachlorobutadiene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Hexanone	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Isopropyl Benzene	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
4-Isopropyl Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MEK(2-Butanone)	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Methylene Chloride	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
MIBK(4-Methyl-2-Pentanone)	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MTBE	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Naphthalene	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
n-Propylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Styrene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Tetrachloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Total Xylenes	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichlorofluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3,5-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Vinyl Acetate	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
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Page: Page 3 of 5
Date: 01/13/2004
Log #: L85130-5

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-5
Date Sampled: 12/26/2003
Time Sampled: 13:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Vinyl Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dilution Factor	1.0		5030/8260		01/01	01/01	SV
Surrogate Recoveries:							
Dibromofluoromethane	109	%	5030/8260	68-145	01/01	01/01	SV
Toluene-D8	112	%	5030/8260	62-133	01/01	01/01	SV
4-Bromofluorobenzene	106	%	5030/8260	56-135	01/01	01/01	SV
TCLP 8270 Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Aniline	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Phenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Chlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	5.0	01/02	01/02	GM
Benzyl Alcohol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Methylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Chloroisopropyl) Ether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
3&4-Methylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachloroethane	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Nitrobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Isophorone	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Nitrophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4-Dimethylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Chloroethoxy)methane	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzoic Acid	BDL	ug/l	3510/8270	50	01/02	01/02	GM
2,4-Dichlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Naphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Chloroaniline	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachlorobutadiene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Chloro-3-Methylphenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Methylnaphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1-Methylnaphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachlorocyclopentadiene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4,6-Trichlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4,5-Trichlorophenol	BDL	ug/l	3510/8270	10	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

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Date: 01/13/2004
Log #: L85130-5

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-5
Date Sampled: 12/26/2003
Time Sampled: 13:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
2-Chloronaphthalene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2-Nitroaniline	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Dimethylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Acenaphthylene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
3-Nitroaniline	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Acenaphthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4-Dinitrophenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Dibenzofuran	BDL	ug/l	3510/8270	10	01/02	01/02	GM
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Nitrophenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Diethylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Fluorene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Nitroaniline	BDL	ug/l	3510/8270	50	01/02	01/02	GM
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	10	01/02	01/02	GM
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Hexachlorobenzene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Pentachlorophenol	BDL	ug/l	3510/8270	50	01/02	01/02	GM
Anthracene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Phenanthrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Carbazole	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Di-N-Butylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Fluoranthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzidine	BDL	ug/l	3510/8270	80	01/02	01/02	GM
Pyrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Butylbenzylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[a]anthracene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	20	01/02	01/02	GM
Chrysene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Bis(2-Ethylhexyl)Phthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Di-N-Octylphthalate	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[b]fluoranthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[k]fluoranthene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Benzo[a]pyrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Indeno[1,2,3-cd]pyrene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Dibenzo[a,h]Anthracene	BDL	ug/l	3510/8270	10	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
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Attn: Stanley Lewis

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Date: 01/13/2004
Log #: L85130-5

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-5
Date Sampled: 12/26/2003
Time Sampled: 13:15
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds **(continued)**							
Benzo[g,h,i]perylene	BDL	ug/l	3510/8270	10	01/02	01/02	GM
Dilution Factor	1.0		3510/8270		01/02	01/02	GM
Surrogate Recoveries:							
2-Fluorophenol	34	%	3510/8270	10-115	01/02	01/02	GM
Phenol-d5	20	%	3510/8270	10-137	01/02	01/02	GM
Nitrobenzene-d5	55	%	3510/8270	18-128	01/02	01/02	GM
2-Fluorobiphenyl	49	%	3510/8270	45-126	01/02	01/02	GM
2,4,6-Tribromophenol	64	%	3510/8270	51-134	01/02	01/02	GM
Terphenyl-d14	49	%	3510/8270	50-146	01/02	01/02	GM
Subcontracted Services							
Subcontract Lab 1	E87634		8280				SUB
TCLP Metals							
Arsenic	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Barium	0.22	mg/l	3010/6010	0.010	12/31	01/02	SB
Cadmium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Chromium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Lead	0.023	mg/l	3010/6010	0.0050	12/31	01/02	SB
Selenium	0.010	mg/l	3010/6010	0.010	12/31	01/02	SB
Silver	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Mercury	BDL	mg/l	7470	0.00020	01/02	01/02	WM
Field Services							
Sampling Method 1	Composite		All		12/26	12/26	PT

All analyses were performed using EPA, ASTM, NIOSH, USGS, or Standard Methods and certified to meet NELAC requirements.
Flags: BDL or U-below reporting limit; DL-diluted out; IL-meets internal lab limits; MI-matrix interference; NA-not appl.
Flags: CFR-Pb/Cu rule; ND-non detect(RL estimated); NFL-no free liquids; dw-dry wt; ww-wet wt; C(#)-see attached USB code
FLDEP Flags: J(#)-estimated 1:surr. fail 2:no known QC req. 3:QC fail %R or %RPD; 4:matrix int. 5:improper fld. protocol
FLDEP Flags: L-exceeds calibration; Q-holding time exceeded; T-value < MDL; V-present in blank
FLDEP Flags: Y-improper preservation; B-colonies exceed range; I-result between MDL and PQL

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
USACE
VA CERT# 00395

DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240

NC CERT# 444
IL CERT# 200020

Respectfully submitted,

LouAnn Jones
Project Manager

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 1 of 5
Date: 01/13/2004
Log #: L85130-6

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-6
Date Sampled: 12/26/2003
Time Sampled: 12:55
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Extraction Date							
TCLP Extraction	12/30	date	1311 EXTR				EB
TCLP ZHE Extraction	12/30	date	1311 ZHE				SV
TCLP Volatile Organic Compounds							
Acetone	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Benzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromodichloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromoform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Bromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
n-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
sec-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
tert-Butylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Disulfide	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Carbon Tetrachloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloroform	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Chloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
4-Chlorotoluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromo-3-Chloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromochloromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dibromomethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dibromoethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,4-Dichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
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Date: 01/13/2004
Log #: L85130-6

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-6
Date Sampled: 12/26/2003
Time Sampled: 12:55
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Dichlorodifluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,2-Dichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2,2-Dichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
trans-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
cis-1,3-Dichloropropene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Ethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Hexachlorobutadiene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
2-Hexanone	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Isopropyl Benzene	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
4-Isopropyl Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MEK(2-Butanone)	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Methylene Chloride	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
MIBK(4-Methyl-2-Pentanone)	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
MTBE	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
Naphthalene	BDL	mg/l	5030/8260	1.0	01/01	01/01	SV
n-Propylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Styrene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2,2-Tetrachloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Tetrachloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Toluene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Total Xylenes	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trichlorobenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,1-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichloroethene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,1,2-Trichloroethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,3-Trichloropropane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Trichlorofluoromethane	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,2,4-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
1,3,5-Trimethylbenzene	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Vinyl Acetate	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
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Page: Page 3 of 5
Date: 01/13/2004
Log #: L85130-6

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-6
Date Sampled: 12/26/2003
Time Sampled: 12:55
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP Volatile Organic Compounds	**(continued)**						
Vinyl Chloride	BDL	mg/l	5030/8260	0.10	01/01	01/01	SV
Dilution Factor	1.0		5030/8260		01/01	01/01	SV
Surrogate Recoveries:							
Dibromofluoromethane	106	%	5030/8260	68-145	01/01	01/01	SV
Toluene-D8	105	%	5030/8260	62-133	01/01	01/01	SV
4-Bromofluorobenzene	97	%	5030/8260	56-135	01/01	01/01	SV
TCLP 8270 Compounds							
N-Nitrosodimethylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Aniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Chlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,3-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,4-Dichlorobenzene	BDL	ug/l	3510/8270	6.5	01/02	01/02	GM
Benzyl Alcohol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2-Dichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroisopropyl) Ether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
N-Nitrosodi-n-propylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3&4-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachloroethane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Nitrobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Isophorone	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitrophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dimethylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Chloroethoxy)methane	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzoic Acid	BDL	ug/l	3510/8270	65	01/02	01/02	GM
2,4-Dichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2,4-Trichlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Naphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloroaniline	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobutadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chloro-3-Methylphenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1-Methylnaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorocyclopentadiene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,6-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4,5-Trichlorophenol	BDL	ug/l	3510/8270	13	01/02	01/02	GM

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Page: Page 4 of 5
Date: 01/13/2004
Log #: L85130-6

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-6
Date Sampled: 12/26/2003
Time Sampled: 12:55
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
2-Chloronaphthalene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dimethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,6-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Acenaphthylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Acenaphthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Dibenzofuran	BDL	ug/l	3510/8270	13	01/02	01/02	GM
2,4-Dinitrotoluene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitrophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Diethylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluorene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Chlorophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Nitroaniline	BDL	ug/l	3510/8270	65	01/02	01/02	GM
4,6-Dinitro-2-Methylphenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
N-Nitrosodiphenylamine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
1,2-Diphenylhydrazine	BDL	ug/l	3510/8270	13	01/02	01/02	GM
4-Bromophenyl-phenylether	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Hexachlorobenzene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Pentachlorophenol	BDL	ug/l	3510/8270	65	01/02	01/02	GM
Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Phenanthrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Carbazole	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Butylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzidine	BDL	ug/l	3510/8270	100	01/02	01/02	GM
Pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Butylbenzylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
3,3'-Dichlorobenzidine	BDL	ug/l	3510/8270	26	01/02	01/02	GM
Chrysene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Bis(2-Ethylhexyl)Phthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Di-N-Octylphthalate	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[b]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[k]fluoranthene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Benzo[a]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Indeno[1,2,3-cd]pyrene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dibenzo[a,h]Anthracene	BDL	ug/l	3510/8270	13	01/02	01/02	GM

Client #: FTL-13-120102
Address: PHS Engineering Corp
4100 NE 2nd Avenue
Suite 310
Miami, FL 33137
Attn: Stanley Lewis

Page: Page 5 of 5
Date: 01/13/2004
Log #: L85130-6

Sample Description:

Wagner Creek Dredging

Analytical Report: WC-6
Date Sampled: 12/26/2003
Time Sampled: 12:55
Date Received: 12/26/2003
Collected By: P. Taylor

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Anly. Date	Analyst
TCLP 8270 Compounds (continued)							
Benzo[g,h,i]perylene	BDL	ug/l	3510/8270	13	01/02	01/02	GM
Dilution Factor	1.3		3510/8270		01/02	01/02	GM
Surrogate Recoveries:							
2-Fluorophenol	35	%	3510/8270	10-115	01/02	01/02	GM
Phenol-d5	19	%	3510/8270	10-137	01/02	01/02	GM
Nitrobenzene-d5	67	%	3510/8270	18-128	01/02	01/02	GM
2-Fluorobiphenyl	63	%	3510/8270	45-126	01/02	01/02	GM
2,4,6-Tribromophenol	60	%	3510/8270	51-134	01/02	01/02	GM
Terphenyl-d14	57	%	3510/8270	50-146	01/02	01/02	GM
Subcontracted Services							
Subcontract Lab 1	E87634		8280				SUB
TCLP Metals							
Arsenic	0.013	mg/l	3010/6010	0.010	12/31	01/02	SB
Barium	0.15	mg/l	3010/6010	0.010	12/31	01/02	SB
Cadmium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Chromium	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Lead	BDL	mg/l	3010/6010	0.0050	12/31	01/02	SB
Selenium	0.011	mg/l	3010/6010	0.0050	12/31	01/02	SB
Silver	BDL	mg/l	3010/6010	0.010	12/31	01/02	SB
Mercury	BDL	mg/l	7470	0.00020	01/02	01/02	WM
Field Services							
Sampling Method 1	Composite		All		12/26	12/26	PT

All analyses were performed using EPA, ASTM, NIOSH, USGS, or Standard Methods and certified to meet NELAC requirements.
Flags: BDL or U-below reporting limit; DL-diluted out; IL-meets internal lab limits; MI-matrix interference; NA-not appl.
Flags: CFR-Pb/Cu rule; ND-non detect(RL estimated); NFL-no free liquids; dw-dry wt; ww-wet wt; C(#)-see attached USB code
FLDEP Flags: J(#)-estimated 1:surr. fail 2:no known QC req. 3:QC fail %R or %RPD; 4:matrix int. 5:improper fld. protocol
FLDEP Flags: L-exceeds calibration; Q-holding time exceeded; T-value < MDL; V-present in blank
FLDEP Flags: Y-improper preservation; B-colonies exceed range; I-result between MDL and PQL

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
USACE
VA CERT# 00395

DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240

NC CERT# 444
IL CERT# 200020

Respectfully submitted,

LouAnn Jones
Project Manager

Modified Method 8280

L85130-1

US Biosystems

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	128				
1,2,3,7,8-PeCDD	ND	495				
1,2,3,4,7,8-HxCDD	ND	539				
1,2,3,6,7,8-HxCDD	ND	487				
1,2,3,7,8,9-HxCDD	ND	493				
1,2,3,4,6,7,8-HpCDD	ND	832				
OCDD	1500			35:45	0.90	A
2,3,7,8--TCDF	ND	445				
1,2,3,7,8-PeCDF	ND	128				
2,3,4,7,8-PeCDF	ND	128				
1,2,3,4,7,8-HxCDF	ND	1020				
1,2,3,6,7,8-HxCDF	ND	891				
2,3,4,6,7,8-HxCDF	ND	1050				
1,2,3,7,8,9-HxCDF	ND	1160				
1,2,3,4,6,7,8-HpCDF	ND	320				
1,2,3,4,7,8,9-HpCDF	ND	349				
OCDF	ND	1050				
Total TCDDs	ND	128				
Total PeCDDs	ND	495				
Total HxCDDs	ND	505				
Total HpCDDs	ND	832				
Total TCDFs	ND	445				
Total PeCDFs	ND	128				
Total HxCDFs	ND	1020				
Total HpCDFs	ND	320				
TEQ (ND=0)	1.50		1.50			ITEF
TEQ (ND=½)	537		537			ITEF

Client Information

Project Name: Not Provided

Sample ID: L85130-1

Laboratory Information

Project ID: G352-90
Sample ID: G352-90-7A
Collection Date/Time: 26-Dec-03 14:15
Receipt Date: 27-Dec-03
Extraction Date: 06-Jan-04
Analysis Date: 08-Jan-04

Sample Information

Report Basis: Dry Weight
Matrix: Soil
Weight / Volume: 11.26 Grams
Solids / Lipids: 69.4 %
Original pH : NA
Batch ID: WG10131

Filename: 0107513
Retchk: 0107501
Begin ConCal: 0107502
End ConCal: 0107518
Initial Cal: m8280-5042903

TW 1/12E

Modified Method 8280

L85130-1

US Biosystems

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	47.6	95.2	24:46	0.74	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	46.3	92.7	30:27	1.36	
$^{13}C_{12}$-OCDD	100	84.9	84.9	35:45	0.90	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	50.8	102	24:06	0.68	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	93.5	93.5	31:55	1.06	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	22.4	89.4	24:46		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:15	0.80	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:38	1.26	

Client Information

Project Name: Not Provided

Sample ID: L85130-1

Laboratory Information

Project ID: G352-90

Sample ID: G352-90-7A

Collection Date/Time: 26-Dec-03 14:15

Receipt Date: 27-Dec-03

Extraction Date: 06-Jan-04

Analysis Date: 08-Jan-04

Sample Information

Report Basis: Dry Weight

Matrix: Soil

Weight / Volume: 11.26 Grams

Solids / Lipids: 69.4 %

Original pH : NA

Batch ID: WG10131

Filename: 0107513

Retchk: 0107501

Begin ConCal: 0107502

End ConCal: 0107518

Initial Cal: m8280-5042903

Analyzed by: JWP

Date: 01-12-04

Reviewed by:

Date: 1/12/04

Modified Method 8280

L85130-2

US Biosystems

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	395				
1,2,3,7,8-PeCDD	ND	2010				
1,2,3,4,7,8-HxCDD	ND	1630				
1,2,3,6,7,8-HxCDD	ND	1470				
1,2,3,7,8,9-HxCDD	ND	1490				
1,2,3,4,6,7,8-HpCDD	ND	1100				
OCDD	14200			35:44	0.89	A
2,3,7,8--TCDF	ND	1200				
1,2,3,7,8-PeCDF	ND	395				
2,3,4,7,8-PeCDF	ND	395				
1,2,3,4,7,8-HxCDF	ND	2720				
1,2,3,6,7,8-HxCDF	ND	2380				
2,3,4,6,7,8-HxCDF	ND	2800				
1,2,3,7,8,9-HxCDF	ND	3100				
1,2,3,4,6,7,8-HpCDF	ND	1290				
1,2,3,4,7,8,9-HpCDF	ND	1760				
OCDF	ND	1980				
Total TCDDs	ND	395				
Total PeCDDs	ND	2010				
Total HxCDDs	ND	1530				
Total HpCDDs	ND	1100				
Total TCDFs	ND	1200				
Total PeCDFs	ND	395				
Total HxCDFs	ND	2730				
Total HpCDFs	ND	1490				
TEQ (ND=0)	14.2		14.2			ITEF
TEQ (ND=½)	1680		1680			ITEF

Client Information

Project Name:	Not Provided
Sample ID:	L85130-2

Laboratory Information

Project ID:	G352-90	
Sample ID:	G352-90-8A	
Collection Date/Time:	26-Dec-03	14:00
Receipt Date:	27-Dec-03	
Extraction Date:	06-Jan-04	
Analysis Date:	08-Jan-04	

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	11.18	Grams
Solids / Lipids:	22.6	%
Original pH :	NA	
Batch ID:	WG10131	
Filename:	0107514	
Retchk:	0107501	
Begin ConCal:	0107502	
End ConCal:	0107518	
Initial Cal:	m8280-5042903	

Modified Method 8280
L85130-2
US Biosystems

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	45.3	90.7	24:46	0.72	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	46.5	93.0	30:26	1.23	
$^{13}C_{12}$-OCDD	100	75.6	75.6	35:43	0.89	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	46.7	93.4	24:06	0.66	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	84.6	84.6	31:55	1.06	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	22.5	90.0	24:46		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:15	0.79	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:38	1.32	

Client Information

Project Name:	Not Provided			
Sample ID:	L85130-2			

Laboratory Information

Project ID:	G352-90	
Sample ID:	G352-90-8A	
Collection Date/Time:	26-Dec-03	14:00
Receipt Date:	27-Dec-03	
Extraction Date:	06-Jan-04	
Analysis Date:	08-Jan-04	

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	11.18	Grams
Solids / Lipids:	22.6	%
Original pH :	NA	
Batch ID:	WG10131	
Filename:	0107514	
Retchk:	0107501	
Begin ConCal:	0107502	
End ConCal:	0107518	
Initial Cal:	m8280-5042903	

Analyzed by: JWP
Date: 01-12-04

Reviewed by:
Date: 1/12/04

Modified Method 8280

L85130-3

US Biosystems

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	503				
1,2,3,7,8-PeCDD	ND	2600				
1,2,3,4,7,8-HxCDD	ND	1260				
1,2,3,6,7,8-HxCDD	ND	1260				
1,2,3,7,8,9-HxCDD	ND	1260				
1,2,3,4,6,7,8-HpCDD	ND	1260				
OCDD	11500			35:41	0.90	A
2,3,7,8--TCDF	ND	2460				
1,2,3,7,8-PeCDF	ND	503				
2,3,4,7,8-PeCDF	ND	503				
1,2,3,4,7,8-HxCDF	ND	3520				
1,2,3,6,7,8-HxCDF	ND	3070				
2,3,4,6,7,8-HxCDF	ND	3620				
1,2,3,7,8,9-HxCDF	ND	4020				
1,2,3,4,6,7,8-HpCDF	ND	1260				
1,2,3,4,7,8,9-HpCDF	ND	1260				
OCDF	ND	4430				
Total TCDDs	ND	503				
Total PeCDDs	ND	2600				
Total HxCDDs	ND	1260				
Total HpCDDs	ND	1260				
Total TCDFs	ND	2460				
Total PeCDFs	ND	503				
Total HxCDFs	ND	3530				
Total HpCDFs	ND	1260				
TEQ (ND=0)	11.5		11.5			ITEF
TEQ (ND=½)	2090		2090			ITEF

Client Information		**Sample Information**		
Project Name:	Not Provided	Report Basis:	Dry Weight	
		Matrix:	Soil	
Sample ID:	L85130-3	Weight / Volume:	11.06	Grams
		Solids / Lipids:	18.0	%
		Original pH :	NA	
Laboratory Information		Batch ID:	WG10131	
Project ID:	G352-90			
Sample ID:	G352-90-9A	Filename:	0107515	
Collection Date/Time:	26-Dec-03 13:45	Retchk:	0107501	
Receipt Date:	27-Dec-03	Begin ConCal:	0107502	
Extraction Date:	06-Jan-04	End ConCal:	0107518	
Analysis Date:	08-Jan-04	Initial Cal:	m8280-5042903	

Modified Method 8280

L85130-3

US Biosystems

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	44.0	88.1	24:44	0.73	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	43.7	87.5	30:23	1.29	
$^{13}C_{12}$-OCDD	100	75.0	75.0	35:41	0.92	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	45.4	90.8	24:06	0.74	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	81.4	81.4	31:53	1.06	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	20.4	81.5	24:44		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:14	0.80	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:34	1.39	

Client Information

Project Name: Not Provided

Sample ID: L85130-3

Laboratory Information

Project ID: G352-90
Sample ID: G352-90-9A
Collection Date/Time: 26-Dec-03 13:45
Receipt Date: 27-Dec-03
Extraction Date: 06-Jan-04
Analysis Date: 08-Jan-04

Sample Information

Report Basis: Dry Weight
Matrix: Soil
Weight / Volume: 11.06 Grams
Solids / Lipids: 18.0 %
Original pH : NA
Batch ID: WG10131

Filename: 0107515
Retchk: 0107501
Begin ConCal: 0107502
End ConCal: 0107518
Initial Cal: m8280-5042903

Analyzed by: JWP
Date: 01-12-04

Reviewed by:
Date: 1/12/04

Modified Method 8280

L85130-4

US Biosystems

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	495				
1,2,3,7,8-PeCDD	ND	1500				
1,2,3,4,7,8-HxCDD	ND	1240				
1,2,3,6,7,8-HxCDD	ND	1240				
1,2,3,7,8,9-HxCDD	ND	1240				
1,2,3,4,6,7,8-HpCDD	ND	1240				
OCDD	15700			35:42	0.93	A
2,3,7,8--TCDF	ND	1200				
1,2,3,7,8-PeCDF	ND	495				
2,3,4,7,8-PeCDF	ND	495				
1,2,3,4,7,8-HxCDF	ND	9190				
1,2,3,6,7,8-HxCDF	ND	8020				
2,3,4,6,7,8-HxCDF	ND	9450				
1,2,3,7,8,9-HxCDF	ND	10500				
1,2,3,4,6,7,8-HpCDF	ND	1240				
1,2,3,4,7,8,9-HpCDF	ND	1240				
OCDF	ND	2860				
Total TCDDs	ND	495				
Total PeCDDs	ND	1500				
Total HxCDDs	ND	1240				
Total HpCDDs	ND	1240				
Total TCDFs	ND	1200				
Total PeCDFs	ND	495				
Total HxCDFs	ND	9200				
Total HpCDFs	ND	1240				
TEQ (ND=0)	15.7		15.7			ITEF
TEQ (ND=½)	2900		2900			ITEF

Client Information		**Sample Information**		
Project Name:	Not Provided	Report Basis:	Dry Weight	
		Matrix:	Soil	
Sample ID:	L85130-4	Weight / Volume:	10.99	Grams
		Solids / Lipids:	18.4	%
		Original pH :	NA	
Laboratory Information		Batch ID:	WG10131	
Project ID:	G352-90			
Sample ID:	G352-90-10A	Filename:	0107516	
Collection Date/Time:	26-Dec-03 13:30	Retchk:	0107501	
Receipt Date:	27-Dec-03	Begin ConCal:	0107502	
Extraction Date:	06-Jan-04	End ConCal:	0107518	
Analysis Date:	08-Jan-04	Initial Cal:	m8280-5042903	

Modified Method 8280

L85130-4

US Biosystems

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	46.1	92.2	24:46	0.72	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	44.0	88.1	30:24	1.28	
$^{13}C_{12}$-OCDD	100	78.1	78.1	35:41	0.93	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	42.7	85.4	24:06	0.82	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	84.9	84.9	31:53	1.06	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	21.4	85.5	24:46		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:15	0.81	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:35	1.28	

Client Information		**Sample Information**		
Project Name:	Not Provided	Report Basis:	Dry Weight	
		Matrix:	Soil	
Sample ID:	L85130-4	Weight / Volume:	10.99	Grams
		Solids / Lipids:	18.4	%
		Original pH :	NA	
Laboratory Information		Batch ID:	WG10131	
Project ID:	G352-90			
Sample ID:	G352-90-10A	Filename:	0107516	
Collection Date/Time:	26-Dec-03 13:30	Retchk:	0107501	
Receipt Date:	27-Dec-03	Begin ConCal:	0107502	
Extraction Date:	06-Jan-04	End ConCal:	0107518	
Analysis Date:	08-Jan-04	Initial Cal:	m8280-5042903	

Analyzed by: SWP
Date: 01-12-04

Reviewed by:
Date: 1/12/04

Modified Method 8280

L85130-5

US Biosystems

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	308				
1,2,3,7,8-PeCDD	ND	1200				
1,2,3,4,7,8-HxCDD	ND	770				
1,2,3,6,7,8-HxCDD	ND	770				
1,2,3,7,8,9-HxCDD	ND	770				
1,2,3,4,6,7,8-HpCDD	2060			32:47	1.09	A
OCDD	12500			35:41	0.90	A
2,3,7,8--TCDF	ND	822				
1,2,3,7,8-PeCDF	ND	308				
2,3,4,7,8-PeCDF	ND	308				
1,2,3,4,7,8-HxCDF	ND	770				
1,2,3,6,7,8-HxCDF	ND	770				
2,3,4,6,7,8-HxCDF	ND	770				
1,2,3,7,8,9-HxCDF	ND	854				
1,2,3,4,6,7,8-HpCDF	ND	770				
1,2,3,4,7,8,9-HpCDF	ND	770				
OCDF	ND	1540				
Total TCDDs	ND	308				
Total PeCDDs	ND	1200				
Total HxCDDs	ND	770				
Total HpCDDs	4160					
Total TCDFs	ND	822				
Total PeCDFs	ND	308				
Total HxCDFs	ND	770				
Total HpCDFs	ND	770				
TEQ (ND=0)	33.1		33.1			ITEF
TEQ (ND=½)	894		894			ITEF

Client Information			**Sample Information**		
Project Name:	Not Provided		Report Basis:	Dry Weight	
			Matrix:	Soil	
Sample ID:	L85130-5		Weight / Volume:	11.51	Grams
			Solids / Lipids:	28.2	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG10131	
Project ID:	G352-90				
Sample ID:	G352-90-11A		Filename:	0107517	
Collection Date/Time:	26-Dec-03	13:15	Retchk:	0107501	
Receipt Date:	27-Dec-03		Begin ConCal:	0107502	
Extraction Date:	06-Jan-04		End ConCal:	0107518	
Analysis Date:	08-Jan-04		Initial Cal:	m8280-5042903	

Modified Method 8280

L85130-5

US Biosystems

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	43.3	86.5	24:45	0.79	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	44.2	88.3	30:24	1.25	
$^{13}C_{12}$-OCDD	100	77.4	77.4	35:41	0.92	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	52.9	106	24:06	0.58	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	85.0	85.0	31:53	1.05	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	20.9	83.8	24:45		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:14	0.80	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:35	1.28	

Client Information

Project Name:	Not Provided
Sample ID:	L85130-5

Laboratory Information

Project ID:	G352-90	
Sample ID:	G352-90-11A	
Collection Date/Time:	26-Dec-03	13:15
Receipt Date:	27-Dec-03	
Extraction Date:	06-Jan-04	
Analysis Date:	08-Jan-04	

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	11.51	Grams
Solids / Lipids:	28.2	%
Original pH :	NA	
Batch ID:	WG10131	
Filename:	0107517	
Retchk:	0107501	
Begin ConCal:	0107502	
End ConCal:	0107518	
Initial Cal:	m8280-5042903	

Analyzed by: JWP
Date: 01-12-04

Reviewed by:
Date: 1/12/04

Paradigm Analytical Labs

E87634

Modified Method 8280

L85130-6

US Biosystems

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	401				
1,2,3,7,8-PeCDD	ND	1130				
1,2,3,4,7,8-HxCDD	ND	1290				
1,2,3,6,7,8-HxCDD	ND	1160				
1,2,3,7,8,9-HxCDD	ND	1180				
1,2,3,4,6,7,8-HpCDD	4270			32:53	0.92	A
OCDD	24900			35:51	0.93	
2,3,7,8--TCDF	ND	1540				
1,2,3,7,8-PeCDF	ND	309				
2,3,4,7,8-PeCDF	ND	309				
1,2,3,4,7,8-HxCDF	ND	985				
1,2,3,6,7,8-HxCDF	ND	860				
2,3,4,6,7,8-HxCDF	ND	1010				
1,2,3,7,8,9-HxCDF	ND	1120				
1,2,3,4,6,7,8-HpCDF	ND	772				
1,2,3,4,7,8,9-HpCDF	ND	772				
OCDF	EMPC	1540	3270	36:02	0.35	A
Total TCDDs	ND	401				
Total PeCDDs	ND	1130				
Total HxCDDs	ND	1210				
Total HpCDDs	8910					
Total TCDFs	ND	1540				
Total PeCDFs	ND	309				
Total HxCDFs	608					
Total HpCDFs	ND	772				
TEQ (ND=0)	67.6		70.9			ITEF
TEQ (ND=½)	1100		1100			ITEF

Client Information		**Sample Information**	
Project Name:	Not Provided	Report Basis:	Dry Weight
		Matrix:	Soil
Sample ID:	L85130-6	Weight / Volume:	11.64 Grams
		Solids / Lipids:	27.83 %
		Original pH :	NA
Laboratory Information		Batch ID:	WG10131
Project ID:	G352-90		
Sample ID:	G352-90-12A	Filename:	0108507
Collection Date/Time:	26-Dec-03 12:55	Retchk:	0108501
Receipt Date:	27-Dec-03	Begin ConCal:	0108502
Extraction Date:	06-Jan-04	End ConCal:	0108516
Analysis Date:	08-Jan-04	Initial Cal:	m8280-5042903

R172429
TW 1/13E
D 1/12A

Modified Method 8280

L85130-6

US Biosystems

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	50.0	48.3	96.6	24:46	0.74	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	50.0	46.6	93.3	30:31	1.27	
$^{13}C_{12}$-OCDD	100	86.3	86.3	35:51	0.91	
$^{13}C_{12}$-2,3,7,8-TCDF	50.0	46.7	93.3	24:07	0.80	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	93.1	93.1	31:59	1.07	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	25.0	22.5	90.1	24:46		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	50.0			24:16	0.80	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	50.0			30:43	1.26	

Client Information

Project Name:	Not Provided
Sample ID:	L85130-6

Laboratory Information

Project ID:	G352-90	
Sample ID:	G352-90-12A	
Collection Date/Time:	26-Dec-03	12:55
Receipt Date:	27-Dec-03	
Extraction Date:	06-Jan-04	
Analysis Date:	08-Jan-04	

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	11.64	Grams
Solids / Lipids:	27.83	%
Original pH :	NA	
Batch ID:	WG10131	
Filename:	0108507	
Retchk:	0108501	
Begin ConCal:	0108502	
End ConCal:	0108516	
Initial Cal:	m8280-5042903	

Analyzed by: HMP
Date: 12Jan04

Reviewed by: CW
Date: 1/12/04

USBIOSYSTEMS

CHAIN OF CUSTODY RECORD

Log # [illegible]/T.N6 **Quote:** ______

Company Name PHS Engineers PO#

Address

City State Zip

Attn: Stanley [illegible] Fax#

Project Name Wagner Creek Dredging Proj#

Sampler Name/Signature Phil Ranfon Jr. Phone#

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE? Temp____	✓		
PROPER PRESERVATIVES indicated?			✓
Received WITHIN HOLDING TIME?	✓		
CUSTODY SEALS INTACT?	✓		
VOLATILES rec'd W/OUT HEADSPACE?	✓		
PROPER CONTAINERS used?	✓		

Matrix Codes*

SD	Solid Waste	OL	Oil
GW	Ground Water	SL	Sludge
EFF	Effluent	SO	Soil Sediment
AFW	Analyte Free H_2O	AQ	Aqueous
WW	Waste Water	NA	Nonaqueous
DW	Drinking Water	PE	Petroleum
SU	Surface Water	O	Other ____ (Please Specify)

Pres/Codes

A. None	G. $Na_2S_2O_3$
B. HNO_3	H. $NaHSO_4$
C. H_2SO_4	I. Ice
D. NaOH	J. MCAA
E. HCL	O. Other
F. MeOH	

LAB ANALYSIS

							Sample															
							pH	(SOIL)														
							Pres Codes	A	A	A	A											
#	Sample Label (Client ID)	Collect Date	Collect Time	Matrix Code*	Sample Container No.	Size	Parameters	TCLP 8260	TCLP 8270	TCLP 8 RCRA metals	Dioxin 8280									Field Filtered (Y/N)	Integrity OK (Y/N)	REMARKS
01	WC-1	12-26-03	14:15	SO	3	[illegible]		X	X	X	X											Comp
02	WC-2		14:00					X	X	X	X											
03	WC-3		13:45					X	X	X	X											
04	WC-4		13:30					X	X	X	X											TT=2hrs
05	WC-5		13:15					X	X	X	X											FT=3hrs. X2=6hrs.
06	WC-6		12:55					X	X	X	X											
7																						
8																						
9																						
0																						

T.A.T. REQUEST STANDARD RUSH		Short Hold	QA/QC Report Level	COC OK	Initials	Specific State Certification Required
Y/N	Date required	Y N ✓	None____ 1____ 2____ 3____ Other____	[✓ Y] N	HB	

Coolers #'s	Item	Relinquished by	Date	Time	Received by	Date	Time
		Phil Zanfon, Jr.	12-26-03	14:45		122603	14:45
			122603	15:45		[illegible]	1610
Bailers							
# ______							

3231 N.W. 7th Avenue
Boca Raton, FL 33431
888-862-LABS
561-447-7373
888-456-4846 Fax
561-447-6136 Fax

C.O.C. # 60141

USBIOSYSTEMS

CHAIN OF CUSTODY RECORD

Log # [illegible] Quote: ______

LAB USE ONLY	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE? Temp___	✓		
PROPER PRESERVATIVES indicated?			✓
Received WITHIN HOLDING TIME?	✓		
CUSTODY SEALS INTACT?	✓		
VOLATILES rec'd W/OUT HEADSPACE?	✓		
PROPER CONTAINERS used?			

Company Name: YHS Engineers PO#

Address

City State Zip

Attn: Stanley Fax#

Project Name: Wagner Creek Dredging Proj#

Sampler Name/Signature: Phone#

#	Sample Label (Client ID)	Collect Date	Collect Time	Matrix Code*	Sample Container No.	Sample Container Size	TCLP 8260	TCLP 8270	TCLP 8 RCRA metals	Dioxin 8280	Field Filtered (Y/N)	Integrity OK (Y/N)	REMARKS
Pres Codes							A	A	A	A			
1	WC-1	12-26-03	14:15	SO	3		X	X	X	X			Comp
2	WC-2		14:00				X	X	X	X			
3	WC-3		13:45				X	X	X	X			
4	WC-4		13:30				X	X	X	X			TT = 2hrs
5	WC-5		13:15				X	X	X	X			FT = 3 hr. X2 = 6hrs.
6	WC-6		12:55				X	X	X	X			
7													
8													
9													
0													

Matrix Codes*

SD	Solid Waste	OL	Oil
GW	Ground Water	SL	Sludge
EFF	Effluent	SO	Soil Sediment
AFW	Analyte Free H_2O	AQ	Aqueous
WW	Waste Water	NA	Nonaqueous
DW	Drinking Water	PE	Petroleum
SU	Surface Water	O	Other (Please Specify)

Pres/Codes

A. None	G. $Na_2S_2O_3$
B. HNO_3	H. $NaHSO_4$
C. H_2SO_4	I. Ice
D. NaOH	J. MCAA
E. HCL	O. Other
F. MeOH	

T.A.T. REQUEST: STANDARD Y/N RUSH ______ Date required

Short Hold: Y [✓ N]

QA/QC Report Level: None____ 1____ 2____ 3____ Other____

COC OK: [✓ Y] N Initials: [illegible]

Specific State Certification Required:

Coolers #'s	Item	Relinquished by	Date	Time	Received by	Date	Time
		Phil Hampton Jr.	12-26-03	[illegible]		12/26/03	[illegible]
			12/26/03	15:45		[illegible]	[illegible]
Bailers							
#							

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Boca Raton, FL 33431
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561-447-7373
888-456-4846 Fax
561-447-6136 Fax

C.O.C. # 60141

CHAIN OF CUSTODY RECORD

USBiosystems

Log # 85130/TN6 Quote: ____

Company Name	PHS Engineers
PO#	
Address	
City	
State	
Zip	
Attn:	Stanley Lewis
Fax#	
Project Name	Wagner Creek Dredging
Proj#	
Sampler Name/Signature	Phil Zaylor, Jr.
Phone#	

LAB ANALYSIS

	Sample Label (Client ID)	Collect Date	Collect Time	Matrix Code*	Sample Container No	Sample Container Size	TCLP 8260	TCLP 8270	TCLP 8 RCRA metals	Dioxin 8280	Field Filtered (Y/N)	Integrity OK (Y/N)	REMARKS
Sample													
pH							(SOIL)						
Pres Codes							A	A	A	A			
01	WC-1	12-26-03	14:15	SO	3	①32oz ①8oz ①4oz	X	X	X	X			Comp
02	WC-2		14:00				X	X	X	X			
03	WC-3		13:45				X	X	X	X			
04	WC-4		13:30				X	X	X	X			TT=2hrs
05	WC-5		13:15				X	X	X	X			FT=3 hrs. X2=6hrs.
06	WC-6		12:55				X	X	X	X			
7													
8													
9													
0													

Turnaround Standard	Rush	Short Hold	QA/QC Report Level	COC OK	Initials	Specific State Certification Required
[✓ Y]/N	____ Date required	Y____ N ✓	None____ 1____ 2____ 3____ Other____	[✓ Y] N	IIB	

Coolers #	Item	Relinquished By	Date	Time	Received By	Date	Time
____ ____		Phil Zaylor, Jr.	12-26-03	14:45		122603	14:45
____ ____			122603	15:45		12/26/03	1610

Bailers

____

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE? Temp____	✓		
PROPER PRESERVATIVES indicated?			
Received WITHIN HOLDING TIME?	✓		
CUSTODY SEALS INTACT?	✓		
VOLATILES rec'd W/OUT HEADSPACE?	✓		
PROPER CONTAINERS used?	✓		

Matrix Codes*

SD	Solid Waste	OL	Oil
GW	Ground Water	SL	Sludge
EFF	Effluent	SO	Soil Sediment
AFW	Analyte Free H_2O	AQ	Aqueous
WW	Waste Water	NA	Nonaqueous
DW	Drinking Water	PE	Petroleum
SU	Surface Water	O	Other ____ (Please Specify)

Pres/Codes

A. None	G. $Na_2S_2O_3$
B. HNO_3	H. $NaHSO_4$
C. H_2SO_4	I. Ice
D. NaOH	J. MCAA
E. HCL	O. Other
F. MeOH	

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561-447-6136 Fax

C.O.C. # 60141

Volume 1, Appendix B

Structures Contingency Plan

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-1	Bridge over Wagner Creek	None anticipated	None	Bridge re-construction	No reaction to dredging works is anticipated
S-2	Articulating Blocks	Addditional sagging of blocks and shifting of system	None	Removal of portion of the system, supply and install additional backfill and re-install system	Existing system is un-even and portions of the system may be in the excavation limits.
S-4	Concrete Mass on Bank	Become dislodged and shift waterward	None	Remove from bank	No reaction to dredging works is anticipated
S-5	Concrete Mass on Bank	Become dislodged and shift waterward	None	Remove from bank	No reaction to dredging works is anticipated
S-6	Concrete poured-in-place concrete bulkhead & T-Pile Bulkhead	Concrete poured-in-place section by become undermined and collapse. The T-pile bulkhead may become undermined.	None	If poured-in-place bulkhead collapses, removal and replace with new poured-in-place bulkhead. If T-pile becomes undermined, repair with sand cement rip rap bags.	Poured-in-place may be affected by dredging, T-should not be affected.
S-8	Gunite faced bulkhead	Become undermined and rotation/failure of system	None	Remove the damaged section and re-construct with new sand cement rip rap bags	Structural make up of system not evident by visual inspection.
S-10	Concrete culvert headwall	Become undermined and shift downward	None	Removal of system and replace new	No reaction to dredging works is anticipated
S-11	3" steel pipe	None, above waters edge	None	None	No reaction to dredging works is anticipated
S-12	3" steel pipe	None, above waters edge	None	None	No reaction to dredging works is anticipated
S-13	8" Concrete pipe	None, above waters edge	None	None	No reaction to dredging works is anticipated
S-14	Concrete Mass on Bank	Become dislodged and shift waterward	None	None	None
S-15	Concrete culvert headwall	Become undermined and shift dowanward	None	Removal of system and replace new	No reaction to dredging works is anticipated

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-16	Concrete pipe	None, above excavation limits	None	None	No reaction to dredging works is anticipated
S-17	PVC pipe	None, above waters edge	None	None	No reaction to dredging works is anticipated
S-18	Articulating Blocks	Sagging of blocks and shifting of system	None	Removal of portion of the system, supply and install additional backfill and re-install system	Existing system is un-even and portions of the system may be in the excavation limits.
S-20	Concrete Pipe	None, above excavation limits	None	None	No reaction to dredging works is anticipated
S-21	Manhole with Concrete Base	Settlement and rotation of system	None	Replace man hole and associated pipe connections	No reaction to dredging works is anticipated
S-22	Concrete T-Pile Bulkhead	The T-pile bulkhead panel may become undermined.	None	If T-pile becomes undermined, repair with sand cement rip rap bags.	No reaction to dredging works is anticipated
S-23	Concrete Sandbag Bulkhead	The existing footing may become undermined and cause the sandbags to rotate and/or collapse	None	Remove affected sandbags and footing, construct new cast-in-place concerete footer, re-construct new and backfill to grade	These types of bulkheads are subseptical to movement and under mining if disturbed
S-33	West Piling for Aerial Crossing	Rotation of pile and movement of system	None	Remove pipe, remove caps, remove piles and reconstruct new	No reaction to dredging works is anticipated
S-34	Center Piling for Aerial Crossing	Rotation of pile and movement of system	None	Remove pipe, remove caps, remove piles and reconstruct new	No reaction to dredging works is anticipated
S-35	East Piling for Aerial Crossing	Rotation of pile and movement of system	None	Remove pipe, remove caps, remove piles and reconstruct new	No reaction to dredging works is anticipated
S-36	Articulating Blocks	Sagging of blocks and shifting of system	None	Removal of portion of the system, supply and install additional backfill and re-install system	Existing system is un-even and portions of the system may be in the excavation limits.
S-37	Concrete Pipe	None, above excavation limits	None	Remove portion of pipe and replace new	No reaction to dredging works is anticipated

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
OPERATIONAL SECTION 2					
S-24	West Piling for Aerial Gas Line Crossing	Rotation of pile and movement of system, gas leak	None	Remove gas line, remove pile, replace pile and re-install gas line	No damage is anticipated. Typically these support pilings are driven to a minimum embedment criteria.
S-25	East Piling for Aerial Gas Line Crossing	Rotation of pile and movement of system, gas leak	None	Remove gas line, remove pile, replace pile and re-install gas line	No damage is anticipated. Typically these support pilings are driven to a minimum embedment criteria.
S-26	Center Piling for Aerial Gas Line Crossing	Rotation of pile and movement of system, gas leak. Avoidance of contact with this pile is imperative.	None	Remove gas line, remove pile, replace pile and re-install gas line	No damage is anticipated. Typically these support pilings are driven to a minimum embedment criteria.
S-27	Concrete culvert headwall	Become undermined and shift downward	None	Remove headwall, remove pipe section, replace pipe and re-construct headwall	No reaction to dredging works is anticipated
S-28	Concrete culvert headwall with grate	Become undermined and shift downward	None	Remove headwall, remove pipe section, replace pipe, re-construct headwall and reinstall grate	No reaction to dredging works is anticipated
S-29	Concrete culvert headwall	Become undermined and shift downward	None	Remove headwall, remove pipe section, replace pipe and re-construct headwall	No reaction to dredging works is anticipated
S-30	Concrete culvert headwall with grate	Become undermined and shift downward	None	Remove headwall, remove pipe section, replace pipe, re-construct headwall and reinstall grate	No reaction to dredging works is anticipated
S-31	Concrete Sandbag Bulkhead	The existing footing may become undermined and cause the sandbags to rotate and/or collapse	None	Remove affected sandbags and footing, construct new cast-in-place concerete footer, re-construct new and backfill to grade	These types of bulkheads are subseptical to movement and under mining if disturbed

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-39	Concrete (CBS) bulkhead	The existing footing may become undermined and cause the concrete blocks to rotate and/or collapse	None	Remove existing system, reconstruct new concrete footer, construct new CBS wall and backfill to grade	No reaction to dredging works is anticipated
S-41	Concrete culvert headwall	Become undermined and shift downward	None	Remove headwall, remove pipe section, replace pipe and re-construct headwall	No reaction to dredging works is anticipated
S-43	Capped off steel pipe	None	None	None	No reaction to dredging works is anticipated
S-44	Steel pipe	None, above waters edge	None	None	No reaction to dredging works is anticipated
S-45	Small concrete (CBS) block stem wall	Total collapse caused by proposed dredging works	Remove blocks prior to commencment	Re-construct once the dredge works have been completed	The existing system has expierenced failure.
S-46	Small concrete (CBS) block deck with decorative tiles	Total collapse caused by proposed dredging works	None	Remove affected system, pour new cast-in-place concrete footer and construct new CBS block wall to required elevation	This structure is in advanced stste of disrepair, although it is out of the canal and may not be affetced
OPERATIONAL SECTION 3					
S-47	Steel Sheet Pile (SSP) Bulkhead	Loose of point of fixity and rotation of system	None	Remove existing cap and install new steel sheet pile system	This bulkhead was constructed by Bunnell Foundation and the SSP have adequate penetration in to substrate. No reaction to dredging is anticipated
S-50	Steel Sheet Pile (SSP) Bulkhead	Loose of point of fixitity and rotation of system	None	Remove existing cap and install new steel sheet pile system	This bulkhead was constructed by Bunnell Foundation and the SSP have adequate penetration in to substrate. No reaction to dredging is anticipated

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-51	Water Monitoring Well	None	None	None	$0.00
OPERATIONAL SECTION 4					
S-52	Steel Sheet Pile Bulkhead (no cap)	Loose of point of fixity and rotation of system	None	Remove existing steel sheet pilings and install new steel sheet pile system	This SSP appears to be installed correctly. No corrective measures anticipated
S-53	Concrete Pile and Panel Bulkhead (CPPB)	Undermining of panels	None	If CPPB was to become undermined, a new aluminum sheet pile toewall is recommended.	This existing CPPB appears to be vertical and in good condition. Based on its conidtion and the proposed cross section through this area, no corrective measures are anticipated. If CPPB was to become undermined, a new aluminum sheet pile toewall is recommended. No reaction to dredging works is anticipated
S-53a	Aluminum panel bulkhead	Loose of point of fixitity and rotation of system	Excavate existing tie rods and repair as necessary	Remove existing system, install new aluminum sheet pilings and install new aluminum cap	This existing aluminum system seems to be functioning properly. System has boulders placed alongs its toe and these boudlers may shift after dredging works. No reaction to dredging works is anticipated
S-54	Street lamp with concrete base	Rotation of concrete base	None	Remove post and re-construct concrete base.	No reaction to dredging works is anticipated
S-55	Street lamp with concrete base	Rotation of concrete base	None	Remove post and re-construct concrete base.	No reaction to dredging works is anticipated
S-56	Sand cement rip rap bags with concrete capping	Undermining of rip rap bags and rotation of system	None	Remove affected sandbags and footing, construct new cast-in-place concerete footer, re-construct new and backfill to grade	Based on the systems location, no reaction is anticipated

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-57	Sand cement rip rap bag headwall with concrete capping	Undermining of rip rap bags and rotation of system	None	Remove affected sandbags and footing, construct new cast-in-place concerete footer, re-construct new and backfill to grade	Based on the systems location, no reaction is anticipated
S-58	Sand cement rip rap bag headwall and wier with concrete capping	Undermining of rip rap bags and rotation of system	None	Remove affected sandbags and footing, construct new cast-in-place concerete footer, re-construct new and backfill to grade	Based on the systems location, no reaction is anticipated
S-60	Concrete pipe	None, above waters edge	None	None	None
S-61	Concrete Utility Pole	None	None	None	Based on the systems location, no reaction is anticipated
S-62	Metal Lamp Post	None	None	None	Based on the systems location, no reaction is anticipated
OPERATIONAL SECTION 5					
S-63	Metal Bridge Support	None, above top of bank	None	None	Based on the systems location, no reaction is anticipated
S-64	Concrete (CBS) bulkhead	The existing footing may become undermined and cause the concrete blocks to rotate and/or collapse	Remove blocks prior to commencment, to reduce fill loss	Remove existing system, reconstruct new concrete footer, construct new CBS wall and backfill to grade	The existing system has expierenced failure. System will need to be replaced
S-66	Sand cement rip rap bags.	Undermining of rip rap bags and rotation of system	Remove rip rap bags and constrcut new with concrete footer	Remove affected sandbags and footing, construct new cast-in-place concerete footer, re-construct new and backfill to grade	Remove rip rap bags and constrcut new with concrete footer
S-68	Concrete (CBS) bulkhead	The existing footing may become undermined and cause the concrete blocks to rotate and/or collapse	Remove blocks prior to commencment, to reduce fill loss	Remove existing system, reconstruct new concrete footer, construct new CBS wall and backfill to grade	The existing system has expierenced failure. System will need to be replaced with steel sheet pile and concrete cap

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-69	PVC pipe	None, above waters edge	None	None	No reaction to dredging works is anticipated
S-71	Corrigated metal bulkhead	Rotation of metal panels and loss of fill	None	Remove panels and reconstruct new with aluminum sheet pilings and new capping	Systems appreas to be sound, no reaction to dredging works is anticipated
S-73	Concrete cantilvered slab	Undermining and failure of slab	None	Remove and replace slab	Slab is currently undermined and at or above top of bank. No reaction to dredging is anticipated
S-74	Concrete (CBS) bulkhead	The existing footing may become undermined and cause the concrete blocks to rotate and/or collapse	None	Remove existing system, reconstruct new concrete footer, construct new CBS wall and backfill to grade	System is shwoing signs of rotation, avoidance dredging within 5 feet is recommended
S-76	Concrete support column for Metro Rail	None	None	None	Bunnell Foundation installed the deep foundations for this structure. No reaction to dredging is anticipated
S-77	Concrete sidewalk	Continued erision of sub-grade and collapse of sidewalk	None	Remove existing sidewalk, re-construct new and re-install handrails.	Sidewalk is extremmly undermined, although it is located above Top of Bank. No reaction to dredging is anticipated
S-78	Poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	None	Remove and replace new	The existing system is functioning properly. Small concrete spalling at expanion joints observed. No reaction to dredging is anticipated
S-79	PVC pipe	None, away from dredging limits	None	None	No reaction to dredging works is anticipated
S-80	Steel Sheet Pile Bulkhead (no cap)	Loose of point of fixity and rotation of system	None	Remove existing steel sheet pilings and install new steel sheet pile system	This SSP appears to be installed correctly. No reaction to dredging is anticipated

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-82	Steel Sheet Pile Bulkhead (no cap)	Loose of point of fixity and rotation of system	None	Remove existing steel sheet pilings and install new steel sheet pile system	This SSP appears to be installed correctly. No reaction to dredging is anticipated
S-83	Concrete pipe	None, above excavation limits	None	None	No reaction to dredging works is anticipated
S-84	Steel pipe	None, above waters edge	None	None	None
OPERATIONAL SECTION 6					
S-85	Poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	None	Remove exsting systems, construct new and backfill to grade	The existing system is showing signs of rotation and settlement. Vertcial and horizontal cracking are evident. This bulkhead will be affected by the dredging activities. We propose a steel sheet pile bulkhead with concrete cap.
S-86	Wooden Dock	Rotation of support pilings and total collapse of dock	Remove structure prior to dredging	Remove existing wood pilings, install new wood pilings and re-construct dock	The existing dock support pilings over 30 years old, dock is in a advanced state of disrepair.
S-88	Wooden Dock	Collapse of support posts and total collapse of dock	Remove structure prior to dredging	Remove existing wood posts, install new wood pilings and re-construct dock	The existing dock is collapsed
S-89	Poured-in-place concrete bulkhead and coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to system, remortar joints and install aluminum sheet pile toe wall with grout in fill.	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has significatnt undermining, additional undermining may occur due to dredging works.
S-90	Wood dock	Undermining of support pilings and rotation of system	Remove structure prior to dredging	Remove dock and reconstruct new	The existing dock is supported on PVC pipes which do not meet Floirda Building Code.

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-91	PVC pipe	None, above waters edge	Investigate source of pipe	None	No reaction to dredging works is anticipated
S-92	PVC pipe boat buffer	None, above waters edge	None	None	No reaction to dredging works is anticipated
S-94	Poured-in-place concrete bulkhead and coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to system, remortar joints and install aluminum sheet pile toe wall with grout in fill.	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-96	Wooden Dock	Collapse of support posts and total collapse of dock	Remove structure prior to dredging	Remove existing wood posts, install new wood pilings and re-construct dock	The existing dock is does not meet Florida Building Code.
S-97	Coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to system, remortar joints and install aluminum sheet pile toe wall with grout in fill.	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-99	Coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to system, remortar joints and install aluminum sheet pile toe wall with grout in fill.	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-100	Steel pipe	None, above waters edge	None	None	None
S-102	Coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to system, remortar joints and install aluminum sheet pile toe wall with grout in fill.	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-103	Wooden Dock	Collapse of support posts and total collapse of dock	Remove structure prior to dredging	Remove existing wood posts, install new wood pilings and re-construct dock	The existing dock is does not meet Florida Building Code.
S-105	Poured-in-place concrete bulkhead and coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to system, remortar joints and install aluminum sheet pile toe wall with grout in fill.	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-106	Tire fendering and wood posts	None	None	None	Existing wood posts have rotated. No affects by dredging is anticipated
S-108	Coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to coral rock system and remortar joints	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has slight undermining, additional undermining may occur due to dredging works.
S-109	PVC pipes	None	None	None	Existing PVC pipes do not meet Florida Building Code. No affects by dredging is anticipated

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-111	Coral rock bulkhead and poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to coral rock system and remortar joints (where applicable)	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has slight undermining, additional undermining may occur due to dredging works.
S-112	PVC pipes	None	None	None	Existing PVC pipes do not meet Florida Building Code. No affects by dredging is anticipated
S-113	Wooden Boat Ramp	None	Remove illegal structure	None	The is structure does not meet Florida Building Code
S-114	Cantilevred concrete dock	None	Remove illegal structure	None	The is structure does not meet Florida Building Code
S-115	PVC pipes	None	None	None	Existing PVC pipes do not meet Florida Building Code. No affects by dredging is anticipated
S-117	Concrete Pile and Panel Bulkhead (CPPB) and a poured-in-place concrete bulkhead	Undermining of panels or concrete footer	None	If CPPB was to become undermined, rip rap bags to be installed.	This existing CPPB appears to be vertical and in good condition. Based on its conidtion and the proposed cross section through this area, no corrective measures are anticipated. If CPPB was to become undermined, rip rap bags to be installed. No reaction to dredging works is anticipated
S-118	Floating dock	None	None	None	No reaction to dredging works is anticipated
S-118a	Wooden Dock	Collapse of support posts and total collapse of dock	Remove structure prior to dredging	Remove existing wood posts, install new wood pilings and re-construct dock	The existing dock is does not meet Floirda Building Code.
S-120	Wooden Finger Piers	None	None	None	The existing piles are substantial but the finger piers do not meet Florida Building Code

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-121	Wooden Dock	Collapse of support posts and total collapse of dock	Remove structure prior to dredging	Remove existing wood posts, install new wood pilings and re-construct dock	The existing dock is does not meet Floirda Building Code. No reaction to dredging is anticipated
S-122	Coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to coral rock system and remortar joints	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-123	Wooden dog loading ramp	Impacted by dredging equipment	Remove structure prior to dredging	None	The existing structure does not meet Florida Building Code
S-124	Wooden Dock	Collapse of support posts and total collapse of dock	Remove structure prior to dredging	Remove existing wood posts, install new wood pilings and re-construct dock	The existing dock is does not meet Florida Building Code.
S-126	Wooden Dock	Collapse of support posts and total collapse of dock	Remove structure prior to dredging	Remove existing wood posts, install new wood pilings and re-construct dock	The existing dock is does not meet Florida Building Code.
S-127	Coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to coral rock system and remortar joints	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-129	Coral rock bulkhead and poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to system, remortar joints and install aluminum sheet pile toe wall with grout in fill.	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-130	Concrete Dock	None	None	None	No reaction to dredging works is anticipated

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-131	Wooden dock constructed over Concrete Dock	None	None	None	No reaction to dredging works is anticipated
S-132	Steel pipe	None	None	None	None
S-134	Poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	None	Remove existing dock, construct new wall in front of existing and backfill to grade	Existing system is advanced state of disrepair, replacement is warranted. We propose a steel sheet pile bulkhead with concrete cap.
S-136	Poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	None	Remove existing dock, construct new wall in front if existing and backfill to grade	Existing system is advanced state of disrepair, replacement is warranted. We propose a steel sheet pile bulkhead with concrete cap.
S-137	Wooden Dock	None	None	None	The existing dock is does not meet Floirda Building Code.
S-138	Steel pipe	None	None	None	None
S-139	Concrete Pipe	None	None	None	No reaction to dredging works is anticipated
S-141	Coral rock bulkhead	Undermining of concrete footing and rotation of system	Add additional boulders to coral rock system and remortar joints	Remove exsting systems, construct new and backfill to grade	The existing coral rock wall has undermining, additional undermining may occur due to dredging works.
S-142	18" Steel pipe	None	None	None	None
S-143	Wooden Dock	None	None	None	The existing dock is does not meet Floirda Building Code.
S-144	Concrete (CBS) bulkhead	The existing footing may become undermined and cause the concrete blocks to rotate and/or collapse	Construct aluminum sheet pile toe wall with grout in fill	Remove existing system, reconstruct new concrete footer, construct new CBS wall and backfill to grade	The existing system has signs of shifting of footing. System may be affected by dredging works

Structure #	Description	Potential reaction to proposed maintenance dredging	Premptive Repairs (if any)	Corrective Measures (if failure occurs)	Comments (if any)
S-145	Wooden Dock	None	None	None	The existing dock is does not meet Florida Building Code.
S-146	Poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	None	Remove existing system and new wall in front if existing and backfill to grade	Existing system is showing signs of settlement and cracking. May not be affected by dredging works.
S-147	Concrete T-Pile Bulkhead	The T-pile bulkhead may become undermined.	None	If T-pile becomes undermined, repair with sand cement rip rap bags.	No reaction to dredging works is anticipated
S-149	Wood mooring pile	None	None	None	None
S-150	Wood mooring pile	None	None	None	None
S-151	Poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	None	Remove existing system and new wall in front if existing and backfill to grade	Existing system is showing signs of settlement and cracking. May not be affected by dredging works.
S-152	Wooden Dock	None	None	None	The existing dock is does not meet Floirda Building Code. No reaction to dredging is anticipated
S-153	Concrete Pile and Panel Bulkhead (CPPB)	Undermining of panels	None	If CPPB was to become undermined, a new aluminum sheet pile toewall is recommended.	The existing system has not been successful constructed. The tie back system has not been installed and the concrete cap has not been constructed. No reaction to dredging is anticipated
S-155	Sand rip rap bags.	Undermining of rip rap bags and rotation of system	None	Remove affected sandbags and footing, construct new cast-in-place concerete footer, re-construct new and backfill to grade	Based on the systems installation, rotation is anticipated
S-157	Poured-in-place concrete bulkhead	Undermining of concrete footing and rotation of system	None	Remove existing system and new wall in front if existing and backfill to grade	Existing system is showing signs of settlement, cracking and rotation. The addition of the existing tie rods show repairs have been attempted to stop rotation. May affected by dredging works.

Volume 1, Appendix C

Health and Safety Plan

Health and Safety Plan
Wagner Creek/Seybold Canal Dredging Project
Phase 2 - Dredging
Miami, Florida

Project Number B-50643

Revision 1

Submitted to:
City of Miami Dept of Capital Improvements Asst Director
444 S.W. 2nd Ave. Miami , FL 33130-1910

Prepared by:

CH2MHILL

Northpark 400
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August 2009

Prepared By:

Michael Goldman, CIH, CSP, CHMM, CPEA August 8, 2009

Responsible Health and Safety Manager Date

Approved By:

David Cole August 8, 2009

Project Manager Date

Client Acceptance:

Responsible Authority Date

CH2M HILL HEALTH AND SAFETY PLAN

This Health and Safety Plan (HSP) will be kept on the site during field activities and will be reviewed as necessary. The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available. The plan adopts, by reference, the Enterprise-wide Core Standards (CS) and Standard Operating Procedures (SOPs), as appropriate. In addition, this plan adopts procedures in the project Work Plan. The Safety Coordinator (SC) is to be familiar with the CSs and SOPs and the contents of these instructions. CH2M HILL's personnel and subcontractors must be trained on this plan and sign Attachment 1.

Project Information and Background

PROJECT NO: 370915

CLIENT: City of Miami Dept of Capital Improvements Asst Director
444 S.W. 2nd Ave. Miami, FL 33130-1910

PROJECT/SITE NAME: Wagner Creek /Seybold Canal Dredging Project

SITE ADDRESS: Wagner Creek (Creek) and Seybold Canal (Canal) meander through the central area of Miami and drain a sizeable portion of central Miami to the Miami River

CH2M HILL PROJECT MANAGER: David Cole

CH2M HILL OFFICE: Miami, Florida

DATE HEALTH AND SAFETY PLAN PREPARED: August 2008; Revised April 30, 2009

DATE(S) OF SITE WORK: May/June 2009

SITE BACKGROUND AND SETTING: Wagner Creek, located in Miami, Florida, is a non-navigable tributary of the Miami River via the Seybold Canal that connects to Biscayne Bay. The Creek acts as a stormwater drainage ditch for the surrounding residential area with water depths of approximately 6 feet. Seybold Canal serves as a navigable waterway for local residents with properties on the Canal.

The primary goal is to execute the Corrective Action Plan (CAP) surrounding the removal of sediments from Wagner Creek and Seybold Canal.

The primary site activities include:

- Mobilization
- Surveying/Sampling (including work from within the canal)
- Utility Clearance
- Sediment excavation from the canal/under /culverts

- Heavy Lifting-Crane Operations (required to move load relay materials, watertight roll-off containers (WTR), turbidity barriers, etc.
- Vacuum truck/water pumping
- Underwater diving
- Waste Removal
- Equipment Decontamination
- Site Restoration
- Demobilization

Site Map

Contents

1.0 Tasks to be Performed under this Plan

1.1 Description of Tasks

Refer to project documents (i.e., Work Plan) for detailed task information. A health and safety risk analysis (Table 1) has been performed for each task and is incorporated in this plan through task-specific hazard controls and requirements for monitoring and protection. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin. Refer to Section 8.2 for procedures related to "clean" tasks that do not involve hazardous waste operations and emergency response (Hazwoper).

1.1.1 Hazwoper-Regulated

- Sediment Excavation
- Sampling
- Heavy lifting/Crane operations
- Vacuum truck operations/water pumping.
- Equipment Decontamination (Dry)
- Observation of material loading for offsite disposal

1.1.2 Non-Hazwoper-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state Hazwoper regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-Hazwoper-trained personnel. **Prior approval from the Responsible Health and Safety Manager (RHSM) is required before these tasks are conducted on regulated hazardous waste sites.**

Tasks	**Controls**
• Surveying • Waste removal/hauling • Underwater diving	• Brief on hazards, limits of access, and emergency procedures • Post contaminant areas as appropriate (refer to Section 8.2 for details) • Sample and monitor as appropriate (refer to Section 5.0)

TABLE 1

Hazard Analysis

(Refer to Section 2.0 for Hazard Controls)

Potential Hazards	Project Activities									
	Mobilization/ Demobilization	Surveying/ Utility Clearance	Sampling	Sediment Excavation	Heavy Lifting-Crane Operations	Vacuum Truck-Water Pumping	Underwater Diving	Decontamination (Dry)	Site Restoration/ Demobilization	
Aerial Lifts					X					
Arsenic										
Benzene										
Cadmium										
Chainsaws										
Chemical Hazard-Dermal/Inhalation			X	X		X				
Confined Space Entry										
Crane-Suspended Personnel Platforms										
Cranes					X					
Demolition										
Diving							X			
Drilling										
Electrical Safety	X								X	
Energized Electrical Work										
Excavations										
Fall Protection					X	X				
Fire Prevention	X			X	X	X		X	X	
Forklifts	X									
Formaldehyde										
Hand & Power Tools	X		X						X	
Haul Truck Operations				X	X	X				
Heavy Equipment			X	X	X	X				
Hexavalent Chromium										
Hoists					X	X				
Lead										
Lockout /Tagout										
Manual Lifting	X		X					X	X	
Methylene Chloride										
Noise	X	X	X	X	X	X	X			
Powder-Actuated Tools										
Pressure Washing/Equip Decon										
Pressurized Lines/Equipment										
Rigging					X					
Utilities (underground/overhead)			X							
Vacuum Truck/Pumping Operations						X				
Vehicle Traffic	X	X	X	X	X	X	X	X	X	
Vinyl Chloride										
Visible Lighting	X	X	X	X	X	X	X	X	X	
Welding and Cutting										
Work Over Water	X	X	X	X	X	X	X			

2.0 Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CH2M HILL employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CH2M HILL employees and subcontractors who do not understand any of these provisions should contact the RHSM for clarification.

The health and safety hazards posed by field activities have been identified for each project activity and are provided in the Hazard Analysis Table (Table 1). Hazard control measures for project-specific and general H&S hazards are provided in 2.1 and 2.2 of this section.

In addition to the controls specified in this section, Project-Activity Self-Assessment Checklists are contained in Attachment 5. These checklists are to be used to assess the adequacy of CH2M HILL and subcontractor site-specific safety requirements. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. Self-assessment checklists should be completed early in the project, when tasks or conditions change, or when otherwise specified by the RHSM. The self-assessment checklists, including documented corrective actions, should be made part of the permanent project records.

Applicable project activity self-assessment checklists (see Attachment 5) shall be completed weekly by a CH2M HILL representative during the course of the project depending on the work performed at the time.

2.1 Project-Specific Hazards

2.1.1 Aerial Lifts

(Reference CH2M HILL, SOP HSE-301, *Aerial Lifts*)

- Operate aerial lifts only if you are authorized and trained to do so.
- Inspect aerial lifts and test lift controls prior to use.
- Wear a full-body harness, with a lanyard attached to the boom or platform. When working within a standard guardrail system with scissors lifts, the full-body harness and lanyard are not required.
- Do not attach lanyard to any adjacent structures or equipment while working from an aerial lift.
- Stand firmly on the floor of the platform and do not sit or climb on the railings of the platform, or use planks, ladders, or other devices to increase working height.
- Remain on the platform at all times and do not leave the platform to climb to adjacent structures.

- Position aerial lifts on firm, level surfaces when possible, with the brakes set. Use wheel chocks on inclines. If outriggers are provided, position them on solid surfaces or cribbing.
- Maintain safe clearance distances between overhead power lines and any part of the aerial lift or conducting material, unless the power lines have been de-energized and grounded, or insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Do not exceed the boom and basket load limits.
- Do not use aerial lifts as cranes, unless specifically designed and approved by the lift manufacturer.
- Do not work or stand below aerial lift operations.
- Do not use aerial lifts when winds exceed 30 miles per hour.

2.2 Cranes

(Reference CH2M HILL SOP HSE-303, *Cranes*)

- Cranes shall be operated by a certified crane operator.
- The crane's operations manual and load chart specifically designed for the crane shall be on the crane at all times.
- The crane must have a current annual inspection to include load test certification (within the last 12 months) that meets all state and federal safety standards. Documentation of this inspection must be available for review.
- A competent person will inspect the crane daily to ensure it is in safe operating condition.
- All rigging equipment must be inspected by a competent person prior to use for signs of excessive wear; equipment found to be damaged will be tagged and removed from service.
- A pre-lift meeting will be conducted to include all parties involved in that days crane operation.
- Only one person shall signal the crane operator. This person shall be thoroughly familiar with all of the cranes operation and be able to communicate with the crane operator with the appropriate hand signals.
- No personnel shall be permitted under the load at any time.
- Tag lines shall be attached to every load being made by the crane.
- The swing radius of the rear rotating superstructure (counterweight) of the crane shall be barricaded and no entrance allowed.

- No part of the crane will come within 10 feet of overhead electrical powerlines rated 50 kV or less. For lines over 50 kV, increase clearance distance by 4 inches for every 10 kV over 50kV.
- Suspended loads shall not pass over workers at any time.

2.2.1 Diving

(Reference CH2M HILL's Commercial Diving Manual)

- Dive team members must have the experience and/or training in the use of tools, equipment and systems relevant to assigned tasks; techniques of the assigned diving mode; diving operations; and emergency procedures.
- Dive team members must be trained in cardiopulmonary resuscitation and standard first aid.
- Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.
- A "designated person-in-charge" must be at the dive location and in charge of all aspects of the diving operation affecting the safety and health of dive team members. The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.
- Diving operations must be conducted in accordance with the CH2M HILL Commercial Diving Safe Practices Manual.

2.2.2 Electrical

(Reference CH2M HILL SOP HSE-206, *Electrical Safety*)

General Electrical Safety

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- CH2M HILL has selected Ground Fault Circuit Interrupters (GFCIs) as the standard method for protecting employees from the hazards associated with electric shock.
  - GFCIs shall be used on all 120-volt, single phase 15 and 20-amphere receptacle outlets which are not part of the permanent wiring of the building or structure.
- An assured equipment grounding conductor program may be required under the following scenarios:
  - GFCIs can not be utilized

  - Client requires such a program to be implemented
  - Business group decides to implement program in addition to GFCI protection

- Extension cords must be equipped with third-wire grounding. Cords passing through work areas must be covered, elevated or protected from damage. Cords should not be routed through doorways unless protected from pinching. Cords should not be fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

Portable Generator Hazards

- Portable generators are useful when temporary or remote electric power is needed, but they also can be hazardous. The primary hazards to avoid when using a generator are carbon monoxide (CO) poisoning from the toxic engine exhaust, electric shock or electrocution, and fire.
- NEVER use a generator indoors or in similar enclosed or partially-enclosed spaces. Generators can produce high levels of carbon monoxide (CO) very quickly. When you use a portable generator, remember that you cannot smell or see CO. Even if you can't smell exhaust fumes, you may still be exposed to CO.
- If you start to feel sick, dizzy, or weak while using a generator, get to fresh air RIGHT AWAY. DO NOT DELAY. The CO from generators can rapidly lead to full incapacitation and death.
- If you experience serious symptoms, get medical attention immediately. Inform project staff that CO poisoning is suspected. If you experienced symptoms while indoors have someone call the fire department to determine when it is safe to re-enter the building.
- Follow the instructions that come with your generator. Locate the unit outdoors and away from doors, windows, and vents that could allow CO to come indoors.
- Keep the generator dry and do not use in rain or wet conditions. To protect from moisture, operate it on a dry surface under an open, canopy-like structure. Dry your hands if wet before touching the generator.

- Plug appliances directly into the generator. Or, use a heavy duty, outdoor-rated extension cord that is rated (in watts or amps) at least equal to the sum of the connected appliance loads. Check that the entire cord is free of cuts or tears and that the plug has all three prongs, especially a grounding pin.
- Most generators come with Ground Fault Circuit Interrupters (GFCI). Test the GFCIs daily to determine whether they are working
- If the generator is not equipped with GFCI protected circuits plug a portable GFCI into the generator and plug appliances, tools and lights into the portable GFCI.
- Never store fuel near the generator or near any sources of ignition.
- Before refueling the generator, turn it off and let it cool down. Gasoline spilled on hot engine parts could ignite.

2.2.3 Excavation Activities

(Reference CH2M HILL SOP HSE-307, *Excavations*)

Excavation Entry

This section applies to all excavation entry regardless of the party in control of the excavation.

Do not enter the excavations unless completely necessary, and only after the excavation competent person has completed their daily inspection and has authorized entry. An inspection shall be conducted by the competent person prior to the start of work, as needed throughout the shift, after every rainstorm, and after any hazard increasing occurrence. Documentation of the inspection must be maintained onsite at all times.

Follow all excavation entry requirements established by the excavation competent person and any excavation permit being used.

Sloping, benching, shoring, shielding, or other protective systems are required to protect personnel from cave-ins except when the excavation is made entirely in stable rock or is less than 5 feet deep and there is no indication of possible cave-in, as determined by the excavation competent person. Protective systems for excavations deeper than 20 feet must be designed or approved by a registered professional engineer.

Trenches greater than 4 feet deep shall be provided with a ladder, stairway, or ramp positioned so that the maximum lateral travel distance is no more than 25 feet.

Excavations shall not be entered when:

- Protective systems are damaged or unstable.
- Objects or structures above the work location may become unstable and fall into the excavation.
- The potential for a hazardous atmosphere exists, unless the air has been tested and found to be at safe levels.
- Accumulated water exists in the excavation, unless precautions have been taken to prevent excavation cave-in.

The Excavation HSE Self-Assessment Checklist may be used to evaluate excavations prior to entry.

2.2.4 Fall Protection Activities

(Reference CH2M HILL, SOP HSE-308, *Fall Protection*)

The precautions listed below shall be followed when working from unprotected heights:

- Fall protection systems must be used to eliminate fall hazards when performing construction activities at a height of 6 feet or greater and when performing general industry activities at a height of 4 feet or greater.
- CH2M HILL staff exposed to fall hazards must complete initial fall protection training by completing either the CH2M HILL 10-Hour Construction Safety Awareness training course or the Fall Protection computer-based training module. Staff must also and receive project-specific fall protection training. Staff shall not use fall protection systems for which they have not been trained.
- The SC or designee must complete the Project Fall Protection Evaluation Form and provide project-specific fall protection training to all CH2M HILL staff exposed to fall hazards.
- The company responsible for the fall protection system shall provide a fall protection competent person to inspect and oversee the use of fall protection system. CH2M HILL staff shall be aware of and follow all requirements established by the fall protection competent person for the use and limitation of the fall protection system.
- When CH2M HILL designs or installs fall protection systems, staff shall be qualified as fall protection competent persons or work directly under the supervision of a CH2M HILL fall protection competent person.
- When horizontal lifelines are used, the company responsible for the lifeline system shall provide a fall protection qualified person to oversee the design, installation, and use of the horizontal lifeline.
- Inspect personal fall arrest system components prior to each use. Do not use damaged fall protection system components at any time, or for any reason. Fall protection equipment and components shall be used only to protect against falls, not to hoist materials. Personal fall arrest systems that have been subjected to impact loading shall not be used.
- Personal fall arrest systems shall be configured so that individuals can neither free-fall more than 6 feet or contact any lower level.
- Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds. Do not attached personal fall arrest systems to guardrail systems or hoists.
- Remain within the guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted. Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails.

- Only one person shall be simultaneously attached to a vertical lifeline and shall also be attached to a separate independent lifeline.

2.2.5 Fire Prevention

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
  - be maintained in a fully charged and operable condition,
  - be visually inspected each month, and
  - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

2.2.6 Forklift Operations

(Reference CH2M HILL, SOP HSE-309, *Forklifts*)

Forklifts may be required for materials movement during project activities. Forklifts present the potential for damage to equipment, materials and personnel by impaling or striking personnel or materials with the forklift tines. Additionally, forklifts may tip if they are incorrectly loaded, driven at excessive speeds or operated with the forks too high.

The following rules apply whenever a forklift is used on the project:

- A rated lifting capacity must be posted in a location readily visible to the operator.
- A forklift truck must not be used to elevate employees unless a platform with guardrails, a back guard, and a kill switch is provided on the vehicle. When guardrails are not possible, fall arrest protection is required.
- The subcontractor operating the forklift must post and enforce a set of operating rules for forklift trucks.
- Only certified forklift operators shall operate forklifts.
- Stunt driving and horseplay are prohibited.
- Employees must not ride on the forks.
- Employees must never be permitted under the forks (unless forks are blocked).
- The driver must inspect the forklift once a shift and document this inspection.

- The operator must look in the direction of travel and must not move the vehicle until all persons are clear of the vehicle.
- Forks must be carried as low as possible.
- The operator must lower the forks, shut off the engine, and set the brakes (or block the wheels) before leaving the forklift operator's position unless maintenance or safety inspections require the forklift to be running.
- Trucks must be blocked and have brakes set when forklifts are driven onto their beds.
- Extreme care must be taken when tilting elevated loads.
- Every forklift must have operable brakes capable of safely stopping it when fully loaded.
- Forklifts must have parking brakes and an operable horn.
- When the operator is exposed to possible falling objects, industrial trucks must be equipped with overhead protection (canopy).

2.2.7 Hand and Power Tools

(Reference CH2M HILL, SOP HSE-210, *Hand and Power Tools*)

- Tools shall be inspected prior to use and damaged tools will be tagged and removed from service.
- Hand tools will be used for their intended use and operated in accordance with manufacturers instructions and design limitations;
- Maintain all hand and power tools in a safe condition.
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool.
- Do not carry or lower a power tool by its cord or hose.
- Portable power tools will be plugged into GFCI protected outlets; and
- Portable power tools will be Underwriters Laboratories (UL) listed and have a three-wire grounded plug or be double insulated.
- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters).
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof, etc.).

- When using a knife or blade tool, stroke or cut away from the body with a smooth motion. Be careful not to use excessive force that could damage the tool, the material being cut, or unprotected hands.
- Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

Machine Guarding

- Ensure that all machine guards are in place to prevent contact with drive lines, belts, chains, pinch points or any other sources of mechanical injury.
- Unplugging jammed equipment will only be performed when equipment has been shut down, all sources of energy have been isolated and equipment has been locked/tagged and tested.
- Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires lockout of that equipment prior to work.

2.2.8 Haul Trucks

- Haul truck operators should be familiar with their equipment and inspect all equipment before use.
- Haul truck operators should ensure all persons are clear before operating truck or equipment. Before moving operators should sound horn or alarm, all equipment should be equipped with a working back up alarm.
- Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.
- Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.
- If possible minimize steep grades on haul roads.
- Where grades are steep provide signage indicating the actual grade as well as measures for a runaway truck.
- Trucks are to be operated within the manufacturer's recommendations (for example-retarder charts indicate the combination of loads, grades and speeds that should not be exceeded if the truck's retarder is to work properly – to ensure the truck does not descend grade at speeds greater than listed).
- Haul roads should be well lit, sufficiently wide (at least 50% of the width of the equipment on both sides of road) and equipped with reflectors to indicate access points.
- Haul roads should have adequate right-of-way signs indicating haul directions.

2.2.9 Heavy Equipment (earthmoving/excavating machinery)

(Reference CH2M HILL, SOP HSE-306, *Earthmoving Equipment*)

- CH2M HILL authorizes only those employees qualified by training or previous experience to operate material handling equipment.
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts and operating controls. All defects shall be corrected before the equipment is placed in service. Documentation of this inspection must be maintained onsite at all times.
- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls shall be in a neutral position, with the motors stopped and brakes set.
- Equipment which is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operators view is obstructed.
- When equipment is used near energized powerlines, the closest part of the equipment must be at least 10′ from the powerlines < 50 kV. Provide an additional 4′ for every 10 kV over 50 kV. A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead powerlines must be considered to be an energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins;
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake shall be set whenever equipment is parked, wheels must be chocked when parked on inclines.
- When not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab. When equipment is unattended, power must be shut off, brakes set, blades/buckets landed and shift lever in neutral.

2.2.10 Manual Lifting

(Reference CH2M HILL SOP HSE-112, *Manual Lifting*)

- Back injuries are the leading cause of disabling work and most back injuries are the result of improper lifting techniques or overexertion. Office or field tasks and activities involving manual lifting are to be identified and a program implemented to assist employees to mitigate the risks associated with manual lifting.
- When possible, the task should be modified to minimize manual lifting hazards.
- Effectiveness of manual handling control measures will be evaluated during assessments (HSE-114, Office & Warehouse Safety Program, or HSE-109, Audits).
- Manual handling incidents are reviewed as part of the HSE Program reviews, and the results influence program development, training, and education efforts.
- Lifting of loads weighing more than 40 pounds (18 kilograms) should be evaluated by the SC using the Lifting Evaluation Form contained in SOP HSE-112.
- Using mechanical lifting devices is the preferred means of lifting heavy objects such as forklifts; cranes, hoists, and rigging; hand trucks; and trolleys.
- Personnel shall seek assistance when performing manual lifting tasks that appear beyond their physical capabilities.
- Physical differences make it difficult to set up safe lifting limits, unless extensive individual testing is performed. In general, the following steps must be practiced when planning and performing manual lifts: Assess the situation before you lift; ensure good lifting and body positioning practices; ensure good carrying and setting down practices.
- All employees must receive training for the correct procedures to lift safely using the computer-based health and safety training or project-specific training.

2.2.11 Hoists

(Reference CH2M HILL SOP HSE-315, *Hoists*)

- Manufacturer's specifications and limitations applicable to the operation of material hoists shall be followed. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a professional engineer competent in the field.
- Rated load capacities, recommended operating speeds, and special hazard warnings or instructions shall be posed on hoists.
- Hoisting ropes shall be installed in accordance with the wire rope manufacturer's recommendations.
- The installation of live booms on hoists is prohibited.
- Operating rules shall be established and posted at the operator's station of on hoists.
- No person shall be allowed to ride on material hoists except for the purposes of inspection and maintenance.
- All entrances of the hoistways shall be protected by substantial gates or bars, which guard the full width of the landing entrance.

- Overhead protective coverings of 2-inch planking, ¾-inch plywood, or other solid material of equivalent strength, shall be provided on the top of every material host cage or platform.
- All hoistway entrance bars and gates shall be painted with diagonal contrasting colors, such as black and yellow.
- A qualified hoist operator will operate, inspect, maintain and oversee all hoist operations. The SC or designee shall verify proof of hoist operator qualifications.

2.2.12 Lockout/Tagout Activities

(Reference CH2M HILL SOP HSE-310, *Lockout and Tagout*)

- Only qualified personnel may work on energized equipment that has not been deenergized by lockout/tagout procedures.
- When CH2M HILL controls the work, CH2M HILL must verify that subcontractors affected by the unexpected operation of equipment develop a written lockout/tagout program, provide training on lockout/tagout procedures and coordinate its program with other affected subcontractors. This may include compliance with the owner or facility lockout/tagout program.
- When CH2M HILL personnel are affected by the unexpected operation of equipment they must complete the lockout/tagout training course in the Basic Program. Project training may also be required on site specific lockout procedures.
- Standard lockout/tagout procedures include the following six steps: 1) notify all personnel in the affected area of the lockout/tagout, 2) shut down the equipment using normal operating controls, 3) isolate all energy sources, 4) apply individual lock and tag to each energy isolating device, 5) relieve or restrain all potentially hazardous stored or residual energy, and 6) verify that isolation and deenergization of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.
- All safe guards must be put back in place, all affected personnel notified that lockout has been removed and controls positioned in the safe mode prior to lockout removal. Only the individual who applied the lock and tag may remove them.

2.2.13 Manual Lifting

(Reference CH2M HILL SOP HSE-112, *Manual Lifting*)

- Back injuries are the leading cause of disabling work and most back injuries are the result of improper lifting techniques or overexertion. Office or field tasks and activities involving manual lifting are to be identified and a program implemented to assist employees to mitigate the risks associated with manual lifting.
- When possible, the task should be modified to minimize manual lifting hazards.
- Effectiveness of manual handling control measures will be evaluated during assessments (HSE-114, Office & Warehouse Safety Program, or HSE-109, Audits).

- Manual handling incidents are reviewed as part of the HSE Program reviews, and the results influence program development, training, and education efforts.
- Lifting of loads weighing more than 40 pounds (18 kilograms) should be evaluated by the SC using the Lifting Evaluation Form contained in SOP HSE-112.
- Using mechanical lifting devices is the preferred means of lifting heavy objects such as forklifts; cranes, hoists, and rigging; hand trucks; and trolleys.
- Personnel shall seek assistance when performing manual lifting tasks that appear beyond their physical capabilities.
- Physical differences make it difficult to set up safe lifting limits, unless extensive individual testing is performed. In general, the following steps must be practiced when planning and performing manual lifts: Assess the situation before you lift; ensure good lifting and body positioning practices; ensure good carrying and setting down practices.
- All employees must receive training for the correct procedures to lift safely using the computer-based health and safety training or project-specific training.

2.2.14 Noise

(Reference CH2M HILL SOP HSE-108, *Hearing Conservation*)

- A noise assessment shall be conducted by the RHSM or designee based on potential to emit noise above 85 dBA.
- Areas or equipment emitting noise at or above 90dBA shall be evaluated to determine feasible engineering controls. When engineering controls are not feasible, administrative controls can be developed and appropriate hearing protection will be provided.
- Areas or equipment emitting noise levels at or above 85 dBA, hearing protection must be worn.
- Employees exposed to 84 dBA or a noise dose of 50% must participate in the Hearing Conservation program including initial and annual (as required) audiograms.
- The RHSM will evaluate appropriate controls measures and work practices for employees who have experienced a standard threshold shift (STS) in their hearing.
- Hearing protection is selected based upon noise levels and specific tasks to be performed.
- Employees are trained in the hazards of noise and how to properly wear and maintain their hearing protection.
- Hearing protection will be maintained in a clean and reliable condition, inspected prior to use and after any occurrence to identify any deterioration or damage, and damaged or deteriorated hearing protection repaired or discarded.
- In work areas where actual or potential high noise levels are present at any time, hearing protection must be worn by employees working or walking through the area.

- Areas where tasks requiring hearing protection are taking place may become hearing protection required areas as long as that specific task is taking place.
- High noise areas requiring hearing protection should be posted or employees must be informed of the requirements in an equivalent manner.

2.2.15 Rigging

(Reference CH2M HILL SOP HSE-316, *Rigging*)

General

- All rigging equipment shall be used only for its intended purpose, inspected by a competent person prior to use, and shall not be loaded in excess of its capacity rating. Defective rigging shall be removed from service.
- Tag lines shall be attached to every load being lifted by a crane.
- Rigging equipment shall be protected from flame cutting and electric welding operations, and or contact avoided with solvents and chemicals.
- Rigging equipment, when not in use, shall be stored in an area free from damage caused by environmental elements, hazardous substances, and other factors that may compromise equipment integrity and performance.
- No modification or addition, which that could affect the capacity and or safe operation of the equipment, shall be made without the manufacturer's written approval.
- Rigging equipment shall not be shortened with knots, bolts or other makeshift devices.
- All rigging equipment shall be load tested at least annually by a competent person and documented.
- Special hoisting devices, slings, chokers, hooks, clamps, or other lifting accessories shall be marked to indicate the safe working loads and shall be proof -tested prior to initial use to 125 percent of their rated load. Vendors or suppliers will provide documentation of proof testing documentation.

Equipment

- Protruding end strands of wire rope shall be covered or blunted.
- Wire rope shall not be used, if in any length of eight diameters, the number of total number of visible broken wires exceeds 10% percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect.
- When inspecting the end fittings of wire rope slings, if more than one wire in a lay is broken in the fitting, do not use the sling.
- Synthetic web slings shall be immediately removed from service if any of the following conditions are present:
- acid or caustic burns; melting or charring of any part of the sling
- surface; snags, punctures, tears or cuts; broken or worn stitches; distortion of fittings;
- discoloration of or rotting; red warning line showing.

- Never use makeshift hooks, links or other fasteners. Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments, shall not be used.
- Alloy steel chains shall have permanently affixed identification stating size, grade, rated capacity and reach.
- Shackles and hooks shall be constructed of forged alloy steel with the identifiable load rating on the shackle or hook.

Rigging Use

- Rigging shall not be pulled from under a load when the load is resting on the rigging.
- Place sling(s) in center bowl of hook.
- When attaching slings to the load hoist hook, corners and sharp edges should be "packed" to prevent cutting or damaging the rope or slings.
- Never use nylon, polyester, or polypropylene web slings, or web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists or liquids of acids, caustics or phenolics are present.
- Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range form from minus 20^{o} F to plus 180^{o} F without decreasing the working load limit. For operations outside this temperature range, and for wet frozen slings, the sling manufacturer's recommendations shall be followed.
- When used for eye splices, the U-bolt shall be installed so that the "U" section is in contact with the dead end of the rope.

2.2.16 Stairways and Ladders

(Reference CH2M HILL SOP HSE-214, *Stairways and Ladders*)

- Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials

- Straight and extension ladders must be tied off to prevent displacement
- Ladders that may be displaced by work activities or traffic must be secured or barricaded
- Portable ladders must extend at least 3 feet above landing surface
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder
- Stepladders are to be used in the fully opened and locked position
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder
- Fixed ladders $\geq$ 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

2.2.17 Traffic Control

(Reference CH2M HILL SOP HSE-216, *Traffic Control*)

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a contractor.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route -- behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic – never assume drivers are looking out for you
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a “buddy system” should be used, where one worker is looking towards traffic.
- When working on highway projects, obtain a copy of the contractor’s traffic control plan.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.

- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion (TMCC). All vehicles within 40 feet of traffic should have an orange flashing hazard light atop the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.

  Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

2.2.18 Utilities (underground)

Do not begin subsurface construction activities (e.g., trenching, excavation, drilling, etc.) until a check for underground utilities and similar obstructions has been conducted. The use of as-built drawings and utility company searches must be supplemented with a geophysical or other survey by a qualified, independent survey contractor to identify additional and undiscovered buried utilities.

Examples of the type of geophysical technologies include:

- **Ground Penetrating Radar (GPR),** which can detect pipes, including gas pipes, tanks, conduits, cables etc, both metallic and non-metallic at depths up to 30 feet depending on equipment. Sensitivity for both minimum object size and maximum depth detectable depends on equipment selected, soil conditions, etc.
- **Radio Frequency (RF),** involves inducing an RF signal in the pipe or cable and using a receiver to trace it. Some electric and telephone lines emit RF naturally and can be detected without an induced signal. This method requires knowing where the conductive utility can be accessed to induce RF field if necessary.
- **Dual RF**, a modified version of RF detection using multiple frequencies to enhance sensitivity but with similar limitations to RF
- **Ferromagnetic Detectors**, are metal detectors that will detect ferrous and non-ferrous utilities. Sensitivity is limited, e.g. a 100 mm iron disk to a depth of about one meter or a 25 mm steel paper clip to a depth of about 20 cm.
- **Electronic markers,** are emerging technologies that impart a unique electronic signature to materials such as polyethylene pipe to facilitate location and tracing after installation. Promising for future installations but not of help for most existing utilities already in place.

Procedure

The following procedures shall be used to identify and mark underground utilities during subsurface construction activities on the project:

- The survey contractor shall determine the most appropriate geophysical technique or combinations of techniques to identify the buried utilities on the project, based on the survey contractor's experience and expertise, types of utilities anticipated to be present and specific site conditions.
- The survey contractor shall employ the same geophysical techniques used on the project to identify the buried utilities, to survey the proposed path of subsurface construction work to confirm no buried utilities are present.
- Identify customer specific permit and/or procedural requirements for excavation and drilling activities. For military installations contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.
- Contact utility companies or the state/regional utility protection service at least two (2) working days prior to excavation activities to advise of the proposed work, and ask them to establish the location of the utility underground installations prior to the start of actual excavation.
- Schedule the independent survey.
- Obtain utility clearances for subsurface work on both public and private property.
- Clearances are to be in writing, signed by the party conducting the clearance.
- Underground utility locations must be physically verified by hand digging using wood or fiberglass-handled tools when any adjacent subsurface construction activity (e.g. mechanical drilling, excavating) work is expected to come within 5 feet of the marked underground system. If subsurface construction activity is within 5 feet and parallel to a marked existing utility, the utility location must be exposed and verified by hand digging every 100 feet.
- Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, the Project Manager must notify the utility company or utility protection service to inform them that the markings have been destroyed.
- Conduct a site briefing for employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation..
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon during drilling or change in color, texture or density during excavation that could indicate the ground has been previously disturbed).

2.2.19 Utilities (overhead)

Proximity to Power Lines

No work is to be conducted within 50 feet of overhead power lines without first contacting the utility company to determine the voltage of the system. No aspect of any piece of equipment is to be operated within 50 feet of overhead power lines without first making this determination.

Operations adjacent to overhead power lines are PROHIBITED unless one of the following conditions is satisfied:

- Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage.
- The minimum clearance from energized overhead lines is as shown in the table below, or the equipment will be repositioned and blocked to ensure that no part, including cables, can come within the minimum clearances shown in the table.

MINIMUM DISTANCES FROM POWERLINES

Powerlines Nominal System Kv	Minimum Required Distance, Feet
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

(These distances have been determined to eliminate the potential for arcing based on the line voltage.)

- The power line(s) has been isolated through the use of insulating blankets which have been properly placed by the utility. If insulating blankets are used, the utility will determine the minimum safe operating distance; get this determination in writing with the utility representative's signature.
- All inquiries regarding electric utilities must be made in writing and a written confirmation of the outage/isolation must be received by the Project Manager/Construction Manager prior to the start of work.

2.2.20 Vacuum Trucks

- A pre-operational check should be performed on the vacuum truck before use. Operators must be familiar with the operator's manual.
- Operators of vacuum trucks should be trained and familiar with the equipment. At least one person should be operating the boom and one person signaling and assisting the boom operator.

- Before use the hoses and lines should be checked for fraying and connections checked for leakage. Proper selection of hose diameter and type of hose (smooth bore hose vs. corrugated hose) is vital before the job is performed.
- The amount of force produced by a vacuum truck can kill hose operators. If an eight-inch hose gets stuck to your body at 27 inches Hg, it can be fatal. All trucks should be equipped with an emergency release the hose operator or assistant can initiate if a worker gets sucked into a hose. A remote release, manual release near the truck and an inline "T" should be present on the truck. The inline "T" should be installed between the very last section of hose and the working section of hose. The cord that releases the in-line relief should be tethered to the hose handlers belt or a watch buddy should be nearby holding the cord and ready to relieve in the event of an emergency. Operators should never attempt to vacuum hose with any part of their body to check for suction.
- Tanks on vacuum trucks are a confined space. Before the tank is opened and anyone enters a confined space assessment should be performed.
- The truck should always be grounded before use. The static electricity produced when sucking materials into the system can produce a spark and ignite anything in the tank or hose. Use of a grounding wire will prevent static electric explosions. Vacuum trucks should not be used to pump mixtures with a flash point less than 140 degrees or less - this is an accepted industry standard - refer to the operators manual for more information.
- When positioning truck to work, be extra cautions of personnel and other equipment located next to truck.
- Wet and dry material should not be mixed in the tank.
- When swinging the boom, change directions slowly.
- Do not load dump body beyond rated capacity. Be aware of possible load surge when turning or braking.

2.2.21 Visible Lighting

- While work is in progress outside construction areas shall have at least 33 lux (lx).
- Construction work conducted inside buildings should be provided with at least 55 lux light.
- The means of egress shall be illuminated with emergency and non-emergency lighting to provide a minimum 11 lx measured at the floor. Egress illumination shall be arranged so that the failure of any single lighting unit, including the burning out of an electric bulb will not leave any area in total darkness.

2.2.22 Working over Water

If any activities pose a risk to drowning do the following during the activity:

- Fall protection should be provided to prevent personnel from falling into water. Where fall protection systems are not provided and the danger of drowning exists, U.S. Coast Guard-approved personal flotation devices (PFDs), or a life jacket, shall be worn.

- Provide employees with an approved (USCG for U.S. operations) life jacket or buoyant work vest.
    - Employees should inspect life jackets or work vests daily before use for defects. Do not use defective jackets or vests.
- Post ring buoys with at least 90 feet of 3/8-inch solid-braid polypropylene (or equal) line next to the work area. If the work area is large, post extra buoys 200 feet or less from each other.
- Provide at least one life saving skiff, immediately available at locations where employees are working over or adjacent to water.
    - Ensure the skiff is in the water and capable of being launched by one person and is equipped with both motor and oars.
- Designate at least one employee on site to respond to water emergencies and operate the skiff at times when there are employees above water.
    - If the designated skiff operator is not within visual range of the water, provide him or her with a radio or provide some form of communication to inform them of an emergency.
    - Designated employee should be able to reach a victim in the water within three to four minutes.
- Ensure at least one employee trained in CPR and first aid is on site during work activities.
- No smoking is permitted on board vessels or during refueling operations.
- The boat skipper has the final authority with regard to boat safety and navigational safety.
- Use the checklist below to evaluate vessel integrity.

Marine Vessel Checklist		
	Yes	**N/A**
Personal Flotation Devices (PFDs)		
Visual Distress Signals		
Anchor and Anchor Line		
Sound-Producing Devices		
Navigation Lights and Shapes		
Fire Extinguishers		
Alternative Propulsion (for example, paddles)		
Overall Vessel Condition Satisfactory		
State Requirements		
Marine Sanitation Device		
Navigation Rules		
Ropes and Buoys		

Marine Vessel Checklist		
	Yes	**N/A**
First Aid Kit and Bloodborne Pathogen Kit		
Nonslip Deck		
Personnel Access Ladder		

2.3 General Hazards

2.3.1 General Practices and Housekeeping

- Site work should be performed during daylight hours whenever possible.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.
- Review the safety requirements of each job you are assigned to with your supervisor. You are not expected to perform a job that may result in injury or illness to yourself or to others.
- Familiarize yourself with, understand, and follow jobsite emergency procedures.
- Do not fight or horseplay while conducting the firm’s business.
- Do not use or possess firearms or other weapons while conducting the firm’s business.
- Report unsafe conditions or unsafe acts to your supervisor immediately.
- Report occupational illnesses, injuries, and vehicle accidents.
- Do not remove or make ineffective safeguards or safety devices attached to any piece of equipment.

- Report unsafe equipment, defective or frayed electrical cords, and unguarded machinery to your supervisor.
- Shut don and lock out machinery and equipment before cleaning, adjustment, or repair. Do not lubricate or repair moving parts of machinery while the parts are in motion.
- Do not run in the workplace.
- When ascending or descending stairways, use the handrail and take one step at a time.
- Do not apply compressed air to any person or clothing.
- Do not wear steel taps or shoes with metal exposed to the sole at any CH2M HILL project location.
- Do not wear finger rings, loose clothing, wristwatches, and other loose accessories when within arm's reach of moving machinery.
- Remove waste and debris from the workplace and dispose of in accordance with federal, state, and local regulations.
- Note the correct way to lift heavy objects (secure footing, firm grip, straight back, lift with legs), and get help if needed. Use mechanical lifting devices whenever possible.
- Check toe work area to determine what problems or hazards may exist.

Personal Hygiene

- Keep hands away from nose, mouth, and eyes.
- Keep areas of broken skin (chapped, burned, etc.) covered.
- Wash hands with hot water and soap frequently prior to eating and smoking.

Drugs and Alcohol

The following situations pertaining to drugs and alcohol are prohibited:

- Use or possession of intoxicating beverages while performing CH2M HILL work
- Abuse of prescription or nonprescription drugs
- Regulations. Use or possession of illegal drugs or drugs obtained illegally
- Sale, purchase, or transfer of illegal or illegally obtained drugs
- Arrival at work under the influence of legal or illegal drugs or alcohol

2.3.2 Hazard Communication

(Reference CH2M HILL SOP HSE-107, *Hazard Communication)*

The Hazard Communication Coordinator is to perform the following:

- Complete an inventory of chemicals brought on site by CH2M HILL using Attachment 2.
- Confirm that an inventory of chemicals brought on site by CH2M HILL subcontractors is available.

- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which CH2M HILL employees potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific HAZCOM training using Attachment 3.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

2.3.3 Shipping and Transportation of Chemical Products

(Reference CH2M HILL's Procedures for Shipping and Transporting Dangerous Goods)

Chemicals brought to the site might be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive CH2M HILL training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the RHSM or the Warehouse Coordinator for additional information.

2.3.4 Ultraviolet (UV) Radiation (sun exposure)

Health effects regarding UV radiation are confined to the skin and eyes. Overexposure can result in many skin conditions, including erythema (redness or sunburn), photoallergy (skin rash), phototoxicity (extreme sunburn acquired during short exposures to UV radiation while on certain medications), premature skin aging, and numerous types of skin cancer.

Acute overexposure of UV radiation to the eyes may lead to photokeratitis (inflammation of the cornea), also known as snow blindness. Symptoms include redness of the eyes and a gritty feeling, which progresses to pain and an inability to tolerate any kind of light. This condition can also occur when working in or around water and other UV radiation reflectors. In addition, long-term exposure to sunlight is thought to cause cataracts or clouding of the lens of the eye.

Limit Exposure Time

- Rotate staff so the same personnel are not exposed all of the time.
- Limit exposure time when UV radiation is at peak levels (approximately 2 hours before and after the sun is at its highest point in the sky).
- Avoid exposure to the sun, or take extra precautions when the UV index rating is high.

Provide Shade

- Take lunch and breaks in shaded areas.
- Create shade or shelter through the use of umbrellas, tents, and canopies.

- Fabrics such as canvas, sailcloth, awning material and synthetic shade cloth create good UV radiation protection.
- Check the UV protection of the materials before buying them. Seek protection levels of 95 percent or greater, and check the protection levels for different colors.

Clothing

- Reduce UV radiation damage by wearing proper clothing; for example, long sleeved shirts with collars, and long pants. The fabric should be closely woven and should not let light through.
- Head protection should be worn to protect the face, ears, and neck. Wide-brimmed hats with a neck flap or "Foreign Legion" style caps offer added protection.
- Wear UV-protective sunglasses or safety glasses. These should fit closely to the face. Wrap-around style glasses provide the best protection.

Sunscreen

- Apply sunscreen generously to all exposed skin surfaces at least 20 minutes before exposure, allowing time for it to adhere to the skin.
- Re-apply sunscreen at least every 2 hours, and more frequently when sweating or performing activities where sunscreen may be wiped off.
- Choose a sunscreen with a high sun protection factor (SPF). Most dermatologists advocate SPF 30 or higher for significant sun exposure.
- Waterproof sunscreens should be selected for use in or near water, and by those who perspire sufficiently to wash off non-waterproof products.
- Check for expiration dates, because most sunscreens are only good for about 3 years. Store in a cool place out of the sun.
- Remember—no sunscreen provides 100% protection against UV radiation. Other precautions must be taken to avoid overexposure.

2.3.5 Heat Stress

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.

- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should report it to their supervisor immediately to avoid progression of heat-related illness.

Symptoms and Treatment of Heat Stress

	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool–but not cold–water. Call ambulance, and get medical attention immediately!

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress.

The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

2.3.6 Cold Stress

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.

- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-Chill Index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should report it immediately to their supervisor/PM to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

Symptoms and Treatment of Cold Stress

	Immersion (Trench) Foot	**Frostbite**	**Hypothermia**
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm–but **not** hot–water. Have victim drink warm fluids, but **not** coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but **not** coffee or alcohol. Get medical attention.

2.4 Biological Hazards and Controls

2.4.1 Snakes

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings.

2.4.2 Poison Ivy and Poison Sumac

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

2.4.3 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray **only outside** of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bullseye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention.

2.4.4 Bees and Other Stinging Insects

Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform your supervisor and/or buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

2.4.5 Bloodborne Pathogens

(Reference CH2M HILL SOP HSE-202, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when coming into contact with landfill waste or waste streams containing potentially infectious material (PIM).

- Employees trained in first-aid/CPR or those exposed to PIM must complete CH2M HILL's 1-hour bloodborne computer-based training module annually.
- Hepatitis B vaccine (HBV) is offered to employees who may be exposed to PIM when they complete training and within 10 working days of assignment. (Note: Employees whose exposure stems only from rendering first aid as a collateral duty receives the vaccine after exposure.)
- Employees who decline the HBV vaccine must sign the declination form (contact regional Safety Program Assistant [SPA]) indicating they declined the vaccination.

Anyone who declines the vaccination and chooses to receive the vaccination at a later time may still receive the vaccination by contacting the SPA.

- Hepatitis B and tetanus vaccinations can be requested by completing the medical portion of the enrollment form, located under Tools & Forms at the HS&E web page, or by contacting the regional SPA.

Work Controls

- Observe universal precautions to prevent contact with blood or other PIMs. Where differentiation between body fluid types is difficult or impossible, consider all body fluids to be potentially infectious materials.
- Consider all sharps encountered at industrial, medical, dental, or biological waste facilities or sampling locations to be contaminated and PIMs.
- Always wash your hands and face with soap and running water after contacting PIMs. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes. These must be provided for employees who have been exposed to PIMs. When antiseptic cleansers or towelettes are used, always rewash your hands and face with soap and running water as soon as available. Do not consume food or beverages until after thoroughly washing your hands and face.
- Decontaminate all potentially contaminated equipment and environmental surfaces with chlorine bleach as soon as possible. Clean and decontaminate on a regular basis (and immediately upon visible contamination) all bins, pails, cans, and other receptacles intended for reuse that have the potential for becoming contaminated.
- Use one part chlorine bleach (5.25 percent sodium hypochlorite solution) diluted with 10 parts water for decontaminating equipment or surfaces after initially removing blood or other PIMs. Remove contaminated PPE as soon as possible before leaving a work area.
- Place regulated waste in containers that are closable; are constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping; are labeled with a Biological warning label or color-coded; and are tightly closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

Post Exposure

CH2M HILL will provide exposed employees with a confidential medical examination should an exposure to PIM occur. This examination includes the following procedures:

- Documenting the exposure
- Testing the exposed employee's and the source individual's blood (with consent)
- Administering post-exposure prophylaxis

2.4.6 Mosquito Bites

Due to the recent detection of the West Nile Virus in the Southwestern United States it is recommended that **preventative measures** be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquito’s are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.
- Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

Symptoms of Exposure to the West Nile Virus

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3-15 days.

Contact the project RHSM with questions, and immediately report any suspicious symptoms to your supervisor/PM.

2.5 Radiological Hazards and Controls

Refer to CH2M HILL’s Core Standard, Radiological Control and Radiological Controls Manual for additional requirements.

Hazards	Controls
None Known	None Required

2.6 Potential Contaminants of Concern

The chemicals that are known to be present in the sludge and silt in Wagner Creek are present in low amounts. In most cases, they are present in levels below the criteria for classification as hazardous wastes. It is highly unlikely that workers will be exposed to concentrations above the action limits for occupational exposures however since these contaminants are known to cause reactions with skin and other health effects, personal protective equipment as outlined in Section 5.

Potential Contaminants of Concern

Contaminant	Location and Maximum[a] Concentration (ppm)	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
Arsenic	SS: 50 mg/kg	0.01 mg/m^3	5 Ca	Ulceration of nasal septum, respiratory irritation, dermatitis, gastrointestinal disturbances, peripheral neuropathy, hyperpigmentation	NA
Benzo(a) pyrene, Benzo(a) anthracene, Benzo(b) fluoranthene, Benzo (K) fluoranthene	SS: 13,400 -24,000 ug/kg	0.2 mg/m^3	ND	An animal carcinogen, probable human carcinogen; a nasal, respiratory tract, and skin irritant; (all substances have probable, possible carcinogenic potential).	NA
Cadmium	SS: 57 mg/kg	0.005 mg/m^3	9 Ca	Pulmonary edema, coughing, chest tightness/pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, difficulty breathing, loss of sense of smell, emphysema, mild anemia	NA
Chromium (as Cr(II) & Cr(III))	SS:334 mg/kg	0.5 mg/m^3	25 mg/m^3	Irritated eyes, sensitization dermatitis, histologic fibrosis of lungs	NA
Dibenz(a,h)anthracene	SS: 7900 ug/kg	0.2 mg/m^3	80 mg/m^3 [c]	Dermatitis and bronchitis	UK
Indeno(1,2,3-cd)pyrene	SS: 2920 ug/kg	0.2 mg/m^3	80 mg/m^3 [c]	A possible human carcinogen, a skin irritant. Should protect this chemical from exposure to light..	UK
Dioxins		NA	NA	Dioxin is a confirmed human carcinogen. Eye irritation; allergic dermatitis, chloracne; porphyria; headache; weakness; gastrointestinal disturbance; possible reproductive, teratogenic effects. In animals: liver, kidney damage; hemorrhage; endometriosis; developmental neurotoxicity; immunosuppression; endocrine disturbances, reproductive problems; [potential occupational carcinogen	UK
Lead	SS: 3610 mg/kg	0.05 mg/m^3	100	Weakness lassitude, facial pallor, pal eye, weight loss, malnutrition, abdominal pain, constipation, anemia, gingival lead line, tremors, paralysis of wrist and ankles, encephalopathy, kidney disease, irritated eyes, hypertension	NA
Mercury	SS: 7.14 mg/kg	0.05 mg/m^3	10	Skin and eye irritation, cough, chest pain, difficult breathing, bronchitis, pneumontitis, tremors, insomnia, irritability, indecision, headache, fatigue, weakness, GI disturbance	NA

Footnotes:

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).

[b] Appropriate value of PEL, REL, or TLV listed.

[c] IDLH = immediately dangerous to life and health (units are the same as specified “Exposure Limit” units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.

[d] PIP = photoionization potential; NA = Not applicable; UK = Unknown.

<table>
<tr><th colspan="6">Potential Contaminants of Concern</th></tr>
<tr><th>Contaminant</th><th>Location and Maximum[a] Concentration (ppm)</th><th>Exposure Limit[b]</th><th>IDLH[c]</th><th>Symptoms and Effects of Exposure</th><th>PIP[d] (eV)</th></tr>
<tr><td colspan="6">Potential Routes of Exposure</td></tr>
<tr><td colspan="2">Dermal: Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 4.</td><td colspan="3">Inhalation: Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 4 and 5, respectively.</td><td>Other: Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).</td></tr>
</table>

3.0 Project Organization and Personnel

3.1 CH2M HILL Employee Medical Surveillance and Training

(Reference CH2M HILL- SOPs HSE-113, Medical Surveillance, and HSE-110, Training)

Employees designated “SC” have completed a 12-hour site safety coordinator course, and have documented requisite field experience. An SC with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated “FA-CPR” are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL-SOP HSE-120, *Reproductive Health*, including obtaining a physician’s statement of the employee’s ability to perform hazardous activities before being assigned fieldwork.

Employee Name	Office	Responsibility	SSC/FA-CPR
To Be Determined			

3.2 Field Team Chain of Command and Communication Procedures

3.2.1 Client

Contact Name: Gary Fabrikant
City of Miami Dept of Capital Improvements Asst Director
444 S.W. 2nd Ave. Miami , FL 33130-1910
O - (305)-416-1252 F – (305) 416-2153 gfabrikant@miamigov.com

3.2.2 CH2M HILL

Program Manager: Todd Milne
Project Manager (PM): David Cole
Responsible Health and Safety Manager (RHSM): Michael Goldman/ATL
Field Team Leader: George Hicks
Safety Coordinator (SC): To Be Determined

The PM is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The PM has overall management responsibility for the tasks listed below. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this SOP:

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors)
- Select safe and competent subcontractors by:
  - obtaining, reviewing and accepting or rejecting subcontractor pre-qualification questionnaires
  - ensuring that acceptable certificates of insurance, including CH2M HILL as named additional insured, are secured as a condition of subcontract award
  - including HS&E submittals checklist in subcontract agreements, and ensuring that appropriate site-specific safety procedures, training and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations
- Maintain copies of subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel
- Provide oversight of subcontractor HS&E practices per the site-specific safety plan
- Manage the site and interfacing with 3rd parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The CH2M HILL RHSM is responsible for:

- Review and accept or reject subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator (KA)
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations
- Support the oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with on-site 3rd parties per the site-specific safety plan

The SC is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify this HSP is current and amended when project activities or conditions change.
- Verify CH2M HILL site personnel and subcontractor personnel read the HSP and sign Attachment 1, Employee Sign-Off Form prior to commencing field activities.
- Verify CH2M HILL site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in Section 2.
- Verify compliance with the requirements of this HSP and applicable subcontractor health and safety plan(s)
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in Section 2.2.x
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in Section 9.
- Post OSHA job-site poster; the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established.
- Verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (e.g., as tasks or hazards change)
- Verify that project H&S forms and permits, found in Attachment 5 and 6, are being used as outlined in Section 2.
- Perform oversight and/or assessments of subcontractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists, found in Attachment 6, are being used as outlined in Section 2
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations
- Manage the site and interfacing with 3rd parties in a manner consistent with our contract/subcontract agreements and the applicable standard of reasonable care
- Coordinate with the RHSM regarding CH2M HILL and subcontractor operational performance, and 3rd party interfaces
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The training required for the SC is as follows:

- SC-Initial and SC-Construction
- OSHA 10-hour course for Construction
- First Aid and CPR

- Relevant Competent Person Courses (excavation, confined space, scaffold, fall protection, etc.)

The SC is responsible for contacting the Field Team Leader and Project Manager. In general, the Project Manager will contact the client. The RHSM should be contacted as appropriate.

3.2.3 CH2M HILL Subcontractors

(Reference CH2M HILL SOP HSE-215, *Contracts and Subcontracts)*

Subcontractor: Government Relations - TEW Cardenas, LLP.

Subcontractor Contact Name: Roman Gustesi
Telephone: O – (305) 536-8495 C – (786) 255-5783

Subcontractor: Public Relations- San Pedro Productions
Subcontractor Contact Name: Pat San Pedro
Telephone: O – (305) 445-4979 C – (305) 588-9088

Subcontractor: Technical Support - Milian Swain & Associates
Subcontractor Contact Name: Drew Campbell
Telephone: O – (561) 689-0863

Subcontractor: Survey Sub - ARC Surveying and Mapping, Inc.
Subcontractor Contact Name: John Sawyer
Telephone: O – (904) 384-8377 C – (904) 237-5949

The subcontractors listed above are required to submit their own Accident Prevention Plan, specific to this project. Other plans, such as Lead or Asbestos Abatement Compliance plans, may be required as well. Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit their plans to CH2M HILL for review before the start of field work.

Subcontractors are also required to prepare an Activity Hazard Analysis (AHA) before beginning each activity posing H&S hazards to their personnel using the AHA form provided in Attachment 6 as a guide. The AHA shall identify the principle steps of the activity, potential H&S hazards for each step and recommended control measures for each identified hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

CH2M HILL should continuously endeavor to observe subcontractors' safety performance and adherence to their Accident Prevention Plan and AHAs. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. CH2M HILL is not responsible for exhaustive observation for hazards and unsafe practices. Self-assessment checklists contained in Attachment 5 are to be used by CH2M HILL personnel to review subcontractor performance. CH2M HILL oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

Health and safety related communications with CH2M HILL subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this plan, and require them to sign the Employee Signoff Form included in Attachment 1.
- Request subcontractor(s) to brief project team on the hazards and precautions related to their work.
- When apparent non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action – the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.
- When an apparent imminent danger exists, immediately remove all affected CH2M HILL employees and subcontractors, notify subcontractor safety representative, and stop affected work until adequate corrective measures are implemented. Notify the PM and RHSM as appropriate.

Document all oral health and safety related communications in project field logbook, daily reports, or other records.

4.0 Personal Protective Equipment (PPE)

(Reference CH2M HILL- SOP HSE-117, *Personal Protective Equipment*)

- PPE must be worn by employees when actual or potential hazards exist and engineering controls or administrative practices cannot adequately control those hazards.
- A PPE assessment has been conducted by the RHSM based on project tasks (see PPE specifications below). Verification and certification of assigned PPE by task is completed by the RHSM or designee.
- Employees must be trained to properly wear and maintain the PPE.
- In work areas where actual or potential hazards are present at any time, PPE must be worn by employees working or walking through the area.
- Areas requiring PPE should be posted or employees must be informed of the requirements in an equivalent manner.
- PPE must be inspected prior to use and after any occurrence to identify any deterioration or damage.
- PPE must be maintained in a clean and reliable condition.
- Damaged PPE shall not be used and must either be repaired or discarded.
- PPE shall not be modified, tampered with, or repaired beyond routine maintenance.

Note that PPE is required when exposed to the general hazards listed below. Because certain tasks (e.g., welding, energized work, etc.) require specialized PPE, refer to Section 2 for task-specific PPE requirements.

PPE Specifications [a]

Task	Level	Body	Head	Respirator [b]
Mobilization, Surveying, Utility clearance, Heavy Lifting/Crane Operations, Site Restoration and Demobilization	D	Work clothes; safety toed leather work boots and gloves. Class II floatation device when working over water.	Hardhat [c] Safety glasses with side shields Ear protection [d]	None required
Sampling and Sediment Excavation Operations that do not require contact with contaminated media	Modified D1	Work clothes or cotton coveralls. . Class II floatation device when working over water. **Boots:** Safety toed leather work boot, with disposable boot covers when in contact with sediments. **Gloves:** Nitrile gloves when in contact with sediments.	Hardhat [c] Safety glasses with side shields Ear protection [d]	None required
Sampling and Sediment Excavation Operations that require contact with contaminated media Vacuum truck/water pumping and Decontamination activities	Modified D2	**Coveralls:** Saranex coated Tyvek® **Boots:** Safety -toe, chemical-resistant boots OR Safety -toe, leather work boots with outer rubber boot covers **Gloves:** Inner surgical-style nitrile & outer chemical-resistant nitrile gloves. Class II floatation device when working over water.	Hardhat [c] Safety glasses with side shields Full face shield, as necessary Ear protection	None required
Diving	NA	As determined by the diver.		

Reasons for Upgrading or Downgrading Level of Protection

Upgrade[f]	Downgrade
• Request from individual performing tasks. • Change in work tasks that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurrence of gas or vapor emission. • Known or suspected presence of dermal hazards. • Instrument action levels (Section 5) exceeded.	• New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decrease the hazard. • Change in work task that will reduce contact with hazardous materials.

[a] Modifications are as indicated. CH2M HILL will provide PPE only to CH2M HILL employees.

[c] Hardhat and splash-shield areas are to be determined by the SSC.

[d] Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.

[f] Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SSC qualified at that level is present.

5.0 Air Monitoring/Sampling

(Reference CH2M HILL SOP HSE-207, Exposure Monitoring for Airborne Chemical Hazards)

5.1 Air Monitoring Specifications

Instrument	Tasks	Action Levels[a]	Action to be Taken when Action Level reached	Frequency [b]	Calibration
Dust Monitor: Miniram model PDM-3 or equivalent	As determined by the SC – tasks that include potential for airborne concentrations of dust	<1.0 mg/m^3 1.0 to 5 mg/m^3 > 5 mg/m^3	Level D Level C Evacuate work area and contact the HSM	Initially and periodically during tasks	Zero Daily
CGI: MSA model 260 or 261 or equivalent	As determined by the SC	0-10% : 10-25% LEL: >25% LEL:	No explosion hazard Potential explosion hazard Explosion hazard; evacuate or vent	Continuous during advancement of boring or trench	Daily
O_2Meter: MSA model 260 or 261 or equivalent	As determined by the SC	>25%[c] O_2: 20.9%[c] O_2: <19.5%[c] O_2:	Explosion hazard; evacuate or vent Normal O_2 O_2 deficient; vent or use SCBA	Continuous during advancement of boring or trench	Daily

[a] Action levels apply to sustained breathing-zone measurements above background.

[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SSC; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3", "at surface/SB-2", etc.).

[c] If the measured percent of O_2 is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O_2 action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O_2 action levels are required for confined-space entry (refer to Section 2).

[d] Refer to SOP HS-10 for instructions and documentation on radiation monitoring and screening.

[e] Noise monitoring and audiometric testing also required.

5.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures)

Instrument	Gas	Span	Reading	Method
Dust Monitor: Miniram-PDM3	Dust-free air	Not applicable	0.00 mg/m^3 in "Measure" mode	Dust-free area OR Z-bag with HEPA filter
CGI: MSA 260, 261, 360, or 361	0.75% pentane	N/A	50% LEL ± 5% LEL	1.5 lpm reg direct tubing

6.0 Decontamination

(Reference CH2M HILL SOP HSE-218, *Hazardous Waste Operations*)

Decontamination activities are not anticipated during Field activities, however, it maybe required in the event of a spill or release (i.e. fuel). The SC must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SC. The SC must ensure that procedures are established for disposing of materials generated on the site.

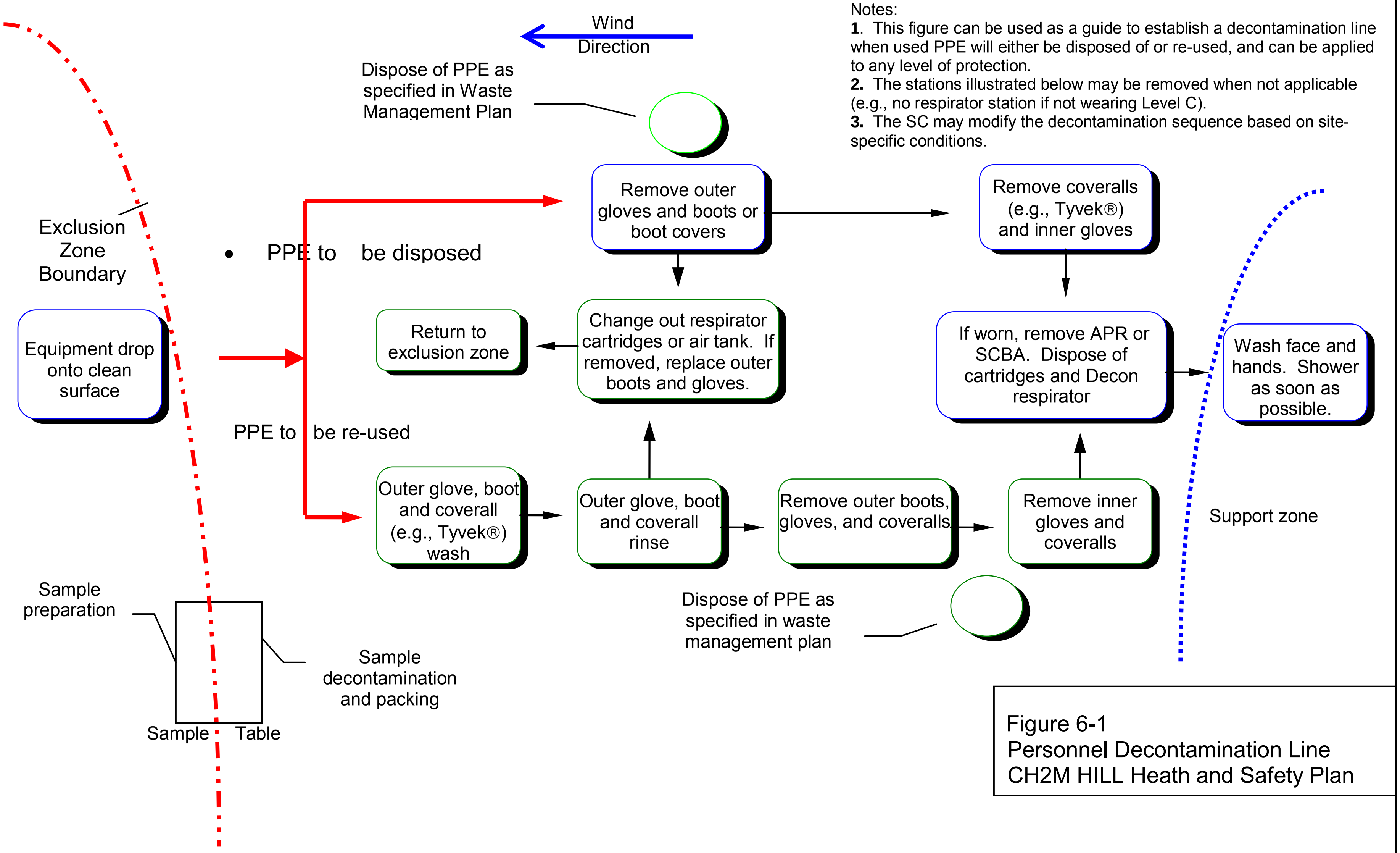
6.1 Decontamination Specifications

Personnel	**Sample Equipment**	**Heavy Equipment**
• Boot wash/rinse • Glove wash/rinse • Outer-glove removal • Body-suit removal • Inner-glove removal • Respirator removal • Hand wash/rinse • Face wash/rinse • Shower ASAP • Dispose of PPE in municipal trash, or contain for disposal • Dispose of personnel rinse water to facility or sanitary sewer, or contain for offsite disposal	• Wash/rinse equipment • Solvent-rinse equipment • Contain solvent waste for offsite disposal	• Power wash • Steam clean • Dispose of equipment rinse water to facility or sanitary sewer, or contain for offsite disposal

6.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SC should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 6-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SC to accommodate task-specific requirements.



Notes:

1. This figure can be used as a guide to establish a decontamination line when used PPE will either be disposed of or re-used, and can be applied to any level of protection.

2. The stations illustrated below may be removed when not applicable (e.g., no respirator station if not wearing Level C).

3. The SC may modify the decontamination sequence based on site-specific conditions.

Figure 6-1
Personnel Decontamination Line
CH2M HILL Heath and Safety Plan

7.0 Spill Containment Procedures

Sorbent material will be maintained in the support zone. Incidental spills will be contained with sorbent and disposed of properly.

8.0 Site-Control Plan

8.1 Site-Control Procedures

(Reference CH2M HILL SOP HSE-218, *Hazardous Waste Operations)*

- The SSC will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of Health and Safety Plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- The SSC records attendance at safety briefings in a logbook and documents the topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location in accordance with CH2M HILL- SOP, *OSHA Postings*.
- Establish support, decontamination, and exclusion zones. Delineate with flags or cones as appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the "buddy system."
- Initial air monitoring is conducted by the SC in appropriate level of protection.
- The SC is to conduct periodic inspections of work practices to determine the effectiveness of this plan – refer to Sections 2 and 3. Deficiencies are to be noted, reported to the HSM, and corrected.

8.2 Hazwoper Compliance Plan

(Reference CH2M HILL SOP HSE-220, Written Plans and HSE-218 Hazardous Waste Operations)

Certain parts of the site work are covered by state or federal Hazwoper standards and therefore require training and medical monitoring. Anticipated Hazwoper tasks (Section 1.1.1) might occur consecutively or concurrently with respect to non-Hazwoper tasks. This section outlines procedures to be followed when approved activities specified in Section

1.1.2 do not require 24- or 40-hour training. Non-Hazwoper-trained personnel also must be trained in accordance with all other state and federal OSHA requirements.

- In many cases, air sampling, in addition to real-time monitoring, must confirm that there is no exposure to gases or vapors before non-Hazwoper-trained personnel are allowed on the site, or while non-Hazwoper-trained staff is working in proximity to Hazwoper activities. Other data (e.g., soil) also must document that there is no potential for exposure. The RHSM must approve the interpretation of these data. Refer to Sections 2.0 and 5.0 for contaminant data and air sampling requirements, respectively.
- When non-Hazwoper-trained personnel are at risk of exposure, the SC must post the exclusion zone and inform non-Hazwoper-trained personnel of the:
    - nature of the existing contamination and its locations
    - limitations of their access
    - emergency action plan for the site
- Periodic air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-Hazwoper-trained personnel (e.g., in an adjacent area) are not exposed to airborne contaminants.
- When exposure is possible, non-Hazwoper-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.
- Remediation treatment system start-ups: Once a treatment system begins to pump and treat contaminated media, the site is, for the purposes of applying the Hazwoper standard, considered a treatment, storage, and disposal facility (TSDF). Therefore, once the system begins operation, only Hazwoper-trained personnel (minimum of 24 hour of training) will be permitted to enter the site. All non-Hazwoper-trained personnel must not enter the TSDF area of the site.

9.0 Emergency Response Plan

(Reference CH2M HILL SOP HSE-106, *Emergency Planning*)

9.1 Pre-Emergency Planning

- The Emergency Response Coordinator (ERC) performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with CH2M HILL onsite parties, the facility, and local emergency-service providers as appropriate.
- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Field Trailers: Post “Exit” signs above exit doors, and post “Fire Extinguisher” signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including driving route to hospital. Drills should take place periodically but no less than once a year.
- Brief new workers on the emergency response plan.
- The ERC will evaluate emergency response actions and initiate appropriate follow-up actions.

9.2 Emergency Equipment and Supplies

The ERC should mark the locations of emergency equipment on the site map and post the map.

Emergency Equipment and Supplies	Location
20 (or two 10) class A,B,C fire extinguisher	Designated vehicle
First aid kit	Designated vehicle/boat
Eye Wash	Designated vehicle
Potable water	Designated vehicle
Bloodborne-pathogen kit	Designated vehicle
Additional equipment (specify):	Boat
Class II personal floatation devices	
Ring Buoy	
Air horn	
Oars	

9.3 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Notify appropriate response personnel.
- Shut down CH2M HILL operations and evacuate the immediate work area.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.
- Implement HSE-111, Incident Notification, Reporting and Investigation.
- Notify and submit reports to clients as required in contract.

Small fires or spills posing minimal safety or health hazards may be controlled with onsite spill kits or fire extinguishers without evacuating the site. When in doubt evacuate. Follow the incident reporting procedures in Section 5.7.

9.4 Emergency Medical Treatment

Emergency medical treatment is needed when there is a life-threatening injury (such as severe bleeding, loss of consciousness, breathing/heart has stopped). When in doubt if an injury is life-threatening or not, treat it as needing emergency medical treatment.

- Notify 911 or other appropriate emergency response authorities as listed in Attachment 4.
- The ERC will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.

- Prevent further injury, perform decontamination (if applicable) where feasible; lifesaving and first aid or medical treatment takes priority.
- Initiate first aid and CPR where feasible.
- Notify supervisor and if the injured person is a CH2M HILL employee. The supervisor will call the occupational nurse at 1-800-756-1130 and make other notifications as required by HSE SOP-111, *Incident Notification, Reporting and Investigation*.
- Make certain that the injured person is accompanied to the emergency room.
- Follow the Serious Incident Reporting process in HSE SOP-111, Incident Notification, Reporting and Investigation, and complete incident report forms in Attachment 6.
- Notify and submit reports to client as required in contract

9.5 Evacuation

- Evacuation routes, assembly areas, and severe weather shelters (and alternative routes and assembly areas) are to be specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the ERC or designee before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The ERC and a "buddy" will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- The ERC will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The ERC will follow the incident reporting procedures in Section 5.7.

9.6 Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

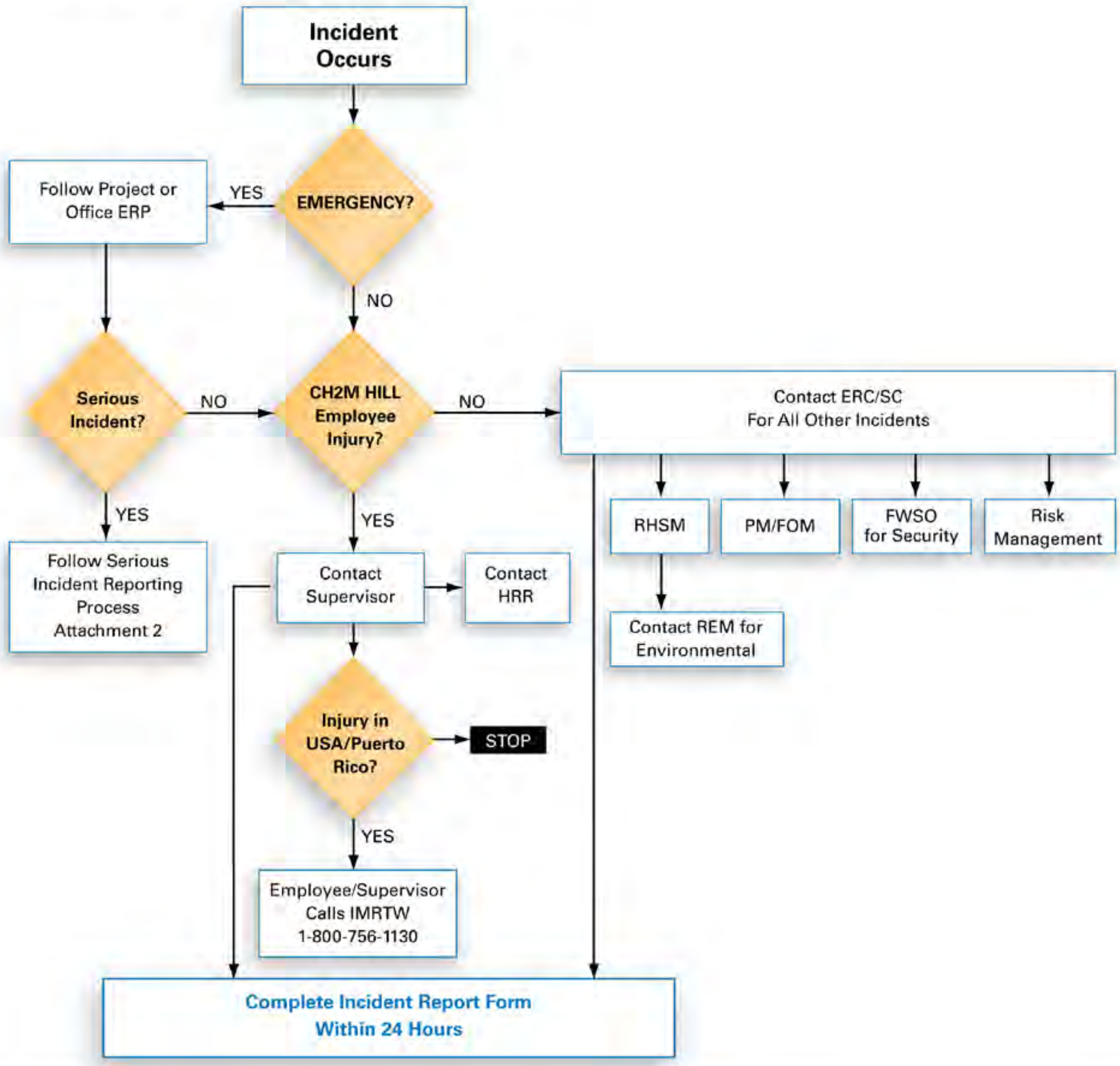
9.7 Incident Notification and Reporting

(Reference CH2M HILL SOP HSE-111, Incident Notification, Reporting and Investigation)

- If you are injured at work, notify your supervisor immediately and contact the Injury Management/Return-to-Work toll free number (for US and Puerto Rico) 1-800-756-1130. All supervisors must contact their Human Resources Representative and complete the employee injury/illness in the Incident Report Form (IRF) in the HITS database within 24 hours of the incident

- Immediately notify the Project Manager (PM), Emergency Response Coordinator (ERC), and/or Responsible Health and Safety Manager (RHSM) for any project incident (fire, spill/release, injury/illness, near miss, property damage, or security-related)
- Report any **serious incidents** (life-threatening injury/illness, death, kidnap/missing person, terrorism, property damage greater than $500K, significant environmental release) **immediately** to your ERC, PM, or RHSM. The Serious Incident Reporting number is 720-286-4911.
- For serious incidents, the Corporate Legal Department will determine who completes the IRF.
- For CH2M HILL subcontractor incidents, immediately notify the ERC and HSM to complete and submit an IRF.
- The RHSM will inform the Responsible Environmental Manager (REM) of any environmental incidents.
- Evaluation and follow-up of the IRF will be completed by the type of incident by the RHSM, REM, or FWSO. The Business Group (BG) HSE Lead will review all BG incidents and modify as required.
- Incident Investigations must be initiated and completed as soon as possible but no later than 72 hours after the incident.
- See the following flowcharts for Immediate Incident Reporting and Serious Incident Reporting.

Attachment 1
CH2M HILL Immediate Incident Notification

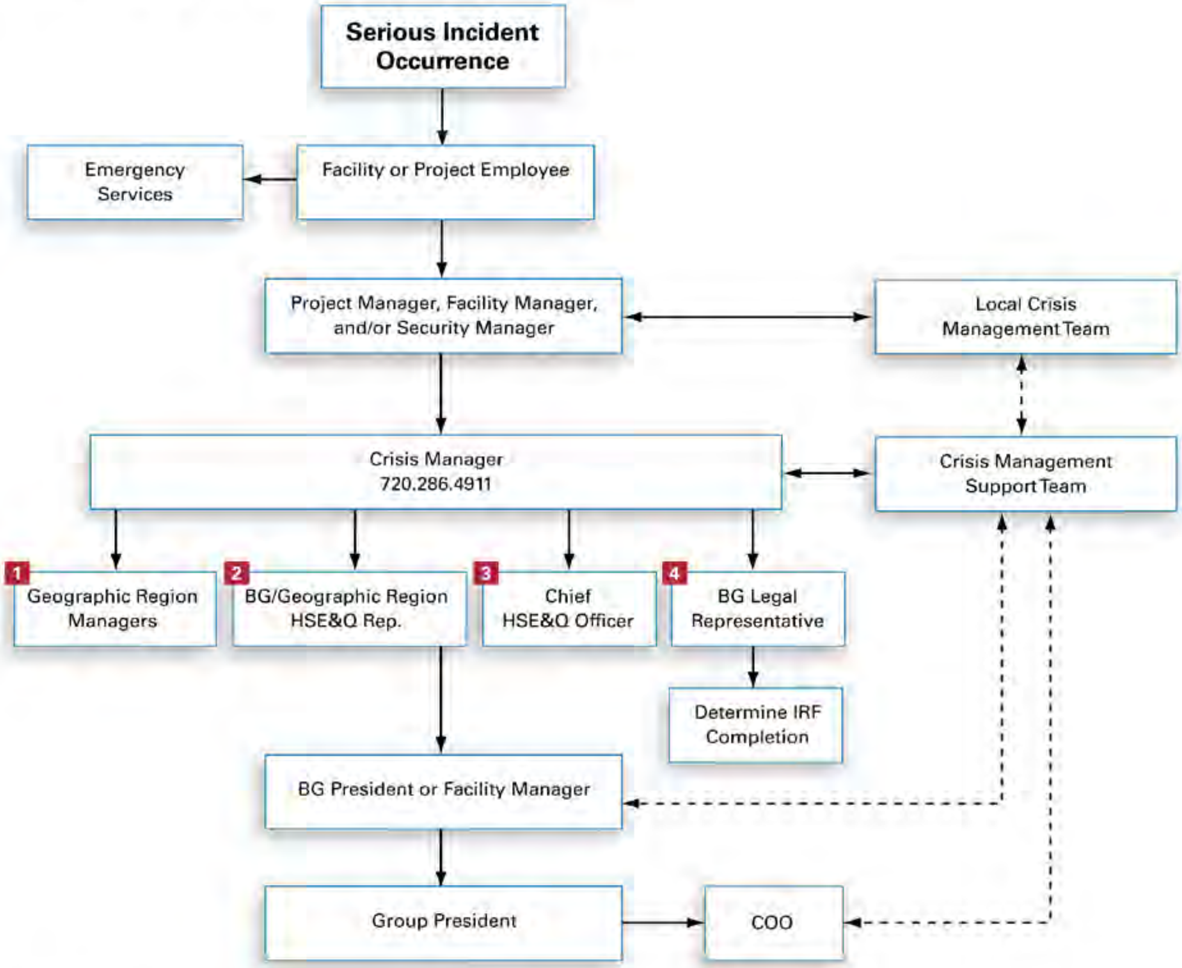


ERC = Emergency Response Coordinator
(designated in Emergency Response Plan)
ERP = Emergency Response Plan
FOM = Facility Office Manager
FWSO = Firm Wide Security Operations
HRR = Human Resources Representative

IMRTW = Injury Management/Return-to-Work
PM = Project Manager
REM = Responsible Environmental Manager
RHSM = Responsible Health & Safety Manager
SC = Safety Coordinator

CH2MHILL

Attachment 2
CH2M HILL Serious Incident Notification



LEGEND:

——→ Direct line of communication

←- - -→ Indirect line of communication

DEFINITIONS:

Local Crisis Management Team: Team comprised of key facility, project and/or business group personnel. Team is assembled as necessary and as appropriate to effectively manage and respond to a crisis situation (serious incident) at/on scene.

Crisis Management Support Team: Team comprised of key corporate personnel. Team is assembled as necessary and as appropriate to effectively support, direct, and /or supplement a Local Crisis Management Team.

Crisis Manager: Corporate based Crisis Manager, contactable by pager 24/7.

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10.0 Behavior Based Loss Prevention System

A Behavior Based Loss Prevention System (BBLPS) is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The four basic Loss Prevention tools that will be used CH2M HILL projects to implement the BBLPS include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plans (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (NLI)

The SC or designated CH2M HILL representative onsite is responsible for implementing the BBLPS on the project site. The Project Manager remains accountable for its implementation. The SC or designee shall only oversee the subcontractor's implementation of their AHAs and PTSPs processes on the project.

10.1 Activity Hazard Analysis

An Activity Hazard Analysis (AHA) defines the activity being performed, the hazards posed and control measures required to perform the work safely. Workers are briefed on the AHA before doing the work and their input is solicited prior, during and after the performance of work to further identify the hazards posed and control measures required.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in Attachment 6. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

An AHA shall be prepared for all field activities performed by CH2M HILL and subcontractor activities during the course of the project. Hazard Controls (found in Sections 2.0 and its subsections of the HSP), the Hazard Analysis Table (Table 1), and applicable CH2M HILL CSs and SOPs should be used as a basis for preparing AHAs.

CH2M HILL subcontractors are required to provide AHAs specific to their scope of work on the project for acceptance by CH2M HILL. Each subcontractor shall submit AHAs for their field activities, as defined in their work plan/scope of work, along with their project-specific safety plan/accident prevention plan. Additions or changes in CH2M HILL or subcontractor field activities, equipment, tools or material to perform work or additional/different hazard encountered that require additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised.

10.2 Pre-Task Safety Plans

Daily safety meetings are held with all project personnel in attendance to review the hazards posed and required H&S procedures/AHAs, that apply for each day's project activities. The PTSPs serve the same purpose as these general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on those hazards posed to individual work crews. At the start of each day's activities, the crew supervisor completes the PTSP, provided in Attachment 6, with input from the work crew, during their daily safety meeting. The day's tasks, personnel, tools and equipment that will be used to perform these tasks are listed, along with the hazards posed and required H&S procedures, as identified in the AHA. The use of PTSPs, better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day. The use of PTSPs is a common safety practice in the construction industry.

10.3 Safety Behavior Observations

Safety Behavior Observations (SBO's) shall be conducted by SC or designee for specific work tasks or operations comparing the actual work process against established safe work procedures identified in the project-specific HSP and AHAs. SBO's are a tool to be used by supervisors to provide positive reinforcement for work practices performed correctly, while also identifying and eliminating deviations from safe work procedures that could result in a loss. The SC or designee shall perform at least one SBO each week for tasks/operations addressed in the project-specific HSP or AHA. The SC or designee shall complete the SBO form in **Attachment 6** for the task/operation being observed.

10.4 Loss/Near Loss Investigations

Loss/Near Loss Investigations shall be performed for CH2M HILL and subcontractor incidents involving:

- Person injuries/illnesses and near miss injuries
- Equipment/property damage
- Spills, leaks, regulatory violations
- Motor vehicle accidents

The cause of loss and near loss incidents are similar, so by identifying and correcting the causes of near loss causes, future loss incidents may be prevented. The following is the Loss/Near Loss Investigation Process:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the who, what, when, where and how questions.
- Draw conclusions, pitting facts together into a probable scenario.
- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.

- Develop and implement solutions, matching all identified root causes with solutions.
- Communicate incident as a Lesson Learned to all project personnel.
- Filed follow-up on implemented corrective active action to confirm solution is appropriate.

The SC or designee shall perform an incident investigation, as soon as practical after incident occurrence during the day of the incident, for all Loss and Near Loss Incidents that occur on the project. Loss and Near Loss incident investigations shall be performed using the following incident investigation forms provided in **Attachment 6**:

- Incident Report Form (IRF)
- Root Cause Analysis Form

All Loss and Near Loss incident involving personal injury, property damage in excess of $1,000 or near loss incidents that could have resulted in serious consequences shall be investigated by completing the incident investigation forms and submitting them to the PM and RHSM within 24 hours of incident occurrence. A preliminary Incident Investigation and Root Cause Analysis shall be submitted to the Project Manager and RHSM within 24 hours of incident occurs. The final Incident Investigation and Root Cause Analysis shall be submitted after completing a comprehensive investigation of the incident.

11.0 Approval

This site-specific HSP has been written for use by CH2M HILL only. CH2M HILL claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

Original Plan

Written By: **Date:**

Alison Harwood 8-15-08

Approved By: **Date: August 15, 2008**

Revisions

Revisions Made By: Michael Goldman **Date: April 30, 2009**

Revisions to Plan: Updated emergency contacts.

Revisions Approved By: Michael Goldman **Date: April 30, 2009**

Revisions Made By: Michael Goldman **Date: August 7, 2009**

Revisions to Plan: Updated chemical exposure information.

Revisions Approved By: Michael Goldman **Date: August 7, 2009**

12.0 Attachments

Attachment 1: Employee Signoff Form – Health and Safety Plan

Attachment 2: Chemical Inventory/Register Form

Attachment 3: Chemical-Specific Training Form

Attachment 4: Emergency Contacts

Attachment 5: Project Activity Self-Assessment Checklists/Permits

Attachment 6: Behavior Based Loss Prevention Forms

Attachment 7: Standards of Conduct

Attachment 8: Notice of Safety Violation Form

Attachment 9: Stop Work Order Form

Attachment 10: Kick Off Meeting Outline

Attachment 11: Safety Program Poster & Return to Work Poster

Attachment 12: Material Safety Data Sheets

CH2M HILL Health and Safety Plan

Attachment 1

Health and Safety Plan Employee Sign-off Form

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

The CH2M HILL project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

Project Name:

Project Number:

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

CH2M HILL Health and Safety Plan

Attachment 2

Chemical Inventory/Register Form

CH2MHILL

CHEMICAL INVENTORY/REGISTER FORM

Refer to Standard of Practice HSE-107 Attachment 1 for instructions on completing this form.

Location: ____

HCC: ____

☐ Office ☐ Warehouse ☐ Laboratory ☐ Project: ____________________

Project No.: ________________

Regulated Product	**Location**	**Container labeled (✓if yes)**	**MSDS available (✓if yes)**

MSDS for the listed products will be maintained at: ____________________________

CH2M HILL Health and Safety Plan

Attachment 3

Chemical-Specific Training Form

CH2MHILL

CHEMICAL-SPECIFIC TRAINING FORM

Refer to Standard Operating Procedure HSE-107 Attachment 1 for instructions on completing this form.

Location:	Project #:
HCC:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL’s written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

CH2M HILL Health and Safety Plan

Attachment 4

Emergency Contacts

Emergency Contacts

24-hour CH2M HILL Serious Incident Reporting Contact/Pager – 720-286-4911

If injured on the job, notify your supervisor and then call 1-866-893-2514 to contact CH2M HILL'S Occupational Nurse

Medical Emergency – 911 Facility Medical Response #: 305-416-5400 Local Ambulance #: 305-416-5400	**CH2M HILL- Medical Consultant** WorkCare Dr. Peter Greaney M.D. 300 S. Harbor Blvd, Suite 600 Anaheim , CA 92805 800-455-6155 714-978-7488
Urgent Care Facility Occupational Health and Wellness M-F 7:30 am - 6:00 pm 3399 N.W., 72 Ave., Suite 101 Miami, FL. 33122 305-599-9933	**CH2M HILL Director Security Operations** Thomas Horton/DEN 720/273-3100 (cell) or 720/286-0022 (office)
Fire/Spill Emergency -- 911 Facility Fire Response #: 306-416-5400 Local Fire Dept #: 306-416-5400	**Responsible Health and Safety Manager (RHSM)** Name: Michael Goldman Phone: 770/604-9182 Cell: 770/331-3127
Security & Police – 911 Facility Security #: 305-476-5423 Local Police #: 305-476-5423	**Human Resources Department** Name: Carol Miscoe Phone: 830-708-5274
Utilities Emergency Phone Numbers Water:305-416-5400 Gas: Electric: 800-432-4770 (All of Florida)	**Worker's Compensation:** Contact Business Group HR dept. to have form completed or contact Albert Jerman after hours: 303/741-5927
Safety Coordinator (SC) Name: To Be Determined Phone:	**Media Inquiries Corporate Strategic Communications** Name: John Corsi Phone: (720) 286-2087
Project Manager Name: David Cole Phone: O – (440) 599-2661 C – (440) 344-2300	**Automobile Accidents**: Rental: Linda Anderson/COR 720/286-2401 CH2M HILL owned vehicle: Linda George 720-286-2057
Federal Express Dangerous Goods Shipping Phone: 800/238-5355	**CH2M HILL Dangerous Goods Shipping** Phone: 800/255-3924

Facility Alarms: Not Applicable

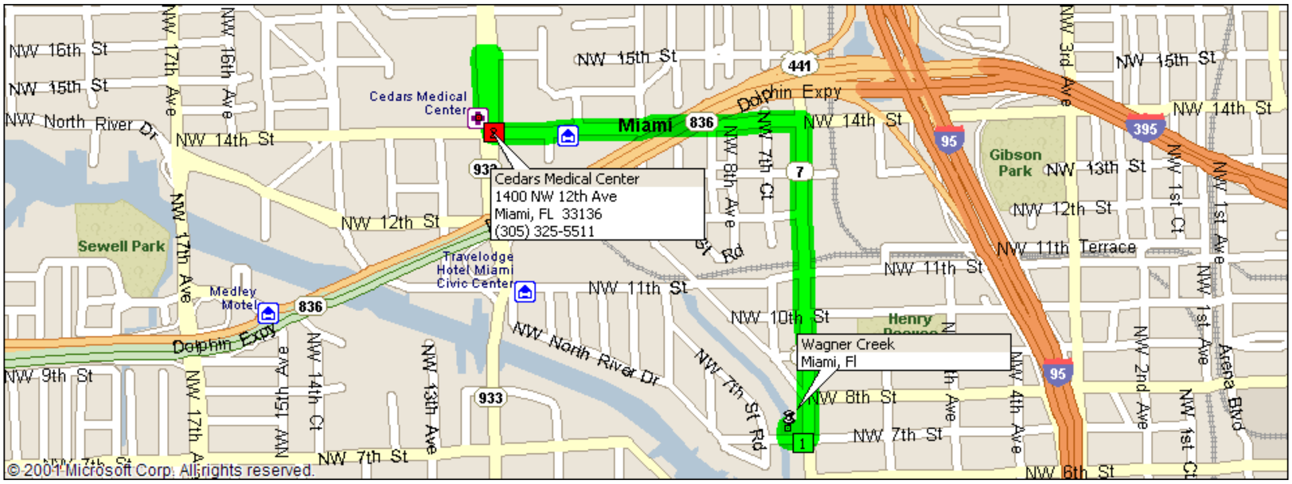
Evacuation Assembly Area(s):

Facility/Site Evacuation Route(s):

Directions to Local Hospital

Local Hospital

Cedars Medical Center
1400 NW 12th AVE
Miami, FL 33136
305-325-5511



Summary: 1.3 miles (6 minutes)

Mile	Instruction	For
0.0	**Depart Wagner Creek on Local road(s) (South)**	**32 yds**
0.1	Turn LEFT (East) onto NW 7th St	54 yds
0.1	Turn LEFT (North) onto US-441 [SR-7]	0.5 mi
0.6	Turn LEFT (West) onto NW 14th St	0.5 mi
1.1	Turn RIGHT (North) onto SR-933 [NW 12th Ave]	0.1 mi
1.2	Turn LEFT (West) onto NW 15th St	21 yds
1.2	Turn LEFT (South) onto SR-933 [NW 12th Ave]	164 yds
1.3	**Arrive Cedars Medical Center**	

Directions to Local Health Resource Medical Clinic

Occupational Health and Wellness **Open Monday-Friday 7:30 am-6:00pm**
3399 N.W., 72 Ave., Suite 101
Miami, FL. 33122
305-599-9933

Summary: 9.8 miles (17 minutes)

Mile	Instruction	For	Toward
0.0	**Depart Wagner Creek on Local road(s) (South)**	**32 yds**	
0.1	Turn LEFT (East) onto NW 7th St	0.5 mi	
0.5	Turn LEFT (North) onto NW 3rd Ave [Da Dorsey Blvd]	109 yds	
0.6	Continue (North) on Ramp	0.1 mi	I-95
0.7	Merge onto I-95 (North)	1.7 mi	
2.4	Turn off onto Ramp	0.8 mi	I-195 / SR-112 / Miami Beach / Airport
3.2	Merge onto SR-112 [Airport Expy] (West)	3.0 mi	
6.2	Turn off onto Ramp	0.1 mi	N W 36th St / Miami Springs
6.3	Merge onto SR-948 [NW 36th St] (West)	3.2 mi	
9.5	Turn LEFT (South) onto SR-969 [NW 72nd Ave]	0.2 mi	
9.8	Turn LEFT (East) onto NW 34th St	10 yds	
9.8	**Arrive Occupational Health and Wellness [3399 NW 72nd Ave, Miami, FL 33122]**		

CH2M HILL Health and Safety Plan

Attachment 5

Project Activity Self-Assessment Checklists/Permits/Forms

- Cranes/Hoisting
- Excavations
- Hand and Power Tools
- Traffic Control

-
-
-
-

H&S Self-Assessment Checklist—CRANES, HOISTS AND RIGGING

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are exposed to crane, hoist and rigging hazards (complete Section 1 and 3) and/or 2) CH2M HILL provides oversight of subcontractor personnel who are exposed to crane, hoist and rigging hazards (complete entire checklist).

SSC or DSC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of crane, hoist and rigging operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: ____ Project No.: _______________________

Location: ____ PM: ___________________________________

Auditor: _____________________________________ Title: __________________________________ Date: _____________

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposure to crane, hoist and rigging hazards
☐ Evaluate a CH2M HILL subcontractor's compliance with crane, hoist and rigging requirements
Subcontractors Name: ____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-44.

SECTION 1

	Yes	No	N/A	N/O
SAFE WORK PRACTICES (3.1)				
1. Individuals operating cranes and hoists of any type are certified operators	☐	☐	☐	☐
2. Cranes have current annual inspection and operations manual with load charts on site	☐	☐	☐	☐
3. Swing radius of cranes are guarded and barricaded	☐	☐	☐	☐
4. Competent person inspects crane daily	☐	☐	☐	☐
5. Pre-lift meetings conducted with all parties involved in crane operations	☐	☐	☐	☐
6. Cranes used to lift vertically only	☐	☐	☐	☐
7. Adequate distance maintained between cranes parts and overhead power lines	☐	☐	☐	☐
8. Dedicated signal person assigned to signal operator	☐	☐	☐	☐
9. Cranes do not swing over live roadways, railways, processes, or occupied buildings	☐	☐	☐	☐
10. Critical lifts have written lifting/rigging plan	☐	☐	☐	☐
11. No personnel permitted on or under loads lifted by crane. Tag lines used to control load	☐	☐	☐	☐
12. Manufacturers specifications and limitations for hoists followed	☐	☐	☐	☐
13. Personnel not permitted to ride on material hoists	☐	☐	☐	☐
14. Weather conditions considered when lifting operations performed	☐	☐	☐	☐
15. All rigging used as intended, inspected, stored, protected and supervised.	☐	☐	☐	☐
16. No fabrication, modifications, or additions to rigging made without testing and approval	☐	☐	☐	☐

SECTION 2

	Yes	**No**	**N/A**	**N/O**
CRANES: GENERAL (3.2.1)				
17. The competent person inspects all cranes, hoists, and rigging prior to use	☐	☐	☐	☐
18. Frequent and periodic inspections have been completed for all cranes to be used	☐	☐	☐	☐
19. Crane ropes and hooks have been inspected by an authorized person	☐	☐	☐	☐
20. All guards and safety devices installed and equipment removed after maintenance	☐	☐	☐	☐
21. A load-rating chart is easily visible to the seated operator	☐	☐	☐	☐
22. A designated person has been assigned to signal the operator when visibility is obstructed	☐	☐	☐	☐
23. Hand signals to crane operators are those prescribed by ANSI	☐	☐	☐	☐
24. All outriggers are deployed and seated	☐	☐	☐	☐
25. The tires of truck mounted cranes are off the ground when the outriggers are seated	☐	☐	☐	☐
26. Cranes are equipped with load limiting devices and boom angle indicator	☐	☐	☐	☐
27. Cabs of cranes have adequate access and kept clean of loose tools, cans, and waste	☐	☐	☐	☐
28. Cranes are equipped with a 5 BC or higher fire extinguisher	☐	☐	☐	☐
29. All windows in cabs are safety glass that does not interfere with the safe operation	☐	☐	☐	☐
30. All machinery operating on rails, tracks, or trolleys has stops/limiting and over speed devices	☐	☐	☐	☐
31. Moving parts on the crane that employees are exposed to are guarded	☐	☐	☐	☐
CRANES: POSITIONING (3.2.2)				
32. Cranes operated near live power lines will maintain minimum distance from the lines	☐	☐	☐	☐
33. Adequate clearance must be maintained between a crane and obstructions	☐	☐	☐	☐
34. The crane is level and blocked properly	☐	☐	☐	☐
35. Swing radius of crane has been barricaded to prevent exposure to struck against/crush hazard	☐	☐	☐	☐
36. Exhaust pipes are guarded from employee contact	☐	☐	☐	☐
CRANES: OPERATION (3.2.3)				
37. Operator tests brakes when load is near rated capacity of lift	☐	☐	☐	☐
38. Sheaves are guarded or warning sign provided to identify hazard	☐	☐	☐	☐
39. Load or boom not lowered to where less than two full wraps of rope remain on drum	☐	☐	☐	☐
If two or more cranes are to be used to lift one load, a designated person is responsible for analyzing, instructing, rigging and signaling movement of the load	☐	☐	☐	☐
41. Cranes not operated without full amount of ballast or counterweight	☐	☐	☐	☐
42. Tag lines are used to control suspended load	☐	☐	☐	☐
43. Sudden acceleration or deceleration of load is avoided	☐	☐	☐	☐
44. Loads are not to be passed over personnel or facilities	☐	☐	☐	☐
45. No personnel are allowed to ride the load	☐	☐	☐	☐
46. Suspended loads are not left unattended	☐	☐	☐	☐
47. Lines are not allowed to twist around each other	☐	☐	☐	☐
HOISTS: GENERAL (3.2.4)				
48. Manufacturer's specifications and limitations are followed	☐	☐	☐	☐
49. Load capacities, operating speeds, and special warnings or instructions are posted on hoists	☐	☐	☐	☐
50. Hoist ropes are installed in accordance with the wire rope manufacturers' recommendations	☐	☐	☐	☐
51. Live booms are not installed on hoists	☐	☐	☐	☐
52. Operating rules are posted at the operator's station of hoists	☐	☐	☐	☐
53. No person will ride on material hoists except for inspection and maintenance	☐	☐	☐	☐
54. All entrances of the hoistways are protected by substantial gates or bars	☐	☐	☐	☐
55. Overhead protective coverings are provided on the top of every material host cage or platform	☐	☐	☐	☐
56. All hoistway entrance bars and gates are painted with diagonal contrasting colors	☐	☐	☐	☐

SECTION 2 (continued)

	Yes	No	N/A	N/O
RIGGING: GENERAL (3.2.5)				
57. The rigging equipment is not used in excess of the rated capacity of the weakest component	☐	☐	☐	☐
58. The rigging competent person has inspected all rigging equipment prior to use on each shift and as necessary during its use	☐	☐	☐	☐
59. Documentation of proof testing is available for rigging equipment that has been repaired	☐	☐	☐	☐
60. Rigging equipment has not been shortened with knots, bolts or other makeshift devices	☐	☐	☐	☐
61. Rigging equipment, when not in use, is removed from the work area	☐	☐	☐	☐
62. Rigging equipment has been load tested annually by a competent person and documented	☐	☐	☐	☐
63. All hooks used according to manufacturer's recommendations or tested to twice SWL	☐	☐	☐	☐
64. Special rigging and hoisting devices are marked and proof tested prior to initial use	☐	☐	☐	☐
RIGGING: EQUIPMENT (3.2.6)				
65. Protruding end strands of wire rope have been covered or blunted	☐	☐	☐	☐
66. Wire rope not used if the rope shows any sign of excessive wear, corrosion, or defect	☐	☐	☐	☐
67. No wire rope slings are used if more than one wire in a lay is broken in the end fitting	☐	☐	☐	☐
68. Splices in rope slings are made in accordance with manufacturer's and regulatory specs	☐	☐	☐	☐
69. Synthetic web slings removed from service if showing any sign of damage	☐	☐	☐	☐
70. No job hooks, links, or makeshift fasteners, formed from bolts, rods, etc., are used	☐	☐	☐	☐
71. Alloy steel chains have identification stating size, grade, rated capacity and reach	☐	☐	☐	☐
72. Manual coupling links or low carbon repair links not used to repair broken lengths of chain	☐	☐	☐	☐
73. Shackles and hooks are constructed of forged alloy steel with the identifiable load rating	☐	☐	☐	☐
RIGGING: USE (3.2.7)				
74. Rigging not pulled from under a resting load				
75. Sling(s) is placed in center bowl of hook.	☐	☐	☐	☐
76. Sharp edges are "packed" to prevent cutting or damaging the rope or slings	☐	☐	☐	☐
Nylon, polyester, polypropylene web slings or web slings with aluminum fittings will not be used where fumes, vapors, sprays, mists or liquids of acids, caustics or phenolics are present	☐	☐	☐	☐
78. Natural or synthetic fiber rope slings used within acceptable operating temperature	☐	☐	☐	☐
79. U-bolts used to form wire rope eyes are of proper amount and spacing	☐	☐	☐	☐
80. U-bolts are installed so that the "U" section is in contact with the dead end of the rope	☐	☐	☐	☐
81. When more than one sling is used, or the sling angle is altered, the load has been calculated to assure that the safe working load is not exceeded.	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: ___________________________ Project Manager: ________________________________

CH2MHILL

HS&E Self-Assessment Checklist - EXCAVATIONS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees enter excavations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of an excavation subcontractor is required (complete entire checklist).

SC may consult with excavation subcontractors when completing this checklist, but shall not direct the means and methods of excavation operations nor direct the details of corrective actions. Excavation subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: ____ Project No.: ______________________

Location: ____ PM: ______________________________

Auditor: _______________________________ Title: ______________________________ Date: _________

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposures to excavation hazards
☐ Evaluate a CH2M HILL subcontractor's compliance with excavation HS&E requirements
Subcontractor Name: ____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the excavation subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-32.

SECTION 1

PERSONNEL SAFE WORK PRACTICES (4.1)

	Yes	No	N/A	N/O
1. Competent person has completed daily inspection and has authorized entry	☐	☐	☐	☐
2. Personnel aware of entry requirements established by competent person	☐	☐	☐	☐
4. Protective systems are free from damage and in stable condition	☐	☐	☐	☐
4. Surface objects/structures secured from falling into excavation	☐	☐	☐	☐
5. Potential hazardous atmospheres have been tested and found to be at safe levels	☐	☐	☐	☐
6. Precautions have been taken to prevent cave-in from water accumulation in the excavation	☐	☐	☐	☐
7. Personnel wearing appropriate PPE, per HSP/FSI	☐	☐	☐	☐

SECTION 2	Yes	No	N/A	N/O
GENERAL (4.2.1)				
8. Daily safety briefing/meeting conducted with personnel	☐	☐	☐	☐
9. Excavation and protective systems adequately inspected by competent person	☐	☐	☐	☐
10. Defective protective systems or other unsafe conditions corrected before entry	☐	☐	☐	☐
11. Guardrails provided on walkways over excavation 6’ or deeper	☐	☐	☐	☐
12. Barriers provided at excavations 6’ or deeper when not readily visible	☐	☐	☐	☐
13. Barriers or covers provided for wells, pits, shafts, or similar excavation 6’ or deeper	☐	☐	☐	☐
14. Excavating equipment operated safely (use earthmoving equipment checklist in HS-27)	☐	☐	☐	☐
PRIOR TO EXCAVATING (4.2.2)				
15. Location of underground utilities and installations identified	☐	☐	☐	☐
16. Soils characterized prior to excavation where contamination may be present	☐	☐	☐	☐
17. Excavation area checked for wetlands, endangered species, cultural/historic resources	☐	☐	☐	☐
18. Stockpile construction and management plan	☐	☐	☐	☐
19. ECC consulted and plan established for wastewater disposal from excavation dewatering	☐	☐	☐	☐
20. SWPPP prepared for construction site 1-5 acres (depending on project location)	☐	☐	☐	☐
EXCAVATING ACTIVITIES (4.2.3)				
21. Rocks, trees, and other unstable surface objects removed or supported	☐	☐	☐	☐
22. Exposed underground utility lines supported	☐	☐	☐	☐
23. Undermined surface structures supported or determined to be in safe condition	☐	☐	☐	☐
24. Warning system used to remind equipment operators of excavation edge	☐	☐	☐	☐
25. Stockpile, excavation covers, liners, silt fences in place, where required	☐	☐	☐	☐
26. Fugitive dust suppressed	☐	☐	☐	☐
EXCAVATION ENTRY (4.2.4)				
27. Trenches > 4’ deep provided with safe means of egress within 25’	☐	☐	☐	☐
28. Structure ramps designed and approved by competent person	☐	☐	☐	☐
29. Potential hazardous atmospheres tested prior to entry	☐	☐	☐	☐
30. Rescue equipment provided where potential for hazardous atmospheres exists	☐	☐	☐	☐
31. Ventilation used to control hazardous atmospheres and air tested frequently	☐	☐	☐	☐
32. Appropriate respiratory protection used when ventilation does not control hazards	☐	☐	☐	☐
33. Precautions taken to prevent cave-in from water accumulation in the excavation	☐	☐	☐	☐
34. Precautions taken to prevent surface water from entering excavation	☐	☐	☐	☐
35. Protection provided from falling/rolling material from excavation face	☐	☐	☐	☐
36. Spoil piles, equipment, materials restrained or kept at least 2’ from excavation edge	☐	☐	☐	☐
EXCAVATION PROTECTIVE SYSTEMS (4.2.5)				
37. Protective systems used for excavations 5’ or deeper	☐	☐	☐	☐
38. Protective systems for excavation deeper than 20’ designed by registered PE	☐	☐	☐	☐
39. If soil unclassified, maximum allowable slope is 34 degrees	☐	☐	☐	☐
40. Protective systems free from damage	☐	☐	☐	☐
41. Protective system used according to manufacturer recommendations and not subjected to loads exceeding design limits	☐	☐	☐	☐
42. Protective system components securely connected to prevent movement or failure	☐	☐	☐	☐
43. Cave-in protection provided while entering/exiting shielding systems	☐	☐	☐	☐
44. Personnel removed from shielding systems when installed, removed, or vertical movement	☐	☐	☐	☐
PROTECTIVE SYSTEM REMOVAL (4.2.6)				
45. Protective system removal starts and progresses from excavation bottom	☐	☐	☐	☐
46. Protective systems removed slowly and cautiously	☐	☐	☐	☐
47. Temporary structure supports used if failure of remaining components observed	☐	☐	☐	☐
48. Backfilling taking place immediately after protective system removal	☐	☐	☐	☐

EXCAVATING AT HAZARDOUS WASTE SITES (4.2.7)
49. Waste disposed of according to HSP and RCRA regulations ☐ ☐ ☐ ☐
50. Appropriate decontamination procedures being followed, per HSP ☐ ☐ ☐ ☐

BACKFILL (4.2.8)
51. Backfill certified clean when required by client or local regulation ☐ ☐ ☐ ☐

FORMS/PERMITS (4.3)
52. Waste discharge/NPDES permit obtained for excavation de-watering, where required ☐ ☐ ☐ ☐
53. Dig permit obtained, where required by client/facility ☐ ☐ ☐ ☐
54. USDA soil permit obtained (for south/southeast and coastal states) ☐ ☐ ☐ ☐

SECTION 3

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item #	**Corrective Action Planned/Taken**	**Date Corrected**

Auditor: ______________________ Project Manager: ______________________________

CH2MHILL

H&S Self-Assessment Checklist – HAND AND POWER TOOLS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are exposed to hand and power tool hazards and/or 2) CH2M HILL provides oversight of subcontractor personnel who are exposed to hand and power tool hazards.

SSC or DSC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of hand and power tool use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: ______________________________ Project No.: ________________

Location: ______________________________ PM: ____________________

Auditor: ______________________ Title: ____________________ Date: __________

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposure to hand and power tool hazards.
☐ Evaluate a CH2M HILL subcontractor's compliance with hand and power tool requirements.
Subcontractors Name: ______________________________

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-50.

SECTION 1

SAFE WORK PRACTICES (3.1)

	Yes	No	N/A	N/O
1. All tools operated according to manufacturer's instructions and design limitations.	☐	☐	☐	☐
2. All hand and power tools maintained in a safe condition and inspected and tested before use.	☐	☐	☐	☐
3. Defective tools are tagged and removed from service until repaired.	☐	☐	☐	☐
4. PPE is selected and used according to tool-specific hazards anticipated.	☐	☐	☐	☐
5. Power tools are not carried or lowered by their cord or hose.	☐	☐	☐	☐
6. Tools are disconnected from energy sources when not in use, servicing, cleaning, etc.	☐	☐	☐	☐
7. Safety guards remain installed or are promptly replaced after repair.	☐	☐	☐	☐
8. Tools are stored properly.	☐	☐	☐	☐
Cordless tools and recharging units both conform to electrical standards and specifications.	☐	☐	☐	☐
10. Tools used in explosive environments are rated for such use.	☐	☐	☐	☐
11. Knife or blade hand tools are used with the proper precautions.	☐	☐	☐	☐
12. Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stressors.	☐	☐	☐	☐

SECTION 2	**Yes**	**No**	**N/A**	**N/O**
GENERAL (3.2.1)				
13. PPE is selected and used according to tool-specific hazards anticipated.	☐	☐	☐	☐
14. Tools are tested daily to assure safety devices are operating properly.	☐	☐	☐	☐
15. Damaged tools are removed from service until repaired.	☐	☐	☐	☐
16. Power operated tools designed to accommodate guards have guards installed.	☐	☐	☐	☐
17. Rotating or moving parts on tools are properly guarded.	☐	☐	☐	☐
18. Machines designed for fixed locations are secured or anchored.	☐	☐	☐	☐
19. Floor and bench-mounted grinders are provided with properly positioned work rests.	☐	☐	☐	☐
20. Guards are provided at point of operation, nip points, rotating parts, etc.	☐	☐	☐	☐
21. Fluid used in hydraulic-powered tools is approved fire-resistant fluid.	☐	☐	☐	☐
ELECTRIC-POWERED TOOLS (3.2.2)				
22. Electric tools are approved double insulated or grounded and used according to SOP HS-23.	☐	☐	☐	☐
23. Electric cords are not used for hoisting or lowering tools.	☐	☐	☐	☐
24. Electric tools are used in damp/ wet locations are approved for such locations or GFCI installed.	☐	☐	☐	☐
25. Hand-held tools are equipped with appropriate on/off controls appropriate for the tool.	☐	☐	☐	☐
26. Portable, power-driven circular saws are equipped with proper guards.	☐	☐	☐	☐
ABRASIVE WHEEL TOOLS (3.2.3)				
27. All employees using abrasive wheel tools are wearing eye protection.	☐	☐	☐	☐
28. All grinding machines are supplied with sufficient power to maintain spindle speed.	☐	☐	☐	☐
29. Abrasive wheels are closely inspected and ring-tested before use.	☐	☐	☐	☐
30. Grinding wheels are properly installed.	☐	☐	☐	☐
31. Cup-type wheels for external grinding are protected by the proper guard or flanges.	☐	☐	☐	☐
32. Portable abrasive wheels used for internal grinding are protected by safety flanges.	☐	☐	☐	☐
33. Safety flanges are used only with wheels designed to fit the flanges.	☐	☐	☐	☐
34. Safety guards on abrasive wheel tools are mounted properly and of sufficient strength.	☐	☐	☐	☐
PNEUMATIC-POWERED TOOLS (3.2.4)				
35. Tools are secured to hoses or whip by positive means to prevent disconnection.	☐	☐	☐	☐
36. Safety clips or retainers are installed to prevent attachments being expelled.	☐	☐	☐	☐
37. Safety devices are installed on automatic fastener feed tools as required.	☐	☐	☐	☐
38. Compressed air is not used for cleaning unless reduced to < 30 psi, with PPE, and guarded.	☐	☐	☐	☐
39. Manufacturer’s safe operating pressure for hoses, pipes, valves, etc. are not exceeded.	☐	☐	☐	☐
40. Hoses are not used for hoisting or lowering tools.	☐	☐	☐	☐
41. All hoses >1/2-inch diameter have safety device at source to reduce pressure upon hose failure.	☐	☐	☐	☐
42. Airless spray guns have required safety devices installed.	☐	☐	☐	☐
43. Blast cleaning nozzles are equipped with operating valves, which are held open manually.	☐	☐	☐	☐
44. Supports are provided for mounting nozzles when not in use.	☐	☐	☐	☐
45. Air receiver drains, handholes, and manholes are easily accessible.	☐	☐	☐	☐
46. Air receivers are equipped with drainpipes and valves for removal of accumulated oil and water.	☐	☐	☐	☐
47. Air receivers are completely drained at required intervals.	☐	☐	☐	☐
48. Air receivers are equipped with indicating pressure gauges.	☐	☐	☐	☐
49. Safety, indicating, and controlling devices are installed as required.	☐	☐	☐	☐
50. Safety valves are tested frequently and at regular intervals to assure good operating condition.	☐	☐	☐	☐

SECTION 2(continued)	Yes	No	N/A	N/O
LIQUID FUEL-POWERED TOOLS (3.2.5)				
51. Liquid fuel-powered tools are stopped when refueling, servicing, or maintaining.	☐	☐	☐	☐
52. Liquid fuels are stored, handled, and transported in accordance with SOP HS-21	☐	☐	☐	☐
53. Liquid fuel-powered tools are used in confined spaces in accordance with SOP HS-17.	☐	☐	☐	☐
54. Safe operating pressures of hoses, valves, pipes, filters, and other fittings are not exceeded.	☐	☐	☐	☐
POWDER-ACTUATED TOOLS (3.2.6)				
55. Only trained employee operates powder-actuated tools.	☐	☐	☐	☐
56. Powder-actuated tools are not loaded until just prior to intended firing time.	☐	☐	☐	☐
57. Tools are not pointed at any employee at any time.	☐	☐	☐	☐
58. Hands are kept clear of open barrel end.	☐	☐	☐	☐
59. Loaded tools are not left unattended.	☐	☐	☐	☐
60. Fasteners are not driven into very hard or brittle materials.	☐	☐	☐	☐
61. Fasteners are not driven into easily penetrated materials unless suitable backing is provided.	☐	☐	☐	☐
62. Fasteners are not driven into spalled areas.	☐	☐	☐	☐
63. Powder-actuated tools are not used in an explosive or flammable atmosphere.	☐	☐	☐	☐
64. All tools are used with correct shields, guards, or attachments recommended by manufacturer.	☐	☐	☐	☐
JACKING TOOLS (3.2.7)				
65. Rated capacities are legibly marked on jacks and not exceeded.	☐	☐	☐	☐
66. Jacks have a positive stop to prevent over-travel.	☐	☐	☐	☐
67. The base of jacks are blocked or cribbed to provide a firm foundation, when required.	☐	☐	☐	☐
68. Wood blocks are place between the cap and load to prevent slippage, when required.	☐	☐	☐	☐
69. After load is raised, it is cribbed, blocked, or otherwise secured immediately.	☐	☐	☐	☐
70. Antifreeze is used when hydraulic jacks are exposed to freezing temperatures.	☐	☐	☐	☐
71. All jacks are properly lubricated.	☐	☐	☐	☐
72. Jacks are inspected as required.	☐	☐	☐	☐
73. Repair or replacement parts are examined for possible defects.	☐	☐	☐	☐
74. Jacks not working properly are removed from service and repaired or replaced.	☐	☐	☐	☐
HAND TOOLS (3.2.8)				
75. Wrenches are not used when jaws are sprung to the point of slippage.	☐	☐	☐	☐
76. Impact tools are kept free of mushroomed heads.	☐	☐	☐	☐
77. Wooden handles of tools are kept free of splinters or cracks and are tightly fitted in tool.	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely man

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _______________________________ Project Manager: ____________________________________

CH2MHILL

H&S Self-Assessment Checklist – TRAFFIC CONTROL

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are exposed to traffic hazards and/or 2) CH2M HILL provides oversight of subcontractor personnel who are exposed to traffic hazards.

SSC or DSC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of traffic control operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: ____ Project No.: ______________________

Location: ____ PM: __________________________________

Auditor: ______________________________ Title: ____________________________ Date: _____________

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposure to traffic hazards.
☐ Evaluate a CH2M HILL subcontractor's compliance with traffic control requirements.
Subcontractors Name: ____

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-24.

SECTION 1

SAFE WORK PRACTICES (3.1)

	Yes	No	N/A	N/O
1. Personnel working on/adjacent to active roadways or in control zones are wearing safety vests.	☐	☐	☐	☐
2. Traffic control plan (TCP) is consistent with roadway, traffic, and working conditions.	☐	☐	☐	☐
3. TCP has been approved by regulatory or contractual authority prior to work.	☐	☐	☐	☐
4. TCP considers all factors that may influence traffic related hazards and controls.	☐	☐	☐	☐
5. Work areas are protected by rigid barriers.	☐	☐	☐	☐
6. Lookouts are used when applicable.	☐	☐	☐	☐
7. Vehicles are parked 40 feet away from work zone or are equipped with hazard beacon/strobe.	☐	☐	☐	☐
8. TMCC or TMA vehicle is used where appropriate.	☐	☐	☐	☐
9. All CH2M HILL traffic control devices conform to MUTCD standards.	☐	☐	☐	☐
10. Traffic control devices are inspected continuously.	☐	☐	☐	☐
11. Flagging is only used when other means of traffic control are inadequate.	☐	☐	☐	☐
12. Additional traffic control zone controls have been implemented.	☐	☐	☐	☐
13. Cranes do not swing loads/booms over nor do workers enter/cross live roadways (as defined).	☐	☐	☐	☐

SECTION 2	Yes	No	N/A	N/O
GENERAL (3.2.1)				
14. Lane closings are performed when required by this SOP.	☐	☐	☐	☐
15. Traffic control configurations are based on an engineering study of the location.	☐	☐	☐	☐
16. If no study, traffic control is performed with approval of the authority having jurisdiction.	☐	☐	☐	☐
17. TCP has been prepared and understood by all responsible parties prior to work.	☐	☐	☐	☐
18. Special preparation/coordination with external parties has been conducted where applicable.	☐	☐	☐	☐
19. All contractor traffic control devices conform to MUTCD standards.	☐	☐	☐	☐
20. Traffic movement and flow are inhibited or disrupted as little as possible.	☐	☐	☐	☐
21. Supplemental equipment and activities do not interfere with traffic.	☐	☐	☐	☐
22. Drivers and pedestrians are considered when entering and traversing traffic control zone.	☐	☐	☐	☐
TRAFFIC CONTROL ZONES (3.2.2)				
23. Traffic control zones are divided into the necessary five areas.	☐	☐	☐	☐
24. Advances warning area is designed based on conditions of speed, roadways, and driver needs.	☐	☐	☐	☐
25. Advanced warning signage is spaced according to roadway type and conditions.	☐	☐	☐	☐
26. Transition areas are used to channelize traffic around the work area.	☐	☐	☐	☐
27. Buffer areas are used to provide a margin of safety for traffic and workers.	☐	☐	☐	☐
28. The buffer area is free of equipment, workers, materials, and worker vehicles.	☐	☐	☐	☐
29. The length of the buffer area is two times the posted speed limit in feet.	☐	☐	☐	☐
30. All work is contained in the work area and is closed to all traffic.	☐	☐	☐	☐
31. A termination area is used to provide traffic to return to normal lanes.	☐	☐	☐	☐
32. A downstream taper is installed in the termination area.	☐	☐	☐	☐
DEVICE INSTALLATION AND REMOVAL (3.2.3)				
33. All vehicles involved with device installation/removal have hazard beacons/strobes.	☐	☐	☐	☐
34. Devices are installed according to the order established by this SOP.	☐	☐	☐	☐
35. Devices are removed in the opposite order of installation.	☐	☐	☐	☐
36. Tapers are used to move traffic out of its normal path.	☐	☐	☐	☐
37. Tapers are created using channelizing devices.	☐	☐	☐	☐
38. The length of taper is determined by posted speed and width of lane to be closed (see formula).	☐	☐	☐	☐
39. Local police or highway patrol assist during taper installation and removal.	☐	☐	☐	☐
40. TMCC/ TMA vehicles are used to protect personnel during installation and removal of devices.	☐	☐	☐	☐
41. Cone trucks are equipped with platforms and railings.	☐	☐	☐	☐
42. Cones are the appropriate height for the specific roadway and are reflectorized.	☐	☐	☐	☐
43. Temporary sign supports are secured using sandbags to prevent movement.	☐	☐	☐	☐
44. Arrow panels are used on lane closures where required.	☐	☐	☐	☐
45. Concrete barriers are used where required.	☐	☐	☐	☐
46. Barrels, crash cushions, or energy absorbing terminals are used to protect traffic as required.	☐	☐	☐	☐
47. Changeable message signs (CMS) are used as required.	☐	☐	☐	☐
48. CMS are not used to replace required signage.	☐	☐	☐	☐
49. No more than two message panels are used in any message cycle on CMS.	☐	☐	☐	☐
FLAGGING (3.2.4)				
50. Flagging is used only when other traffic control methods are inadequate.	☐	☐	☐	☐
51. Only approved personnel with current certification are allowed to be used as flaggers.	☐	☐	☐	☐
52. Flaggers are located off the traveled portion of the roadway.	☐	☐	☐	☐
53. A communication system is established when more than one flagger is used.	☐	☐	☐	☐
54. Hand signaling by flaggers is by means of red flags, sign paddles, or red lights.	☐	☐	☐	☐
55. Flaggers are alert, positioned close enough to warn work crews, and easily identified from crew.	☐	☐	☐	☐
56. An escape plan is established by crew and flaggers prior to traffic control set up.	☐	☐	☐	☐
57. Signs indicating a flagger is present are used and removed as required.	☐	☐	☐	☐

SECTION 2

INSPECTION AND MAINTENANCE (3.2.5)

	Yes	No	N/A	N/O
58. Traffic control zones are monitored to determine their effectiveness under varying conditions.	☐	☐	☐	☐
59. Traffic control devices are inspected at the beginning and continuously during work shift.	☐	☐	☐	☐
60. Traffic control devices are restored to their proper position immediately and continuously.	☐	☐	☐	☐
61. Damaged, old, or ineffective devices are removed and replace immediately and continuously.	☐	☐	☐	☐
62. Devices using reflected light for illumination are cleaned and monitored continuously.	☐	☐	☐	☐

SECTION 3

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: ________________________ Project Manager: __________________________________

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 6

Behavior Based Loss Prevention System Forms

Activity Hazard Analysis-Examples

Pre-Task Safety Plans

Safe Behavior Observation Form

Incident Report Form

Injury Information Form

Root Cause Analysis Form and Flow Chart

ACTIVITY HAZARD ANALYSIS

Equipment to be used **(List equipment to be used in the work activity)**	**Inspection Requirements** **(List inspection requirements for the work activity)**	**Training Requirements** **(List training requirements including hazard communication)**

ACTIVITY HAZARD ANALYSIS

	PRINT	SIGNATURE	
Supervisor Name:	______________________	______________________________	**Date/Time:**____________________________________
Safety Officer Name:	______________________	______________________________	**Date/Time:**____________________________________
Employee Name(s):	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	**Date/Time:**____________________________________
	______________________	______________________________	Date/Time:____________________________________

PRE-TASK SAFETY PLAN

Project: __________________________ Location: ____________________________Date:_______________________

Supervisor: __________________________________ Job Activity:____

____

Task Personnel:

____

____

____

____

List Tasks:

____

____

____

____

Tools/Equipment required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

____

____

____

____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	__Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	__ Pinch points	__ Poisonous plants/insects
__ Electrical	__ Cuts/abrasions	___Eye hazards/flying projectile
__ Weather conditions	__ Spills	__ Inhalation hazard
__Heights/fall> 6′	__ Overhead Electrical hazards	__ Heat/cold stress
__ Noise	__ Elevated loads	__ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__Radiation	__ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__Welding/cutting	__ Demolition

Other Potential Hazards (Describe):

____

____

____

____

____

____

CH2MHILL

PRE-TASK SAFETY PLAN

Hazard Control Measures (Check all that apply):

PPE __ Thermal/lined __ Eye __ Dermal/hand __ Hearing __ Respiratory __ Reflective vests __ Flotation device	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections	Fire Protection __ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/ Heavy equipment __ Backup alarms __ Hand/power tools __ Crane w/current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER __ First-aid kit __ Eye wash __ FA-CPR trained personnel __ Route to hospital	Heat/Cold Stress __ Work/rest regime __ Rest area __ Liquids available __ Monitoring __ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __Cranes and rigging	Training: __ Hazwaste __ Construction __ Competent person __ Task-specific (THA) __ Hazcom

FieldNotes:____

____

____

Supervisor signature:________________________________ Date:___________________

CH2MHILL

Safe Behavior Observation Form

Project:

Observer:

Date:

Position/Title of worker observed:

Background Information/ comments:

Task/Observation Observed:

Identify and reinforce safe work practices/behaviors

Identify and improve on at-risk practices/acts

Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards

Proactive PM support facilitates eliminating/reducing hazards (do you have what you need?)

Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	Safe	At-Risk	Observations/Comments
Current & accurate Pre-Task Planning/Briefing (Project safety plan, STAC, AHA, PTSP, tailgate briefing, etc., as needed)			**Positive Observations/Safe Work Practices:**
Properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			**Questionable Activity/Unsafe Condition Observed:**
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			**Observer’s Corrective Actions/Comments:**
Pace			
Uncomfortable/unsafe position			
Inconvenient/unsafe location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			**Observed Worker’s Corrective Actions/Comments:**
Other…			

CH2M HILL

Incident Report Form (Hardcopy)

Fax or email completed form to:

Bret Clausen (Fax 720-286-9498)

Type of Incident **(Select at least one)**

☐ Injury/Illness
☐ Environmental/Permit Issue
☐ Property Damage
☐ Near Miss
☐ Spill/Release
☐ Other

General Information (Complete for all incident types)

Preparer's Name: ____________________________ Preparer's Employee Number: ________________

Date of Report: _______________ Date of Incident: _____________ Time of Incident: ______am/pm

Verbal Notification (Complete for all incident types)

CH2M HILL PM/CM Notified: _________________________Date______________Time______________

CH2M HILL HS&E Notified: ___________________________Date______________Time______________

Client Notified: ______________________________________Date______________Time____________

Type of Activity (Provide activity being performed that resulted in the incident)

☐ Asbestos Work
☐ Confined Space Entry
☐ Construction Mgmt- Haz Waste
☐ Construction Mgmt - Non-Haz Waste
☐ Demolition
☐ Drilling-Haz Waste
☐ Drilling-Non Haz Waste
☐ Drum Handling
☐ Electrical Work
☐ Excavation Trench-Haz Waste
☐ Excavation Trench-Non Haz
☐ Facility Walk Through
☐ General Office Work
☐ Keyboard Work
☐ Laboratory
☐ Lead Abatement
☐ Motor Vehicle Operation
☐ Moving Heavy Object
☐ Other (Specify) ______________________
☐ Process Safety Management
☐ Tunneling
☐ Welding
☐ Wetlands Survey
☐ Working from Heights
☐ Working in Roadways
☐ WWTP Operation

Location of Incident (Select one)

☐ Company Premises - CH2M HILL Office: _________________________

☐ Field - Project #: ____________________ Project/Site Name: ________________________________

Location: ________________________________ Client: ____________________________________

☐ In Transit – Traveling from: _______________________ Traveling to: ________________________

☐ At Home

☐ Other - Address ____

Geographic Location of Incident **(Select region/company where the incident occurred)**

CH2M HILL Company

☐ Northeast
☐ Southeast
☐ Northwest
☐ Southwest
☐ Corporate
☐ Canadian
☐ Asia Pacific
☐ Latin America
☐ Europe Middle East
☐ CH2M HILL
☐ CCI
☐ CHIL

Incident Investigation (Complete for all incident types)

Describe the Incident (Provide a brief description of the incident and how it occurred)

____

____

Task Location: ____

Job/Task Assignment: ____

Specific activity the employee was engaged in when the incident occurred:
____
____

Activity was a Routine Task: Yes ☐ No ☐

All equipment, materials, or chemicals the employee was using when the incident occurred:
____
____

Equipment Malfunction : Yes ☐ No ☐

Root Causes and Contributing Factors (**COMPLETE ROOT CAUSE ANALYSIS FORM)**
____
____

Describe how you may have prevented this injury: ____________________
____
____

Witnesses (Complete for all incident types)

Witness Information (First Witness)	Witness Information (Second Witness)
Name: ____________________	Name: ____________________
Employee Number (CH2M HILL):__________	Employee Number (CH2M HILL: __________
Address: ____________________	Address: ____________________
City: ____________________	City: ____________________
Zip Code:____________________	Zip Code:____________________
Phone: ____________________	Phone :____________________

Property Damage (Complete for Property Damage incidents only)

Property Damaged: ____________________ Property Owner: ____________________
Damage Description: ____________________
Estimated Amount: $ ____________________

Spill or Release (Complete for Spill/Release incidents only)

Substance (attach MSDS): ____________________ Estimated Quantity: ____________________
Facility Name, Address, Phone No.: ____________________
Did the spill/release move off the property where work was performed?: ____________________
Spill/Release From: ____________________ Spill/Release To: ____________________

Environmental/Permit Issue (Complete for Environmental/Permit Issue incidents only)

Describe Environmental or Permit Issue: ____________________
Permit Type: ____________________
Permitted Level or Criteria (e.g., discharge limit): ____________________
Permit Name and Number (e.g., NPDES No. ST1234): ____________________
Substance and Estimated Quantity: ____________________
Duration of Permit Exceedence: ____________________

Injury Information (Complete for Injury/Illness incidents only)

If CH2M HILL employee injured

Employee Name: ______________________________ Employee Number: _________________________

If CH2M HILL Subcontractor employee injured

Employee Name: _____________________________ Company: ___________________________________

Subcontractor Contact: _________________________ Phone number: ___________________________

Injury Type

- ☐ Allergic Reaction
- ☐ Amputation
- ☐ Asphyxia
- ☐ Bruise/Contusion/Abrasion
- ☐ Burn (Chemical)
- ☐ Burn/Scald (Heat)
- ☐ Cancer
- ☐ Carpal Tunnel
- ☐ Concussion
- ☐ Cut/Laceration
- ☐ Dermatitis
- ☐ Dislocation
- ☐ Electric Shock
- ☐ Foreign Body in eye
- ☐ Fracture
- ☐ Freezing/Frost Bite
- ☐ Headache
- ☐ Hearing Loss
- ☐ Heat Exhaustion
- ☐ Hernia
- ☐ Infection
- ☐ Irritation to eye
- ☐ Ligament Damage
- ☐ Multiple (Specify) _______________________
- ☐ Muscle Spasms
- ☐ Other (Specify) _______________________
- ☐ Poisoning (Systemic)
- ☐ Puncture
- ☐ Radiation Effects
- ☐ Strain/Sprain
- ☐ Tendonitis
- ☐ Wrist Pain

Part of Body Injured

- ☐ Abdomen
- ☐ Ankle(s)
- ☐ Arms (Multiple)
- ☐ Back
- ☐ Blood
- ☐ Body System
- ☐ Buttocks
- ☐ Chest/Ribs
- ☐ Ear(s)
- ☐ Elbow(s)
- ☐ Eye(s)
- ☐ Face
- ☐ Finger(s)
- ☐ Foot/Feet
- ☐ Hand(s)
- ☐ Head
- ☐ Hip(s)
- ☐ Kidney
- ☐ Knee(s)
- ☐ Leg(s)
- ☐ Liver
- ☐ Lower (arms)
- ☐ Lower (legs)
- ☐ Lung
- ☐ Mind
- ☐ Multiple (Specify) ____________________
- ☐ Neck
- ☐ Nervous System
- ☐ Nose
- ☐ Other (Specify) ____________________
- ☐ Reproductive System
- ☐ Shoulder(s)
- ☐ Throat
- ☐ Toe(s)
- ☐ Upper Arm(s)
- ☐ Upper Leg(s)
- ☐ Wrist(s)

Nature of Injury

- ☐ Absorption
- ☐ Bite/Sting/Scratch
- ☐ Cardio-Vascular/Respiratory System Failure
- ☐ Caught In or Between
- ☐ Fall (From Elevation)
- ☐ Fall (Same Level)
- ☐ Ingestion
- ☐ Inhalation
- ☐ Lifting
- ☐ Mental Stress
- ☐ Motor Vehicle Accident
- ☐ Multiple (Specify) _______________________
- ☐ Other (Specify) _______________________
- ☐ Overexertion
- ☐ Repeated Motion/Pressure
- ☐ Rubbed/Abraded
- ☐ Shock
- ☐ Struck Against
- ☐ Struck By
- ☐ Work Place Violence

Initial Diagnosis/Treatment Date: _______________

Type of Treatment

☐ Admission to hospital/medical facility
☐ Application of bandages
☐ Cold/Heat Compression/Multiple Treatment
☐ Cold/Heat Compression/One Treatment
☐ First Degree Burn Treatment
☐ Heat Therapy/Multiple treatment
☐ Multiple (Specify)
____
☐ Heat Therapy/One Treatment
☐ Non-Prescriptive medicine
☐ None
☐ Observation
☐ Other (Specify)
____
☐ Prescription- Multiple dose

☐ Prescription- Single dose
☐ Removal of foreign bodies
☐ Skin Removal
☐ Soaking therapy- Multiple Treatment
☐ Soaking Therapy- One Treatment
☐ Stitches/Sutures
☐ Tetanus
☐ Treatment for infection
☐ Treatment of 2nd /3rd degree burns
☐ Use of Antiseptics – multiple treatment
☐ Use of Antiseptics – single treatment
☐ Whirlpool bath therapy/multiple treatment
☐ Whirlpool therapy/single treatment
☐ X-rays negative
☐ X-rays positive/treatment of fracture

- Number of days doctor required employee to be off work: _________
  Number of days doctor restricted employee's work activity: _________

Physician Information

Name: ______________________________
Address: ______________________________
City: ______________________________
Zip Code: ______________________________
Phone: ______________________________

Hospital Information

Name: ________________________
Address: ________________________
City: ________________________
Zip Code: ________________________
Phone: ________________________

Additional Comments:

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CH2MHILL
Constructors, Inc.

Root Cause Analysis Form

Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

Lack of skill or knowledge
Lack of or inadequate operational procedures or work standards
Inadequate communication of expectations regarding procedures or work standards
Inadequate tools or equipment
Correct way takes more time and/or requires more effort
Short-cutting standard procedures is positively reinforced or tolerated
Person thinks there is no personal benefit to always doing the job according to standards

RCC #	Root Cause(s)	Corrective Actions	RC[1]	CF[2]	Due Date	Date Completed	Date Verified

[1] RC = Root Cause; [2] CF = Contributing Factors (check which applies)

Investigation Team Members

Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Determination of Root Cause(s)

For minor losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more "root causes" and "contributing factors". The "root cause" is the primary or immediate cause of the incident, while a "contributing factor" is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as "personal factors". Causes that pertain to the *system* within which the loss or injury occurred should be referred to as "job factors".

Personal Factors

- Lack of skill of knowledge
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks that there is no personal benefit to always doing the job according to standards

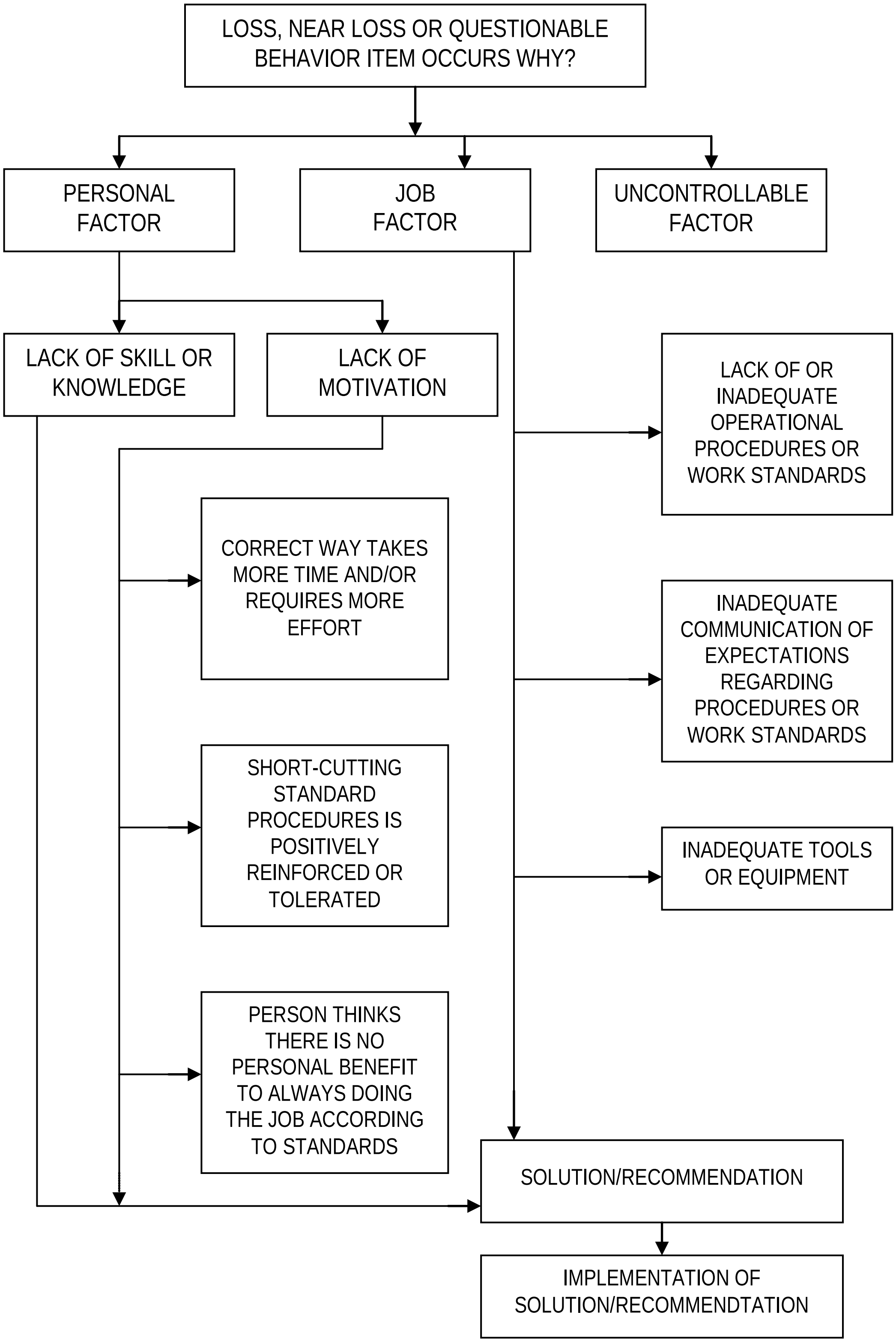
Job Factors

- Lack of or inadequate operational procedures or work standards.
- Inadequate communication of expectations regarding procedures or standards
- Inadequate tools or equipment

The root cause(s) could be any one or a combination of these seven possibilities or some other "uncontrollable factor". In the vast majority of losses, the root cause is very much related to one or more of these seven factors. Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.

Root Cause Analysis
Flow Chart

CH2M HILL, INC



ACTIVITY HAZARD ANALYSIS

ACTIVITY: DIVING	**Date:**
	Project:
Description of the work:	Site Supervisor:
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Diving	Unsafe Water Conditions	• The supervisor and Safety Coordinator (SC) shall continuously monitor water conditions to determine if entry and exit from the site can be performed safely by boat. • Obtain weather reports to determine if the weather conditions pose a potential danger to accessing the area by boat. • Do not attempt to enter or exit or exit the area by boat if water conditions are dangerous. • If lightning is determined to be within 30 miles of the work-site, all work activities will cease and all personnel should immediately seek refuge. • The boat shall have sufficient room, freeboard and stability to safely carry the cargo and number of passengers allowed with consideration given to weather and water conditions in which it will operate.
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion in PPE.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Diving (continued)	Drowning	• Each person must be able to swim • Personnel in the boat shall wear type III personal floatation devices. • Personnel will receive a water safety briefing. • Have floating ring buoy with 90 ft of line, within 200 ft of rescue personnel. • There must be one person specifically designated to respond to water emergencies. • A competent person inspects boat for holes, tears, and general "sea worthiness". • Pre-launch safety meetings will be conducted daily with all parties involved with boat activities. • An adequate distance will be maintained between boat and overhead power lines, bridges, and overpasses. • An adequate distance will be maintained between boat and other ships on waterways. • Manufacturers specifications and limitations for weight allowance and distribution will be followed at all times
	Diving	• Divers must be certified. • Check equipment before use. • Establish a dive plan. • Complete the Diving and Equipment Checklist in Appendix G. • Review hand signals. • Do not dive deeper than the depth of your experienced.
	Slips, Trips, Falls	• No jumping in or out of boat. • Care must be taken when entering or exiting the water and the boat due to rough terrain and unstable boat. • Use the buddy system to enter and exit (one person help the other), or other safe means of boarding and leaving the boat which prevents falling or slipping.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Diving (continued)	Vehicles/Traffic	• Exercise caution when exiting traveled way or parking along street—avoid sudden stops, use flashers, etc. • Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier. • All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests/clothing. • Always pay attention to moving traffic – never assume drivers/operators are looking out for you. • When workers must face away from traffic, a “buddy system” should be used, where one worker is looking toward traffic. Lookouts should be used when physical barriers are not available or practical
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion in PPE.
	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting. • Plan storage and staging to minimize lifting or carrying distances. • Split heavy loads into smaller loads.
	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.
	Fire Prevention	• Use only metal safety cans for storage and transfer of fuel. • Maintain flammable/combustible materials in flammable lock-up (vented) when not in use. • Use funnels and nozzles during fueling operations. • Allow warm engine parts (small engines) to cool before refueling. • Appropriately sized, easily accessible ABC fire extinguisher in work area.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Diving (continued)	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Avoid use of razor knives. • Cut away from the body and never towards another worker.
	General Inhalation and Contact with Hazardous Substances exposure	• Before the boat is placed in the water, a 3.5 mil visquene plastic sheet is deployed on the shoreline. • The boat is then to be placed onto the sheet and then gently slid into the water in order to avoid stirring up potentially contaminated sediments and to minimize the amount of sediments that the boat comes into contact with. • The staff is then to enter the boat from the sheet. • The boat's anchor is to never make contact with the boat. After it has been pulled up, it is to be rinsed. The anchor is then to be placed in a 5 gallon bucket with a plastic liner attached on the inside. • Before exiting the boat, a 3.5 mil visquene plastic sheet is deployed on the shoreline.
	Adverse weather conditions: -lightening -high winds -driving rain	• Monitor weather forecast • Follow the Hurricane Preparedness Plan • Shut down operations should severe weather conditions exist
	Theft	• Secure all materials at the end of the day • Lock-up materials if able to do so.
	Bystanders	• Place barriers around the work area to keep the general public out. • Notify the police of any suspicious behavior.

ACTIVITY HAZARD ANALYSIS

Equipment to be used	Inspection Requirements	Training Requirements
• Jon Boat • SCBAs • Oars • Life Vests • First aid kit • Fire extinguisher • Air horn • Ring Buoy • Sample containers and equipment • Surveying equipment	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of boat and related equipment • Obtain weather report for determining safe boating conditions and heat stress monitoring.	• Review HASP with all site personnel • Review site specific AHA with all task personnel • Water safety review. • Diving training • CPR/First aid • HAZCOM • Blood-borne pathogen

	PRINT	**SIGNATURE**	
Supervisor Name:			**Date/Time:**
Safety Specialist Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
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ACTIVITY HAZARD ANALYSIS

ACTIVITY: HEAVY LIFTING/CRANE

Date:

Project:

Description of the work: Heavy lifting and crane operations including rigging and lifting of WRCs, load relays, rigging and lifting of sectional barges and small dredging equipment, turbity barriers, etc.

Site Supervisor:

Site Safety Officer:

Review for latest use: Before the job is performed.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Heavy Lifting/Crane	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures.	• All personnel shall attend the site orientation training. The HASP and AHAs will be covered with work crew. The site orientation shall include a review of the phone locations, evacuation routes, and any special site conditions. • Post all hazard warning signs, emergency maps, and emergency phone numbers. • Minimum PPE – Hardhats, Safety Glasses with side shields, Safety Toed boots, Long Pants and shirts with a minimum of 3” sleeves. This may be modified to include; work gloves, splash suit, and face shield.
	Failure to properly plan daily activities	• A Job Safety Analysis (JSA) shall be prepared by the crew prior to commencing daily activities. • The JSA may be used as a component of the morning Tailgate Safety Meeting. • The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change.

Work Activity Sequence	**Potential Health and Safety Hazard**	**Hazard Controls**
Heavy Lifting/Crane (continued)	Slips, Trips, Falls	• Clear walkways work areas of objects • Mark, identify, or barricade other obstructions • Identify uneven surfaces or ground protrusions • Institute and maintain good housekeeping practices. • Observe and avoid tools and debris in a work area. • Walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area. • Observe and avoid areas of unprotected holes, ramps, roof areas and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs. • If steep terrain must be negotiated, sturdy shoes or boots that provide ankle support should be used. The need for ladders or ropes to provide stability should be evaluated prior to exercising this option
	Visible Lighting	• Perform tasks in daylight hours whenever possible. • Do not enter poorly lit areas without first providing portable illumination. • Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.
	Rigging Equipment	• Identify the proper rigging equipment for the type of lift. • Inspect rigging devices to verify slings, chains, straps are free from defects and rated for the lift weight. • Prohibit use of equipment with missing documentation tags, or defective equipment. • Ensure tag-lines are free of knots and defects. • Review rigging techniques, positioning of load, tag lines with workers involved in rigging activities.
	Crane Operation Inspections	• Verify the cranes annual inspection and maintenance log. • Perform required daily crane inspections, of wire ropes

		sheaves, drums, rigging hardware and attachments. • Perform daily inspection of mechanical, hydraulic operations of crane.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Heavy Lifting/Crane (continued)	Pre-lift Meeting	• Hold mandatory pre-lift meeting and complete lift worksheet. • Determine if the lift is a critical lift. • Assign lift or critical lift supervisor and a signaler for the lift. • Calculate lift / load capacities using crane operations manuals and load capacity charts. • Review lift hand signals with operator, signaler, supervisor and work crew.
	Struck By/ Against Heavy Equipment	• Wear reflective warning vests when exposed to vehicular traffic. • Isolate crane swing areas. • Make eye contact with operators before approaching equipment. • Prohibit all personnel from work activities in the blind swing areas of the crane. • Test lift objects if center of gravity or similar critical factors are uncertain. • Never lift any object if weights are unknown. • **Never stand under a suspended load.**
	Tag Lines	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by tag lines. • Prohibit looping / winding tag lines around hands or body. • Prohibit positioning, moving load using tag lines.
	Hand injuries.	• Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.

	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting. • Plan storage and staging to minimize lifting or carrying distances. • Split heavy loads into smaller loads.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Heavy Lifting/Crane (continued)	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.
	Fire Prevention	• Use only metal safety cans for storage and transfer of fuel. • Maintain flammable/combustible materials in flammable lock-up (vented) when not in use. • Use funnels and nozzles during fueling operations. • Allow warm engine parts (small engines) to cool before refueling. • Appropriately sized, easily accessible ABC fire extinguisher in work area.
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Avoid use of razor knives. • Cut away from the body and never towards another worker.
	Vehicles/Traffic	• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc. • Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier. • All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests/clothing. • Always pay attention to moving traffic – never assume drivers/operators are looking out for you. • When workers must face away from traffic, a “buddy system”

		should be used, where one worker is looking toward traffic. Lookouts should be used when physical barriers are not available or practical
	Struck by equipment	▪ Personnel working in the area will be cautioned regarding mobile equipment in the area. ▪ Workers on the ground will be required to wear high visibility safety vests. ▪ Assure back-up alarms are working properly. ▪ Equipment will use low speeds during unloading.
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)

Work Activity Sequence	**Potential Health and Safety Hazard**	**Hazard Controls**
Heavy Lifting/Crane (continued)	Insect/ Animal Bites	• Review injury potential with workers. • Avoid insect nests areas, habitats outside work areas. • Emphasize the “Buddy System” where such injury potential exists. • Immediately report all bites and seek medical treatment.. • Identify personnel who have known allergies to stinging insects and ensure they are equipped with Epi-pens. • Wear PPE and tape joints to keep insects away from the skin, as necessary. • Use protective insect repellents containing DEET to prevent insect bites. • Check limbs/body for insects/ insect bites during breaks and at the end of the day.
	Adverse weather conditions: -lightening -high winds -driving rain	• Monitor weather forecast • Follow the Hurricane Preparedness Plan • Shut down operations should severe weather conditions exist
	Theft	• Secure all materials at the end of the day • Lock-up materials if able to do so.

	Bystanders	• Place barriers around the work area to keep the general public out. • Notify the police of any suspicious behavior.
	Overhead Utilities	• Identify all utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kv) 15 feet phase to ground clearance; 31 feet phase to phase clearance

Equipment to be used	Inspection Requirements	Training Requirements
• Crane • Rigging equipment • WRC’s • Load Relay Equipment • Pumps • Vehicles • First aid kit • Fire extinguisher	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of equipment	• Review HASP with all site personnel • Review site specific AHA with all task personnel • Crane operator training • Hazard Communication training • CPR/First aid • Blood-borne Pathogen

	PRINT	**SIGNATURE**	
Supervisor Name:			**Date/Time:**
Safety Specialist Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
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CH2MHILL

ACTIVITY HAZARD ANALYSIS

ACTIVITY: MOBILIZATION/DEMOBILIZATION	**Date:**
	Project:
Description of the work:	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Mobilization/Demobilization	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures.	• All personnel shall attend the site orientation training. The HASP and AHAs will be covered with work crew. The site orientation shall include a review of the phone locations, evacuation routes, and any special site conditions. • Post all hazard warning signs, emergency maps, and emergency phone numbers. • Minimum PPE – Hardhats, Safety Glasses with side shields, Safety Toed boots, Long Pants and shirts with a minimum of 3" sleeves. This may be modified to include; work gloves, splash suit, and face shield.
	Failure to properly plan daily activities	• A Job Safety Analysis (JSA) shall be prepared by the crew prior to commencing daily activities. • The JSA may be used as a component of the morning Tailgate Safety Meeting. • The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change.
	Overhead.	• Vehicle drivers must be aware of overhead hazards and maintain safe clearances - use spotters when necessary.

Work Activity Sequence	**Potential Health and Safety Hazards**	**Hazard Controls**
Mobilization/Demobilization (continued)	Hand injuries.	• Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.
	Electrical.	• GFCIs shall be used on all power tools and extension cords. • Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas.
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.
	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting.
	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.
	Fire Prevention	• Use only metal safety cans for storage and transfer of fuel. • Maintain flammable/combustible materials in flammable lock-up (vented) when not in use. • Use funnels and nozzles during fueling operations. • Allow warm engine parts (small engines) to cool before refueling. • Appropriately sized, easily accessible ABC fire extinguisher in work area.
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Avoid use of razor knives. • Cut away from the body and never towards another worker.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Mobilization/Demobilization (continued)	Struck by equipment	▪ Personnel working in the area will be cautioned regarding mobile equipment in the area. ▪ Workers on the ground will be required to wear high visibility safety vests. ▪ Assure back-up alarms are working properly. ▪ Equipment will use low speeds during unloading.
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
	Forklift Operations	• Conduct pre-operation equipment inspections using checklist • Only trained qualified operators may operate forklifts • Do not exceed rated capacity of forklift • Use spotters when backing or when view is obstructed by objects • Use horn to warn when rounding corners • Use only approved lifting devices that are properly rated and certified for the load being moved • No employees shall pass under any elevated forks, buckets, or lifts whether loaded or not. • Loads shall be lowered, power shut off, and parking brake applied when equipment is left unattended.
	Insect/ Animal Bites	• Review injury potential with workers. • Avoid insect nests areas, habitats outside work areas. • Emphasize the “Buddy System” where such injury potential exists. • Immediately report all bites and seek medical treatment.. • Identify personnel who have known allergies to stinging insects and ensure they are equipped with Epi-pens. • Wear PPE and tape joints to keep insects away from the skin, as necessary. • Use protective insect repellents containing DEET to prevent insect bites. • Check limbs/body for insects/ insect bites during breaks and at the end of the day.
	Contact Dermatitis/ Poison Ivy	• Wear long sleeve shirts / trousers to avoid skin contact with plants or other skin irritants. • Identify and review poisonous plants with workers. • Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. • Identify workers who are known to contract poison ivy

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Mobilization/Demobilization (continued)	Slips, Trips, Falls	• Clear walkways work areas of objects • Mark, identify, or barricade other obstructions • Identify uneven surfaces or ground protrusions • Institute and maintain good housekeeping practices. • Observe and avoid tools and debris in a work area. • Walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area. • Observe and avoid areas of unprotected holes, ramps, roof areas and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs. • Whenever possible observe the conditions from a flat surface and do not enter a steep ditch or side of a steep road bed. • If steep terrain must be negotiated, sturdy shoes or boots that provide ankle support should be used. The need for ladders or ropes to provide stability should be evaluated prior to exercising this option
	Visible Lighting	• Perform tasks in daylight hours whenever possible. • Do not enter poorly lit areas without first providing portable illumination. • Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.
	Adverse weather conditions: -high winds -driving rain	• Monitor weather forecast • Follow the Hurricane Preparedness Plan • Shut down operations should severe weather conditions exist
	Theft	• Secure all materials at the end of the day • Lock-up materials if able to do so.
	Bystanders	• Place barriers around the work area to keep the general public out. • Notify the police of any suspicious behavior.

Equipment to be used	Inspection Requirements	Training Requirements
• Heavy Equipment/Forklift • Boats • Vehicles • First aid kit • Fire extinguisher • Air horn	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of equipment	• Review HASP with all site personnel • Review site specific AHA with all task personnel • Operator training • Hazard Communication training • CPR/First aid • Blood-borne Pathogen

	PRINT	**SIGNATURE**	
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ACTIVITY HAZARD ANALYSIS

ACTIVITY: SAMPLING/SURVEYING FROM A JON BOAT	**Date:**
	Project:
Description of the work:	Site Supervisor:
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence	**Potential Health and Safety Hazards**	**Hazard Controls**
Sampling/Surveying from a Jon Boat	Unsafe Water Conditions	• The supervisor and Safety Coordinator (SC) shall continuously monitor water conditions to determine if entry and exit from the site can be performed safely by boat. • Obtain weather reports to determine if the weather conditions pose a potential danger to accessing the area by boat. • Do not attempt to enter or exit or exit the area by boat if water conditions are dangerous. • If lightning is determined to be within 30 miles of the work-site, all work activities will cease and all personnel should immediately seek refuge. • The boat shall have sufficient room, freeboard and stability to safely carry the cargo and number of passengers allowed with consideration given to weather and water conditions in which it will operate.
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion in PPE.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Sampling/Surveying from a Jon Boat (continued)	Drowning	• Each person must be able to swim • Personnel in the boat shall wear type III personal floatation devices. • Personnel will receive a water safety briefing. • Have floating ring buoy with 90 ft of line, within 200 ft of rescue personnel. • There must be one person specifically designated to respond to water emergencies. • A competent person inspects boat for holes, tears, and general “sea worthiness”. • Pre-launch safety meetings will be conducted daily with all parties involved with boat activities. • An adequate distance will be maintained between boat and overhead power lines, bridges, and overpasses. • An adequate distance will be maintained between boat and other ships on waterways. • Manufacturers specifications and limitations for weight allowance and distribution will be followed at all times
	Slips, Trips, Falls	• No jumping in or out of boat. • Care must be taken when entering or exiting the water and the boat due to rough terrain and unstable boat. • Use the buddy system to enter and exit (one person help the other), or other safe means of boarding and leaving the boat which prevents falling or slipping.
	Vehicles/Traffic	• Exercise caution when exiting traveled way or parking along street—avoid sudden stops, use flashers, etc. • Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier. • All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests/clothing. • Always pay attention to moving traffic – never assume drivers/operators are looking out for you. • When workers must face away from traffic, a “buddy system” should be used, where one worker is looking toward traffic. Lookouts should be used when physical barriers are not available or practical

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Sampling/Surveying from a Jon Boat (continued)	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion in PPE.
	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting. • Plan storage and staging to minimize lifting or carrying distances. • Split heavy loads into smaller loads.
	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.
	Fire Prevention	• Use only metal safety cans for storage and transfer of fuel. • Maintain flammable/combustible materials in flammable lock-up (vented) when not in use. • Use funnels and nozzles during fueling operations. • Allow warm engine parts (small engines) to cool before refueling. • Appropriately sized, easily accessible ABC fire extinguisher in work area.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Sampling/Surveying from a Jon Boat (continued)	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Avoid use of razor knives. • Cut away from the body and never towards another worker.
	General Inhalation and Contact with Hazardous Substances exposure	• Before the boat is placed in the water, a 3.5 mil visquene plastic sheet is deployed on the shoreline. • The boat is then to be placed onto the sheet and then gently slid into the water in order to avoid stirring up potentially contaminated sediments and to minimize the amount of sediments that the boat comes into contact with. • The staff is then to enter the boat from the sheet. • The boat's anchor is to never make contact with the boat. After it has been pulled up, it is to be rinsed. The anchor is then to be placed in a 5 gallon bucket with a plastic liner attached on the inside. • Before exiting the boat, a 3.5 mil visquene plastic sheet is deployed on the shoreline.

ACTIVITY HAZARD ANALYSIS

Equipment to be used	Inspection Requirements	Training Requirements
• Jon Boat • Oars • Life Vests • First aid kit • Fire extinguisher • Air horn • Ring Buoy • Sample containers and equipment • Surveying equipment	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of boat and related equipment • Obtain weather report for determining safe boating conditions and heat stress monitoring.	• Review HASP with all site personnel • Review site specific AHA with all task personnel • Water safety review. • CPR/First aid • HAZCOM • Blood-borne pathogen

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ACTIVITY HAZARD ANALYSIS

ACTIVITY: SEDIMENT EXCAVATION UNDER BRIDGES	**Date:**
	Project:
Description of the work:	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence	**Potential Health and Safety Hazard**	**Hazard Controls**
Sediment Excavation Under Bridges	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures.	• All personnel shall attend the site orientation training. The HASP and AHAs will be covered with work crew. The site orientation shall include a review of the phone locations, evacuation routes, and any special site conditions. • Post all hazard warning signs, emergency maps, and emergency phone numbers. • Minimum PPE – Hardhats, Safety Glasses with side shields, Safety Toed boots, Long Pants and shirts with a minimum of 3" sleeves. This may be modified to include; work gloves, splash suit, and face shield.
	Failure to properly plan daily activities	• A Job Safety Analysis (JSA) shall be prepared by the crew prior to commencing daily activities. • The JSA may be used as a component of the morning Tailgate Safety Meeting. • The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Sediment Excavation under Bridges (continued)	Slips, Trips, Falls	• Clear walkways work areas of objects • Mark, identify, or barricade other obstructions • Identify uneven surfaces or ground protrusions • Institute and maintain good housekeeping practices. • Observe and avoid tools and debris in a work area. • Walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area. • Observe and avoid areas of unprotected holes, ramps, roof areas and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs. • If steep terrain must be negotiated, sturdy shoes or boots that provide ankle support should be used. The need for ladders or ropes to provide stability should be evaluated prior to exercising this option
	Visible Lighting	• Perform tasks in daylight hours whenever possible. • Do not enter poorly lit areas without first providing portable illumination. • Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.
	Unsafe Water Conditions	• The supervisor and Safety Coordinator (SC) shall continuously monitor water conditions to determine if entry and exit from the site can be performed safely by boat. • Obtain weather reports to determine if the weather conditions pose a potential danger to accessing the area by boat.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Sediment Excavation Under Bridges (continued)	Drowning from Tow Boats	• Each person must be able to swim • Personnel in the boat shall wear type III personal floatation devices. • Personnel will receive a water safety briefing. • Have floating ring buoy with 90 ft of line, within 200 ft of rescue personnel. • There must be one person specifically designated to respond to water emergencies. • A competent person inspects boat for holes, tears, and general “sea worthiness”. • Pre-launch safety meetings will be conducted daily with all parties involved with boat activities. • An adequate distance will be maintained between boat and overhead power lines, bridges, and overpasses. • An adequate distance will be maintained between boat and other ships on waterways. • Manufacturers specifications and limitations for weight allowance and distribution will be followed at all times
	Hand injuries.	• Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.
	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting. • Plan storage and staging to minimize lifting or carrying distances. • Split heavy loads into smaller loads.
	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Sediment Excavation Under Bridges (continued)	Fire Prevention	• Use only metal safety cans for storage and transfer of fuel. • Maintain flammable/combustible materials in flammable lock-up (vented) when not in use. • Use funnels and nozzles during fueling operations. • Allow warm engine parts (small engines) to cool before refueling. • Appropriately sized, easily accessible ABC fire extinguisher in work area.
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Avoid use of razor knives. • Cut away from the body and never towards another worker.
	Vehicles/Traffic	• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc. • Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier. • All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests/clothing. • Always pay attention to moving traffic – never assume drivers/operators are looking out for you. • When workers must face away from traffic, a “buddy system” should be used, where one worker is looking toward traffic. Lookouts should be used when physical barriers are not available or practical
	Struck by equipment	▪ Personnel working in the area will be cautioned regarding mobile equipment in the area. ▪ Workers on the ground will be required to wear high visibility safety vests. ▪ Assure back-up alarms are working properly. ▪ Equipment will use low speeds during unloading.
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Sediment Excavation Under Bridges (continued)	Insect/ Animal Bites	• Review injury potential with workers. • Avoid insect nests areas, habitats outside work areas. • Emphasize the "Buddy System" where such injury potential exists. • Immediately report all bites and seek medical treatment.. • Identify personnel who have known allergies to stinging insects and ensure they are equipped with Epi-pens. • Wear PPE and tape joints to keep insects away from the skin, as necessary. • Use protective insect repellents containing DEET to prevent insect bites. • Check limbs/body for insects/ insect bites during breaks and at the end of the day.
	General Inhalation and Contact with Hazardous Substances	• All site personnel will enter and exit equipment from visquene sheeting. • Disposable boot covers will be worn by all equipment operators. • Residual sediment materials will be scraped off onto viquene before moving equipment. • Provide workers proper skin and eye protection based on the exposure hazards present. • Review hazardous properties of site contaminants with workers before operations begin.
	Underground/ Overhead Utilities	• Identify all utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 3 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kv) 15 feet phase to ground clearance; 31 feet phase to phase clearance
	Adverse weather conditions: -lightening -high winds -driving rain	• Monitor weather forecast • Follow the Hurricane Preparedness Plan • Shut down operations should severe weather conditions exist
	Theft	• Secure all materials at the end of the day • Lock-up materials if able to do so.
	Bystanders	• Place barriers around the work area to keep the general public out. • Notify the police of any suspicious behavior.

Equipment to be used	Inspection Requirements	Training Requirements
• Horizontal Drill Rig • Vermeer® Bucket • Barges • Watertight Roll-off Containers (WRC) • Vehicles • First aid kit • Fire extinguisher • Air horn	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of equipment	• Review HASP with all site personnel • Review site specific AHA with all task personnel • Equipment operator training • Hazard Communication training • CPR/First aid • Blood-borne Pathogen • Excavation Component Person

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ACTIVITY HAZARD ANALYSIS

ACTIVITY: SEDIMENT EXCAVATION	**Date:**
	Project:
Description of the work:	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Sediment Excavation	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures.	• All personnel shall attend the site orientation training. The HASP and AHAs will be covered with work crew. The site orientation shall include a review of the phone locations, evacuation routes, and any special site conditions. • Post all hazard warning signs, emergency maps, and emergency phone numbers. • Minimum PPE – Hardhats, Safety Glasses with side shields, Safety Toed boots, Long Pants and shirts with a minimum of 3" sleeves. This may be modified to include; work gloves, splash suit, and face shield.
	Failure to properly plan daily activities	• A Job Safety Analysis (JSA) shall be prepared by the crew prior to commencing daily activities. • The JSA may be used as a component of the morning Tailgate Safety Meeting. • The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Sediment Excavation (continued)	Slips, Trips, Falls	• Clear walkways work areas of objects • Mark, identify, or barricade other obstructions • Identify uneven surfaces or ground protrusions • Institute and maintain good housekeeping practices. • Observe and avoid tools and debris in a work area. • Walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area. • Observe and avoid areas of unprotected holes, ramps, roof areas and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs. • If steep terrain must be negotiated, sturdy shoes or boots that provide ankle support should be used. The need for ladders or ropes to provide stability should be evaluated prior to exercising this option
	Visible Lighting	• Perform tasks in daylight hours whenever possible. • Do not enter poorly lit areas without first providing portable illumination.
	Unsafe Water Conditions	• The supervisor and Safety Coordinator (SC) shall continuously monitor water conditions to determine if entry and exit from the site can be performed safely by boat. • Obtain weather reports to determine if the weather conditions pose a potential danger to accessing the area by boat.
	Drowning	• Each person must be able to swim • Personnel in the boat shall wear type III personal floatation devices. • Personnel will receive a water safety briefing. • Have floating ring buoy with 90 ft of line, within 200 ft of rescue personnel. • There must be one person specifically designated to respond to water emergencies.
	Underground/ Overhead Utilities	• Identify all utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 3 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kv) 15 feet phase to ground clearance; 31 feet phase to phase clearance

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Sediment Excavation (continued)	Hand injuries.	• Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.
	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting.
	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.
	Fire Prevention	• Use only metal safety cans for storage and transfer of fuel. • Maintain flammable/combustible materials in flammable lock-up (vented) when not in use. • Use funnels and nozzles during fueling operations. • Allow warm engine parts (small engines) to cool before refueling. • Appropriately sized, easily accessible ABC fire extinguisher in work area.
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Avoid use of razor knives. • Cut away from the body and never towards another worker.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Sediment Excavation (continued)	Struck by equipment	▪ Personnel working in the area will be cautioned regarding mobile equipment in the area. ▪ Workers on the ground will be required to wear high visibility safety vests. ▪ Assure back-up alarms are working properly. ▪ Equipment will use low speeds during unloading.
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
	Insect/ Animal Bites	• Review injury potential with workers. • Avoid insect nests areas, habitats outside work areas. • Emphasize the “Buddy System” where such injury potential exists. • Immediately report all bites and seek medical treatment.. • Identify personnel who have known allergies to stinging insects and ensure they are equipped with Epi-pens. • Wear PPE and tape joints to keep insects away from the skin, as necessary. • Use protective insect repellents containing DEET to prevent insect bites. • Check limbs/body for insects/ insect bites during breaks and at the end of the day.
	General Inhalation and Contact with Hazardous Substances	• Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Monitor breathing zone air to determine levels of contaminants, as necessary. • Limit the amount of water being placed into the roll-offs. • Personnel not directly involved with the activities will be restricted from this area. • All site personnel will enter and exit equipment from visquene sheeting. • Disposable boot covers will be worn by all equipment operators. • Residual sediment materials will be scraped off onto viquene before moving equipment.

Equipment to be used	Inspection Requirements	Training Requirements
• Walking Excavator/Swamp Buggy • Barges • Watertight Roll-off Containers (WRC) • Vehicles • First aid kit • Fire extinguisher • Air horn	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of equipment	• Review HASP with all site personnel • Review site specific AHA with all task personnel • Equipment operator training • Excavation Component Person • CPR/First aid • HAZCOM • Blood-borne pathogens

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ACTIVITY HAZARD ANALYSIS

ACTIVITY: UTILITY CLEARANCE

Date:

Project:

Description of the work:

Site Supervisor:

Site Safety Officer:

Review for latest use: Before the job is performed.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
	Failure to properly plan daily activities	• A Job Safety Analysis (JSA) shall be prepared by the crew prior to commencing daily activities. • The JSA may be used as a component of the morning Tailgate Safety Meeting. • The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change.
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.
	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting.

Work Activity Sequence	**Potential Health and Safety Hazard**	**Hazard Controls**
	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.
	Insect/ Animal Bites	• Review injury potential with workers. • Avoid insect nests areas, habitats outside work areas. • Emphasize the “Buddy System” where such injury potential exists. • Immediately report all bites and seek medical treatment.. • Identify personnel who have known allergies to stinging insects and ensure they are equipped with Epi-pens. • Wear PPE and tape joints to keep insects away from the skin, as necessary. • Use protective insect repellents containing DEET to prevent insect bites. • Check limbs/body for insects/ insect bites during breaks and at the end of the day.
	Contact Dermatitis/ Poison Ivy	• Wear long sleeve shirts / trousers to avoid skin contact with plants or other skin irritants. • Identify and review poisonous plants with workers. • Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. • Identify workers who are known to contract poison ivy
	Adverse weather conditions: -lightening -high winds -driving rain	• Monitor weather forecast • Follow the Hurricane Preparedness Plan • Shut down operations should severe weather conditions exist
	Theft	• Secure all materials at the end of the day • Lock-up materials if able to do so.
	Bystanders	• Place barriers around the work area to keep the general public out. • Notify the police of any suspicious behavior.

Equipment to be used	**Inspection Requirements**	**Training Requirements**
• Electronic Utility Locating Equipment – METROTECH Model: 810 – 9890 • Transmitter and Receiver – Pipehorn • Cable Locator, GSSI 4000	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of equipment	• Review HASP with all site personnel • Review site specific AHA with all task personnel

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ACTIVITY HAZARD ANALYSIS

ACTIVITY: VACUUM TRUCK/WATER PUMPING	**Date:**
	Project:
Description of the work:	**Site Supervisor:**
	Site Safety Officer:
	Review for latest use: Before the job is performed.

Work Activity Sequence	Potential Health and Safety Hazard	Hazard Controls
Vacuum Truck/Water Puming	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures.	• All personnel shall attend the site orientation training. The HASP and AHAs will be covered with work crew. The site orientation shall include a review of the phone locations, evacuation routes, and any special site conditions. • Post all hazard warning signs, emergency maps, and emergency phone numbers. • Minimum PPE – Hardhats, Safety Glasses with side shields, Safety Toed boots, Long Pants and shirts with a minimum of 3” sleeves. This may be modified to include; work gloves, splash suit, and face shield.
	Failure to properly plan daily activities	• A Job Safety Analysis (JSA) shall be prepared by the crew prior to commencing daily activities. • The JSA may be used as a component of the morning Tailgate Safety Meeting. • The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change.
	Overhead.	• Vehicle drivers must be aware of overhead hazards and maintain safe clearances - use spotters when necessary.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Vacuum Truck/Water Pumping (continued)	Hand injuries.	• Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.
	Electrical.	• GFCIs shall be used on all power tools and extension cords. • Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas.
	Fire/ Explosion from Ignition of vapors	• Eliminate sources of ignition from the work area • Prohibit smoking • Post "NO SMOKING" signs • Shut-off all fuel powered equipment during refueling • Use grounding and bonding during to eliminate static discharge during Vacuum/pumping operations • Prohibit storage, transfer of flammable liquids in plastic containers • Vent the equipment air discharge downwind, away from engine, work areas. • Provide ABC (or equivalent) fire extinguishers in all work and flammable storage areas
	High Ambient Temperature	• Provide fluids to prevent worker dehydration. • Monitor for heat stress in accordance with HSP (maintain use of buddy system). • Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.
	Handling Heavy Equipment	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Avoid carrying heavy objects above shoulder height. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting.
	Alligators and Snapping Turtles	• Do not bother them and usually they will not bother you. • Do not feed the alligators or turtles (note: Feeding an alligator is a second degree misdemeanor in Florida). • Get immediate medical attention if injured.
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Cut away from the body and never towards another worker.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Vacuum Truck/Water Pumping (continued)	Struck by equipment	▪ Personnel working in the area will be cautioned regarding mobile equipment in the area. ▪ Workers on the ground will be required to wear high visibility safety vests. ▪ Assure back-up alarms are working properly. ▪ Equipment will use low speeds during unloading.
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
	Insect/ Animal Bites	• Review injury potential with workers. • Avoid insect nests areas, habitats outside work areas. • Emphasize the “Buddy System” where such injury potential exists. • Immediately report all bites and seek medical treatment.. • Identify personnel who have known allergies to stinging insects and ensure they are equipped with Epi-pens. • Wear PPE and tape joints to keep insects away from the skin, as necessary. • Use protective insect repellents containing DEET to prevent insect bites. • Check limbs/body for insects/ insect bites during breaks and at the end of the day.
	Contact Dermatitis/ Poison Ivy	• Wear long sleeve shirts / trousers to avoid skin contact with plants or other skin irritants. • Identify and review poisonous plants with workers. • Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. • Identify workers who are known to contract poison ivy

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
Vacuum Truck/Water Pumping (continued)	Slips, Trips, Falls	• Clear walkways, work areas, of equipment, vegetation, excavated material, tools and debris • Mark, identify, or barricade other obstructions • Use fall protection working on Vacuum-truck catwalks (above 6 feet) • Move cautiously on tank ladders, catwalks and other walkways • Clean boot soles before using ladders or stairs • Clean up spills around Vacuum equipment • Identify uneven surfaces or ground protrusions • Institute and maintain good housekeeping practices. • Observe and avoid tools and debris in a work area. • Walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area. • Observe and avoid areas of unprotected holes, ramps, roof areas and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs. • Whenever possible observe the conditions from a flat surface and do not enter a steep ditch or side of a steep road bed. • If steep terrain must be negotiated, sturdy shoes or boots that provide ankle support should be used. The need for ladders or ropes to provide stability should be evaluated prior to exercising this option
	Visible Lighting	• Perform tasks in daylight hours whenever possible. • Do not enter poorly lit areas without first providing portable illumination. • Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.
	Adverse weather conditions: -high winds -driving rain	• Monitor weather forecast • Follow the Hurricane Preparedness Plan • Shut down operations should severe weather conditions exist
	Theft	• Secure all materials at the end of the day • Lock-up materials if able to do so.
	Bystanders	• Place barriers around the work area to keep the general public out. • Notify the police of any suspicious behavior.

Equipment to be used	Inspection Requirements	Training Requirements
• Vacuum truck • Portable water storage tank • Pumps • First aid kit • Fire extinguisher • Air horn	• Emergency Safety Equipment, Eyewashes, Fire Extinguishers, First aid supplies • Perform daily inspection of equipment	• Review HASP with all site personnel • Review site specific AHA with all task personnel • Operator training • Hazard Communication training • CPR/First aid • Blood-borne Pathogen

	PRINT	**SIGNATURE**	
Supervisor Name:			**Date/Time:**
Safety Specialist Name:			**Date/Time:**
Employee Name(s):			**Date/Time:**
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
			Date/Time:
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			Date/Time:

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 7

Standards of Conduct

CH2M HILL CONSTRUCTORS, INC. (CCI)

STANDARDS OF CONDUCT

All individuals associated with this project must work injury free and drug free, comply with the following Standards of Conduct, the Site Safety Plan and the Safety requirements of CCI . Commonly accepted standards of conduct help maintain good relationships between people. They promote responsibility and self-development. You can avoid misunderstandings, frictions and disciplinary action by avoiding thoughtless or wrongful acts.

List of Standards of Conduct (not all-inclusive).

- Failure to perform work. Inefficient performance, incompetence or neglect of work.
- Willful refusal to perform work as directed (insubordination).
- Negligence in observing safety regulations, poor housekeeping, or failure to report on-the-job injuries or unsafe conditions.
- Unexcused or excessive absence or tardiness.
- Unwillingness or inability to work in harmony with others. Discourtesy, irritation, friction or conduct creating disharmony.
- Harassing or discriminating against another individual.
- Failure to be prepared for work by wearing the appropriate construction clothing or bringing the necessary tools.
- Violation of any other commonly accepted reasonable rule of responsible personal conduct.

Intolerable Offenses.

- Certain employee conduct may be so intolerable as to justify removal from the project. Intolerable offenses and actions will include, but will not be limited to:
- Dishonesty or falsification in any form or degree.
- Damage, loss or destruction of employee's, CCI's, Subcontractors, or owner's property due to willful or negligent acts.
- Unauthorized possession, removal or use of property belonging to CCI, Owner, other employees, or Subcontractors.
- Safety violations that endanger yourself or other employees.
- Refusal to wear safety equipment.

- Horseplay, fighting, threatening, intimidating or coercing others on Project premises.
- Removing and/or crossing through red danger tape and/or working inside red or red danger tape without authorization.
- Bringing unauthorized weapons, firearms or explosives on-site.
- Any person working more than 6 feet above the next lowest level not implementing proper fall protective system criteria and practices outlined in the Site Safety Plan and OSHA 29 CFR 1926, Subpart M
- Failure to comply with procedures contained in the Subcontract, Site Safety Plan, or any and all federal, state, or local safety laws and regulations that create the potential for serious or costly consequences.
- Repeated minor offenses for which an Employee shows a lack of responsible effort to correct deficiencies
- Participating in workplace violence.

Drug-Free Workplace

CCI does not tolerate illegal drug use, or any use of drugs, controlled substances or alcohol that impairs an employees work performance or behavior. CCI has established a policy that its employees and subcontractors shall not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. The use or possession of alcohol in the workplace is also prohibited. Any violation of these prohibitions may result in discipline or immediate discharge. *(Please reference CH2M HILL SOP 76 Drug-Free Workplace Standard of Practice)*

Enforcement/Discipline

- CCI's Enforcement/Discipline procedures, the Standards of Conduct, the Intolerable Offenses, and the Drug-Free Workplace policy will be thoroughly reviewed with each employee during the employee project orientation.

  Intolerable Offenses

  - Zero Tolerance for intolerable offenses. Those individuals found participating in such offenses will be:
    - Suspended from work for three (3) days without pay, or
    - Immediately discharged and will not be allowed to return.
- **Other Violations**
  - Other violations as outlined in the standards of conduct will be handled accordingly:
    - First Offense – Employee will receive a written warning.
    - Second Offense – Employee will receive a two (2) day suspension without pay.
    - Third Offense – employee will be discharged.

SUBCONTRACTOR DEFAULT

Stop Work Orders

- Should Subcontractor fail to comply with any of the requirements of the Subcontract, Site Safety Plan, or any and all federal, state, or local safety laws and regulations, CCI may issue a stop work order to Subcontractor. Thereupon, Subcontractor shall immediately cease all Work or portion of Work that may be specifically designated in the stop work order until CCI has concluded in writing that the Subcontractor has corrected its failure of performance. No adjustments will be made to the Subcontractor Price or Schedule as a result of any stop work orders being issued by CCI. A stop work order form will be completed by CCI and a copy will be given to the noncompliant Subcontractor on the date of deficiency. If Subcontractor fails to correct the deficiencies noted in the Stop Work Order within THREE (3) WORKING DAYS following the written notice from CCI, CCI may, without prejudice to any other rights or remedies under the Subcontract or at law or equity, suspend all further payments to Subcontractor and/or terminate Subcontractor's right to continue performance of the Work. (see **Subcontractor Nonperformance**)

Subcontractor Nonperformance

- In the event that Subcontractor fails to perform any of its obligations under the Subcontract, Site Safety Plan, or any and all federal, state, or local safety laws and regulations and shall fail to correct such nonperformance within THREE (3) WORKING DAYS following the written notice from CCI, CCI may, without prejudice to any other rights or remedies under the Subcontract or at law or equity, suspend all further payments to Subcontractor and/or terminate Subcontractor's right to continue performance of the Work. In the event of such termination, CCI shall have the right to take possession of all tools, equipment, materials or other things at the job site, and may finish the Work by whatever means CCI may deem appropriate.

- In the event of termination by CCI under the Subcontractor Default procedures, Subcontractor shall not be entitled to any further payments until Work is completed and finally accepted. Upon the completion and final acceptance, CCI will determine the cost of completion of the Work, including the costs incurred by CCI and the Owner due to such default, including without limitations CCI's and Owner's overheads and legal costs and expenses in the completion of the Work. In addition, CCI will be entitled to a profit markup of 10% of the costs of completion of the Work. If such costs of completion of the Work together with all payments previously made exceed the Subcontractor's Price, such excess will be paid by Subcontractor to CCI. If such costs plus previously paid amounts are less than Subcontractor's Price, then such excess will be paid to the Subcontractor.

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 8

Notice of Safety Violation Form

CH2MHILL
Constructors, Inc.

Notice of Safety Violation

REPORT PREPARED BY:

Name:	**Title:**	**Signature:**	**Date:**

VIOLATION

Description: ____ ____ ____ ____ ____ ____	**Date:** _______________

SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	**Title:**	**Signature:**	**Date:**

** Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.**

SUBCONTRACTOR'S CORRECTIVE ACTION

Description: ____ ____ ____ ____ ____ ____	**Date of Corrective Actions:** _______________

SUBCONTRACTOR SIGNATURE OF CORRECTION:

Name:	**Title:**	**Signature:**	**Date:**

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 9

Stop Work Order Form

Stop Work Order

REPORT PREPARED BY:

Name:	Title:	Signature:	Date:

ISSUE OF NONPERFORMANCE

Description:______	Date of Nonperformance: ______

SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	Title:	Signature:	Date:

** Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.* Work may not resume until authorization is granted by CH2M HILL Constructors, Inc. Representative,*

SUBCONTRACTOR'S CORRECTIVE ACTION

Description:______	Date of Corrective Actions: ______

SUBCONTRACTOR SIGNATURE OF CORRECTION:

Name:	Title:	Signature:	Date:

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 10

Kick off Meeting Outline

CH2MHILL
Constructors, Inc.

Kick-off Meeting Outline

Health and Safety

Health and Safety is paramount to the success of this project. We expect 100% compliance and cooperation with/from our subcontractors. While willingness to correct safety hazards detected by CH2M HILL is commendable…It is a poor substitute for a positive program that prevents or detects and corrects hazards.

We need the following information prior to beginning work:

1. Health and Safety Plan
2. Activity Hazard Analyses for work to be performed
3. Drug Test verifications for each employee
4. Training records for each employee
    - Hazwoper
    - Hazard Communication
    - And any other applicable required training records or certifications
5. Hazwoper Medical verifications
6. Hazcom Chemical Inventory List
7. MSDS for any Hazardous Materials brought on site
8. Safety orientation including review of HSP and AHAs for site work with signoff sheets for all personnel.
9. Post appropriate postings.
10. Excavation Competent Person
11. Scaffold Competent Person

Once work begins:

1. Minimum Personal Protective Equipment for the Site:
    - Hard Hat
    - Safety glasses with side shields
    - Safety toe boots
    - Reflective vest when working in any motorized vehicle/heavy equipment zone
    - Personal flotation devices required for any work on or over water
2. Place fire extinguishers as required and inspect monthly. Provide inspection documentation monthly.
3. Submit Pre Task Safety Plans (PTSP) daily for work to be conducted, based on AHAs.
4. Conduct daily safety meetings based on PTSP. Document meetings and attendance and submit weekly.
5. Inspect equipment daily and provide documentation weekly.
6. Incidents will be reported immediately and investigated jointly with CH2M HILL.
7. Enforce job site safety standards. Hold your people accountable.

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 11

Safety Program Poster

Return to Work Poster

CH2MHILL
Constructors, Inc.

Willingness to correct SAFETY HAZARDS detected by CH2M Hill is commendable…

…but a POOR SUBSTITUTE for a positive program that prevents or detects and corrects hazards.

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 12

Material Safety Data Sheets

Volume 1, Appendix D

Manatee Protection Plan

1.0 INTRODUCTION

The West Indian manatee (*Trichechus manatus*) was listed as an endangered species by the Florida Fish and Wildlife Service (FFWS) on June 2, 1970. This species' habitat range includes rivers, canals, estuaries, and coastal regions of subtropical and tropical areas. The West Indian manatee is an herbivore that migrates to warmer waters during the colder months. In Florida, most migrate south during the winter and congregate mainly in estuaries and canals. They prefer brackish over marine environments. The present distribution of the West Indian manatee includes the coasts and rivers of Florida, the Greater Antilles, eastern Mexico and Central America, and northern and eastern South America. A critical habitat was established for the West Indian manatee in 1976. It includes Biscayne Bay and all adjoining and connected lakes, rivers, canals, and other waterways from the southern tip of Key Biscayne (FFWS, 1999).

During sampling events for the Wagner Creek and Seybold Canal project, it was noted that manatees frequent both the creek and canal. During the June/July 2008 sampling event, manatees were sighted up to the NW 15th St. bridge (adjacent to University of Miami Hospital). During the May 2009 sampling event, manatees were sighted between the NW 14th Ave./NW 17th St. bridges (adjacent to VA Hospital). There is anecdotal evidence that manatees have been sighted as far northwest as the NW 20th St. culvert.

Because of the considerations noted above, manatee protection will be a daily concern during the dredging of Wagner Creek and Seybold Canal. The following are key issues to manatee protection during the work:

- Mechanical dredging will be utilized to remove the sediments. One or more staff members trained to perform Manatee Watch will be required to minimize the potential for manatee contact with the dredge.
- Control of water quality (turbidity) may require the use of multiple turbidity curtains (up to three upstream and three downstream) during dredging. A Manatee Watch will be required to monitor upstream and downstream of the turbidity curtains.
- Solid turbidity curtains will be utilized (no netted curtains). This will minimize the potential for manatees to become entangled. Curtain designs that minimize the potential for entanglement with bottom chains or flotation systems will be selected.
- Turbidity curtains for Wagner Creek dredging will be small (approximately 25 ft wide x 5 ft deep) and will be removed when manatees are present within 50 ft of the downstream curtain. Curtains will not be deployed if manatees are sighted within 50 ft of upstream curtains.
- Wagner Creek tidal activity is approximately 1.5 ft (high tide to low tide). Sediment can become exposed at low tide between NW 20th St and NW 15th St. Dredging in these areas will begin at NW 20th St and progress downstream. Because of this, there is a possibility that manatees can become stranded in dredged areas at low tide. If this occurs, the Manatee Watch will continue to monitor the manatees until they leave. If this proves problematic to the dredging progress, a manatee barrier such as an

AquaBarrier™ will be installed at the NW 15th St. bridge to limit manatee movement into the work areas and maintain an upstream water level for manatee movement.

- Turbidity curtains for Seybold Canal will be staggered and oriented to allow for manatee movement through the work areas. Work will cease when manatees are sighted within 50 ft of the upstream or downstream curtains.

The general manatee protection measures described below will be implemented to avoid potential impacts to manatees during the Wagner Creek and Seybold Canal project construction.

2.0 GENERAL PROTECTION MEASURES

1. The dredging contractor will advise all personnel associated with the project construction of the potential presence of manatees in the project area and the need to avoid collisions.
2. All construction personnel will be responsible for observing water-related activities for the presence of manatees and will implement appropriate precautions to ensure the protection of manatees. At least one person will be formally designated as a manatee observer when in-water work is performed. The observer must be equipped with polarized sunglasses to enhance viewing. The observer must be onsite during all in-water construction and will advise construction personnel to cease construction whenever a manatee is sighted within 50 feet of the work.
3. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammals Protection Act of 1972, the Endangered Species Act of 1973, and the Florida Sanctuary Act. The contractor will be held responsible for any manatee harmed, harassed, or killed as a result of the project area investigation and construction activities.
4. Turbidity barriers, when utilized, will be made of material in which manatees cannot become entangled, will be properly secured, and will be regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exit from essential habitat.
5. Prior to the commencement of construction, the contractor will construct and install at least two temporary signs concerning manatees. One sign measuring at least 3 ft. by 4 with this message must be posted: “Caution: Manatee Area. Idle speed is required if operating a vessel in the construction area.” A second temporary sign, measuring at least 8.5 x 11 inches, must be posted with this message: "Caution: Manatee Habitat. Equipment must be shut down immediately if a manatee comes within 50 feet of operation. A collision with and/or injury to a manatee will be immediately reported to the U.S. Fish and Wildlife Service in Vero Beach at 772-562-3909." The second sign will be located adjacent to the displayed construction permit.
6. All vessels associated with the project will be required to operate at "no wake" speeds at all times while in waters where the draft of the vessel provides less than 4 ft of clearance from the bottom. All vessels shall follow routes of deep water whenever possible. No vessels shall operate and all in-water work will cease whenever manatee observation becomes ineffective (e.g., after sunset, in cases of rain, fog, or limited visibility).

7. If a manatee is sighted within 100 yards of the construction area, appropriate safeguards will be taken, including suspension of construction activities and removal of curtains, if necessary, to avoid injury to manatees. These precautions shall include the immediate shutdown of all moving equipment when a manatee is sighted within 50 ft of construction. Construction activities shall not resume until the manatee has departed from the construction area of its own volition.
8. Any collision with and/or injury of a manatee shall be reported immediately to the U.S. Fish and Wildlife Service (USFWS) in Vero Beach (772-562-3909).
9. The contractor shall maintain a log detailing sightings of, collisions with, or injuries to manatees should they occur during the contract period. Within 90 days after the contract period, a report summarizing incidents and sightings shall be submitted to the Florida Fish and Wildlife Conservation Commission’s Bureau of Protected Species Management and to the USFWS.

MSA ***Milian, Swain & Associates, Inc.***

civil engineers • environmental scientists and engineers • utility management • financial consultants

July 28, 2008

Florida Fish and Wildlife Conservation Commission
Imperiled Species Management Section
Ms. Terri Calleson
620 S. Meridian Street
Tallahassee, FL 32399-1600

RE: Manatee Siting Report

Dear Ms. Calleson,

The Wagner Creek / Seybold Canal Maintenance Dredging Project's sediment characterization field work and data collection has been completed. In accordance with our Manatee Protection Plan, Milian, Swain & Associates, Inc (MSA) is submitting our findings for the days Manatee Observers were deployed during sediment sampling activities. A SDI Electric Vibracore System was used to extract the sediment samples.

Manatee observation was performed on the following dates:

- 7/1/2008 through 7/3/2008
- 7/7/2008 through 7/12/2008
- 7/14/2008

Participating Staff included Cian Reger and Michael Kirkland, who were pre-approved by the Commission for Manatee observation on June 18th, 2008. The following pages contain a report summarizing our findings. It contains the observer, site, date, time, distance (if applicable), the approximate length of the Manatee, if operations were shut-down, and comments.

Manatees were observed at four stations within the project area. Operational shut-down was not required because no in-water work was being performed during the time of these sitings. However, the sitings were recorded in accordance with our observation plan.

If you have any questions, please feel free to contact me in our West Palm Beach Office.

Sincerely,

Drew Campbell
Manager – Environmental Services

Wagner Creek / Seybold Canal
Sediment Characterization
Manatee Siting Report

Observer	Site	Date	Time	Distance (ft)	Length (ft)	Shut Down (Y/N)	Comment
CR	CH-24	7/1/2008	9:30	No siting			
CR	CH-22	7/1/2008	11:00	No siting			
CR	CH-25	7/1/2008	12:00	No siting			
CR	CH-23	7/1/2008	13:30	No siting			
CR	CH-31	7/2/2008	8:50	No siting			
CR	CH-32	7/2/2008	9:45	No siting			
CR	CH-28	7/2/2008	10:10	No siting			
CR	CH-26	7/2/2008	11:25	No siting			
CR	CH-27	7/2/2008	12:20	No siting			
CR	CH-1	7/3/2008	9:00	No siting			
CR	CH-3	7/3/2008	9:15	No siting			
CR	CH-5	7/3/2008	10:15	No siting			
CR	CH-7	7/3/2008	11:35	No siting			
CR	NW 14th Ave. and NW 17th St.	7/3/2008	9:10	Unknown	5-6	N	No in-water work – called in 3rd party
MK	CH-20	7/7/2008	7:40	No siting			
MK	CH-18	7/7/2008	8:13	No siting			
MK	CH-16	7/7/2008	9:05	No siting			
MK	CH-14	7/7/2008	10:46	No siting			
MK	CH-9	7/7/2008	12:18	No siting			
MK	CH-11	7/7/2008	13:43	~300	5-6	N	No in-water work being performed

Manatee Observers: (CR) Cian Reger, *Staff Environmental Scientist*
(MK) Michael Kirkland, *Environmental Scientist*
Project Manager: Drew Campbell, *Manager – Environmental Services*
Report Date: 7/15/2008

Wagner Creek / Seybold Canal
Sediment Characterization
Manatee Siting Report

Observer	Site	Date	Time	Distance (ft)	Length (ft)	Shut Down (Y/N)	Comment
MK	CH-13	7/7/2008	14:50	No siting			
CR	CH-20	7/8/2008	9:00	No siting			
CR	CH-10	7/8/2008	11:30	No siting			
CR	CH-10	7/8/2008	1:20	No siting			
CR	CH-20	7/8/2008	2:10	No siting			
CR	CH-39	7/9/2008	10:30	No siting			
CR	CH-39	7/9/2008	12:35	No siting			
CR	CH-40	7/9/2008	14:05	No siting			
CR	CH-42	7/9/2008	15:40	No siting			
CR	CH-44	7/10/2008	9:10	No siting			
CR	CH-43	7/10/2008	10:45	No siting			
CR	CH-33	7/10/2008	13:15	~10	4-6	N	Just after sampling
CR	CH-34	7/10/2008	15:15	~40	4-5	N	Just after sampling
CR	CH-35	7/10/2008	16:45	No siting			
CR	CH-41	7/11/2008	9:00	No siting			
CR	CH-38	7/11/2008	10:30	No siting			
CR	CH-36	7/11/2008	11:20	No siting			
CR	CH-37	7/11/2008	13:30	No siting			
MK	CH-21	7/12/2008	7:21	No siting			
MK	CH-19	7/12/2008	8:18	No siting			

Manatee Observers: (CR) Cian Reger, *Staff Environmental Scientist*
(MK) Michael Kirkland, *Environmental Scientist*
Project Manager: Drew Campbell, *Manager – Environmental Services*
Report Date: 7/15/2008

Wagner Creek / Seybold Canal
Sediment Characterization
Manatee Siting Report

Observer	Site	Date	Time	Distance (ft)	Length (ft)	Shut Down (Y/N)	Comment
MK	CH-17	7/12/2008	9:15	No siting			
MK	CH-15	7/12/2008	9:37	No siting			
CR	CH-30	7/14/2008	9:00	No siting			

Manatee Observers: (CR) Cian Reger, *Staff Environmental Scientist*
(MK) Michael Kirkland, *Environmental Scientist*
Project Manager: Drew Campbell, *Manager – Environmental Services*
Report Date: 7/15/2008

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MSA *Milian, Swain & Associates, Inc.*

civil engineers • environmental scientists and engineers • utility management • financial consultants

July 28, 2008

U.S. Fish and Wildlife Service
Mr. Winston Hobgood
1339 20th St.
Vero Beach, Fl 32960

RE: Manatee Siting Report

Dear Mr. Hobgood,

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If you have any questions, please feel free to contact me in our West Palm Beach Office.

Sincerely,

Drew Campbell
Manager – Environmental Services

Wagner Creek / Seybold Canal
Sediment Characterization
Manatee Siting Report

Observer	Site	Date	Time	Distance (ft)	Length (ft)	Shut Down (Y/N)	Comment
CR	CH-24	7/1/2008	9:30	No siting			
CR	CH-22	7/1/2008	11:00	No siting			
CR	CH-25	7/1/2008	12:00	No siting			
CR	CH-23	7/1/2008	13:30	No siting			
CR	CH-31	7/2/2008	8:50	No siting			
CR	CH-32	7/2/2008	9:45	No siting			
CR	CH-28	7/2/2008	10:10	No siting			
CR	CH-26	7/2/2008	11:25	No siting			
CR	CH-27	7/2/2008	12:20	No siting			
CR	CH-1	7/3/2008	9:00	No siting			
CR	CH-3	7/3/2008	9:15	No siting			
CR	CH-5	7/3/2008	10:15	No siting			
CR	CH-7	7/3/2008	11:35	No siting			
CR	NW 14th Ave. and NW 17th St.	7/3/2008	9:10	Unknown	5-6	N	No in-water work – called in 3rd party
MK	CH-20	7/7/2008	7:40	No siting			
MK	CH-18	7/7/2008	8:13	No siting			
MK	CH-16	7/7/2008	9:05	No siting			
MK	CH-14	7/7/2008	10:46	No siting			
MK	CH-9	7/7/2008	12:18	No siting			
MK	CH-11	7/7/2008	13:43	~300	5-6	N	No in-water work being performed

Manatee Observers: (CR) Cian Reger, *Staff Environmental Scientist*
(MK) Michael Kirkland, *Environmental Scientist*
Project Manager: Drew Campbell, *Manager – Environmental Services*
Report Date: 7/15/2008

Wagner Creek / Seybold Canal
Sediment Characterization
Manatee Siting Report

Observer	Site	Date	Time	Distance (ft)	Length (ft)	Shut Down (Y/N)	Comment
MK	CH-13	7/7/2008	14:50	No siting			
CR	CH-20	7/8/2008	9:00	No siting			
CR	CH-10	7/8/2008	11:30	No siting			
CR	CH-10	7/8/2008	1:20	No siting			
CR	CH-20	7/8/2008	2:10	No siting			
CR	CH-39	7/9/2008	10:30	No siting			
CR	CH-39	7/9/2008	12:35	No siting			
CR	CH-40	7/9/2008	14:05	No siting			
CR	CH-42	7/9/2008	15:40	No siting			
CR	CH-44	7/10/2008	9:10	No siting			
CR	CH-43	7/10/2008	10:45	No siting			
CR	CH-33	7/10/2008	13:15	~10	4-6	N	Just after sampling
CR	CH-34	7/10/2008	15:15	~40	4-5	N	Just after sampling
CR	CH-35	7/10/2008	16:45	No siting			
CR	CH-41	7/11/2008	9:00	No siting			
CR	CH-38	7/11/2008	10:30	No siting			
CR	CH-36	7/11/2008	11:20	No siting			
CR	CH-37	7/11/2008	13:30	No siting			
MK	CH-21	7/12/2008	7:21	No siting			
MK	CH-19	7/12/2008	8:18	No siting			

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Wagner Creek / Seybold Canal
Sediment Characterization
Manatee Siting Report

Observer	Site	Date	Time	Distance (ft)	Length (ft)	Shut Down (Y/N)	Comment
MK	CH-17	7/12/2008	9:15	No siting			
MK	CH-15	7/12/2008	9:37	No siting			
CR	CH-30	7/14/2008	9:00	No siting			

Manatee Observers: (CR) Cian Reger, *Staff Environmental Scientist*
(MK) Michael Kirkland, *Environmental Scientist*
Project Manager: Drew Campbell, *Manager – Environmental Services*
Report Date: 7/15/2008

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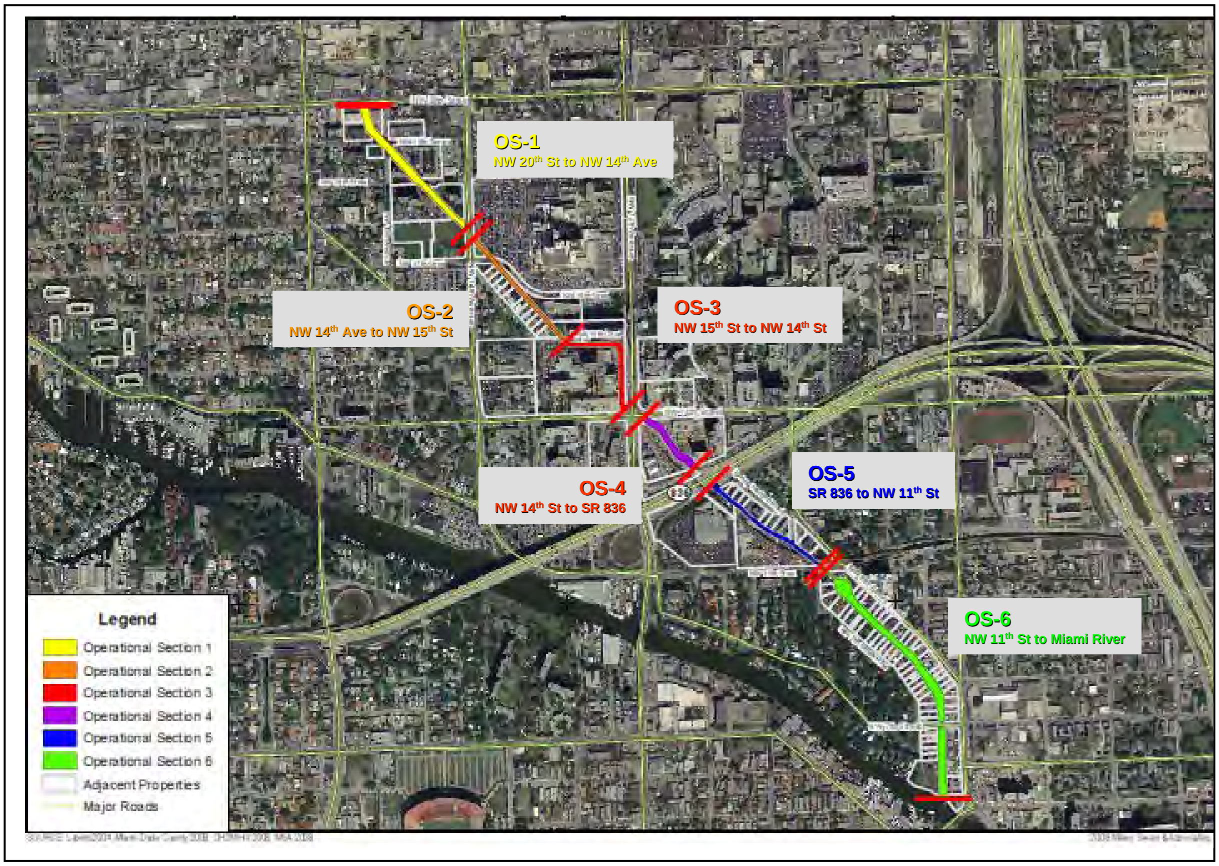
Volume 1, Appendix E

Public Involvement Plan

Appendix E

COMMUNITY INVOLVEMENT PLAN
Wagner Creek / Seybold Canal
2009 Update

This Community Involvement Plan has been developed to outline the community involvement activities that will occur in conjunction with the dredging of Wagner Creek and Seybold Canal located within the City of Miami, Florida. Maintenance dredging of these waterways is required to remove contaminated sediments and improve drainage. The dredging project will be completed in six Operational Sections (OSs) as shown in Figure 1.



SPECIFIC INFORMATIONAL REQUIREMENTS

The schedule for dredging each OS will depend upon funding availability. This plan assumes that all permitting activities are complete and that community involvement activities will be focused on notification of the stakeholders of impending work.

Upon notification that an OS has been funded and will be dredged, the dredging contractor will:

1. Prepare and submit all required road closure and Maintenance of Traffic (MOT) permit requests for the section to FDOT and Miami-Dade County agencies with purview.
2. Prepare an announcement flyer (in Spanish and English) inviting all concerned stakeholders to attend a Public Information Meeting to discuss the work to be performed and the estimated schedule for performance.
3. Distribute the Public Information Meeting announcement at least 60 days in advance of the work; and advertize in appropriate periodicals and post on community bulletin boards. Flyer distribution will include all agencies, businesses, and residences adjoining Wagner Creek/Seybold Canal in the OS to be dredged and along each local transportation route.
4. Participate as part of the project team to work with City of Miami **to keep the media informed** of our progress. The media will also be used to inform the public on bridge closures (if any) and traffic re-routing (if any) associated with the project.
5. Participate in the Public Information Meeting, which will occur no later than 30 days in advance of the work.
6. Post road closure notices as required by MOT permits.

Governmental landowners have been contacted during the permitting process to secure access for the dredging. It is anticipated that organized groups such as the "Friends of Seybold Canal," residents of multi-family buildings such as Mederos or Peninsula properties, and private landowners may require special informational meetings to ensure that all are aware of the work that will occur. In these cases, the dredging contractor will arrange for and conduct these special meetings at least 30 days in advance of the start of work.

If work is suspended, similar notices will be prepared and distributed to the stakeholders. At a minimum, these notices will provide an anticipated schedule for the restart of the work and a means for the stakeholders to contact the dredging contractor/City to resolve questions.

GENERAL PUBLIC INVOLVEMENT ACTIVITIES

Public involvement is a matter of careful listening and clear communication. Today, residents demand a direct role in the decisions that affect their communities, and projects must have community and political support to be implemented. The City of Miami will support public communication strategies by developing the forums and formats that are most conducive to meaningful, cooperative planning. At each stage of the project, the City will provide the most appropriate public involvement and communication strategies and tools.

The following tools ensure that the public is well-informed about a project and has appropriate opportunities to participate in project discussions:

Community Assessment—Early assessment of the key community issues defines the most appropriate communication tools and approaches; builds trust; identifies new alternatives; and screens out unacceptable alternatives.

Community Response—Accurate responses to community concerns and timely notification of project changes and decisions increase trust and cooperation between the team and the community and demonstrates that the project is listening and responding to community concerns as well as maintaining continuous, open lines of communication,

Information Materials—Quality information materials are the key to providing clear, accurate information to the community. The City of Miami will prepare materials that are meaningful and appropriate for the audience and that communicate complex technical issues in language and images that are easily understood by the general public.

To ensure timely and effective communications, a proactive, positive public education/involvement effort will be conducted that is sensitive to resident concerns and needs such as:

- Scope of work
- Dredging, processing, and disposal of materials
- Environmental concerns
- Protection of structures
- Marine and land traffic flow
- Coordination of bridge/street closings
- Procedures for odor, noise, and dust control
- Control of water quality during dredging

Public Presentations— Meeting formats that promote meaningful communication will be implemented. Public meetings will be conducted in conjunction with the City of Miami, its Commissioners, County Commissioners, and the Miami River Commission. During the meetings, audiences will be informed about the project, and especially its environmental impact, prior to the start of work in a given OS. Target audiences may include:

- Miami River Commission
- Multi-family housing along Wagner Creek and Seybold Canal
- Single-family residences along Wagner Creek and Seybold Canal
- Spring Garden Civic Association/River Council
- Friends of Spring Garden
- Special interest groups and other stakeholders

Documenting Community Concerns—Cooperative decision making with the community requires careful documentation and consideration of community concerns. Building trust with the community requires careful listening and responses to community concerns. The City of Miami will document all concerns for review and plan modifications where necessary.

ONSITE REQUIREMENTS

If for some reason, any media or other representatives from private firms or municipalities should visit the site with little or no advance notice, they will be required to sign in at the project office on a daily sign-in sheet. The sign-in sheet will list the name of the person and the entity they represent. The Project Manager or Dredging Manager will interface with those individuals and address any concerns they might have.

Media or community relations representatives will be directed to the City of Miami Public Relations designate.

Volume 1, Appendix F

Risk Analysis

Appendix F: Sediment Removal Risk Considerations

F.1 Project Background and Purpose of Risk Evaluation

Dredging of Operational Sections (OSs) in Wagner Creek and Seybold Canal is currently being planned for routine maintenance. Sampling investigations within the Wagner Creek and Seybold Canal channels conducted in 2003, 2008, and 2009 to determine the dredged sediment quality for disposal requirements indicated the presence of chemicals of potential concern such as metals, SVOCs, and dioxins. Elutriate and leachate testing conducted on the sediment and surface water samples did not indicate leaching as a concern; thus none of the detected chemicals would require disposal of sediments in a controlled landfill. However, dioxins do not have leaching based standards or methods to determine their disposal eligibility. The Wagner Creek/Seybold Canal sediments have been characterized as non-hazardous based on criteria defined in 40 CFR Part 261 Subpart C and as determined by the disposal facilities' acceptance criteria for dioxin and other contaminants. The dredged sediments from portions of the canal where sediment samples had with dioxin levels ≤ 1 part per billion (ppb) will be sent to the closest Subtitle D non-hazardous landfills. The dredged material from "hot" areas will be segregated for disposal at a designated disposal facility outside the State of Florida when dioxins estimated as 2,3,7,8-TCDD equivalent (TEQs) concentrations are above 1 ppb ("hot"). These dredged sediments will be sent to Waste Management's facility in Emelle, Alabama.

The dioxin-contaminated sediments are present only in the Wagner Creek portion of the Wagner Creek/Seybold Canal. This risk based evaluation is provided to address the following aspects of the Wagner Creek/Seybold Canal dredging project:

1) Potential risks from residual concentrations of dioxin within the sediments have been reviewed under two scenarios: a) risks from concentrations of dioxins in sediments prior to excavation, and b) risks from sediment concentrations after excavations are completed – where some of the areas cannot be excavated due to the access limitations – these are the residual risks.

2) Areas needing excavation for disposal as: a) above 1 ppb concentration sediments group ("hot") and b) sediments with concentrations ≤ 1 ppb ("cold") – based on estimated TEQ distributions with depth in sediments as well as concentration averages among adjacent lateral samples.

3) Considerations for excavation and disposal of removed sediments due to mixing during dredging and transportation.

During the excavation, all sediment materials starting at a location with historical TEQ concentrations above 1 ppb ("hot") down to the next known "cold" samples, and the locations immediately adjacent on either side of the "hot" sample will be grouped as "hot." Excavated sediments from this entire "hot" area will be sent to a designated landfill per DERM recommendations.

Some of the areas along the Wagner Creek channel with underground/aboveground utilities and the presence of other interfering structures are not accessible for dredging. The sediments in such areas are assumed to be "remaining in place," although mechanical disturbances during dredging in adjacent areas will loosen and remove some of the material. Access limitations are associated primarily with one area east of sample CH-08 that includes the WC-6 sample location extending to the area under the NW 14th Avenue Bridge. However, WC-6 and the sample collected immediately east of the bridge (CH-02-07) are well below 1-ppb ("cold") levels for dioxins. Thus sediments that are inaccessible for dredging are likely to have dioxin TEQ values below the 1-ppb level. A risk evaluation (discussed in Section F.2.2 below) was conducted to estimate risks from residual sediments assuming samples CH-08 and WC-6 will not be excavated. The area of sediment materials remaining in place is much smaller than the area that is planned for dredging.

A Biological Assessment Report (CH2M HILL, 2008) was prepared after surveying the Wagner Creek and Seybold Canal (see Appendix I of CAP2). The survey concluded that the area consists largely of disturbed lands and designated urban area and does not offer high quality habitat to floral or faunal species. Also, the precautionary measures planned during the construction phase will result in no significant impacts to the ecological receptors in the area.

A Health and Safety Plan (see Appendix C of CAP2) was developed for the potential exposure to workers during the construction phase of this project. This appendix includes a proposed approach to address the long-term exposure to human receptors and related risks from Wagner Creek and Seybold Canal sediments before and after dredging, using the FDEP and EPA risk guidelines and requirements.

F.2 Risk Assessment

Sections 2.1 through 2.9 of this CAP2 present the project background, sediment characterization, and planned dredging actions and limitations. Section 2.4 describes area land use – which includes both commercial and residential land use for the area around Wagner Creek and Seybold Canal. All sediments accessible for excavation are planned to be removed to the depth where refusal was encountered during the sediment thickness measurement studies. Sediment excavation depths are determined based on sediment thickness to refusal and range between 2 and 6 feet, as discussed in Section 2.7.2 of CAP2 and as shown on figures in Appendix A-1.

The resulting residual concentrations are likely to be at or below urban background levels for various chemicals, including dioxins, except for the select areas where excavation is not possible due to access limitations. Therefore, the residual concentrations were estimated assuming concentrations at sample locations CH-08 and WC-6 are to remain in the channel. This does not take into account that disturbance from dredging in the adjacent areas will likely loosen and remove some of this material.

Of the six Operational Sections (OSs) within the project area, OS-1 and OS-2 had the highest detected chemical concentrations in Wagner Creek. The chemical of potential concern (COPC) for the Wagner Creek sediments is primarily dioxins, as the only areas with access limitations that are expected to remain after excavation are in the one OS of Seybold Canal. No COPCs have been identified in the Seybold Canal sediments, as all TEQs are below target levels. The TEQs in Seybold Canal sediment samples (OS-6) were evaluated as a separate group, and OS's 3, 4, and 5 of the Wagner Creek sediments were evaluated as one group since the TEQs are reported below 1 ppb in all four of these sections. The indicator contaminant that determines the disposal option for the dredged sediment is dioxin TEQs. The majority of the dioxin TEQ concentrations in the canal are lower than the TEQ remediation goal range of 1 – 20 ppb set at a target risk level of 1E-5 by EPA (US EPA, 1998).

F.2.1 Exposure Scenario

Land uses in the project area, as presented in Section 2.4 of the CAP2, include residential, commercial, industrial, institutional, governmental, and open lands, including parks and undeveloped lands within urban areas. Table 3-1 of the CAP2 provides a breakdown of each land use category for the OSs.

Residential land uses include apartment buildings and other high density urban housing developments. Commercial areas are predominantly associated with warehouses for the distribution of products and services, and the manufacturing, assembly, or processing of materials and products. Industrial areas include a wide array of industry types ranging from light manufacturing and industrial parks to heavy manufacturing plants. Within the project area, there are a total of 18 commercial and industrial land use parcels, which include warehouses, office buildings, shopping areas, and industrial fish processing facilities.

As discussed in Section 2.3 of the CAP2, the Wagner Creek/Seybold Canal project area is a tributary to the Miami River, which discharges into Biscayne Bay. The creek is maintained by the City of Miami to provide stormwater conveyance during rain events, draining the surrounding portion of the C-6 Basin of the Miami metropolitan area. Wagner Creek is not navigable by boat due to its shallow depths, the presence of low-lying bridges, utility lines, and buried utility lines that prevent deeper dredging. The creek extends from NW 20th Street downstream to NW 11th Street, is approximately 5,900 feet long and approximately 30 feet wide (top-of-bank to top-of-bank), and has depths ranging between 3 and 6 feet. The Seybold Canal and turning basin were dredged in the 1930s and are deeper and wider than Wagner Creek. The approximate length of Seybold Canal is 2,200 feet, with a width of 30 to 50 feet. The 100-foot wide turning basin is located at the canal’s northernmost extent, which receives stormwater runoff from Wagner Creek. Seybold Canal extends downstream from NW 11th Street to the confluence with the Miami River. The total length of the Wagner Creek and Seybold Canal is approximately 8,100 ft.

- Wagner Creek does not provide a suitable area for recreational or other human uses; thus no routine exposures of humans to the creek surface water or sediments are expected.
- Recreational uses such as swimming or fishing are not expected for Wagner Creek and Seybold Canal, as these areas have been identified specifically as no swimming and no fishing zones. Thus direct exposures to the Wagner Creek and Seybold Canal sediment or surface water by casual contact or by indirect contact through fish consumption are not expected.
- The canal edges are steep and are not accessible for casual contact with surface water or sediments.

Potential human exposure to canal surface water and sediments, although unlikely or limited, is assumed in this conservatively protective risk evaluation. The exposure scenarios for the two water bodies, Wagner Creek and Seybold Canal, are described below.

- **Wagner Creek** consists of OS-1 through OS-5 of the study area. The majority of Wagner Creek is shallow and extends through industrial areas, and does not provide suitable recreational habitat; thus no human direct exposure to canal sediments is expected. Though homeless persons are noted under the bridge during site visits, they are not expected to come in contact with submerged sediments. The potential exposure is limited and assumed to occur when adults and youth wade into the canal to repair buried utility lines or to retrieve objects accidentally dropped into the canal. These exposures routes are identified as limited skin contact with sediments while wading though Wagner Creek to perform the identified activities.
- **Seybold Canal** consists of OS-6 of the study area. This portion of the canal is maintained deeper than the Wagner Creek area to provide access for boats used by the residents and other industrial/commercial facilities in the area. Thus, direct contact with sediments is least likely for this portion of the water body – as submerged sediments are inaccessible for direct contact during a swimming type of scenario. The Seybold Canal can support swimming, as this water body is wider and deeper, allowing for boat traffic. However, there are signs indicating no swimming is allowed; Seybold Canal is tidally influenced and likely brackish water, and boat traffic presents hazard for swimmers. Most importantly, because the canal is deep, swimming type activities would not likely involve direct exposure to sediments at the bottom of the canal, and the surface water is not contaminated. Therefore, evaluation of a wading scenario was used assuming a person entering the canal to retrieve boats and other objects in shallower depths would have a direct exposure to the sediments in the Seybold Canal. This is considered a conservatively protective exposure scenario for risk evaluation. Thus, a wading scenario was included for Seybold Canal for risk assessment using data from OS-6.

As previously stated, the TEQs were reported only in the sediment materials; therefore, the exposure medium is the sediment. The Wagner Creek and Seybold Canal surface water did not have any chemicals that exceeded surface water quality standards; therefore, this medium is not an exposure risk. Sediments under water are washed off quickly from the skin surface during any of the described contact activities. EPA Region 4 risk assessment guidance recommends not including any direct exposure assumptions for sediments, because submerged sediments are washed off during contact exposures to canals and ponds (USEPA. 2000). Thus, the risk calculations performed are based on conservatively protective exposure scenarios.

F.2.1.1 Exposure Concentration Estimations

Exposure Point Concentrations (EPCs) are the statistical upper-bound estimates on the mean values referred to as (UCL) typically at 95% or above the mean value. The EPCs for sediments were estimated using all historical sediment data that included analysis for dioxins. The canal has been sampled and analyzed for dioxins in 2003, 2008, and June 2009. The 2003 sampling included collection of six sediment samples, WC-1 through WC-6. Additionally, 12 sample locations were sampled by Consulting Engineering and Science, Inc. (CES), which included vertical depth profiling by collecting a discrete sample at four different depths at each location from 0.0 to 0.5 ft, 0.5 to 2 ft, 2 to 4 ft, and 4 to 6 ft below the sediment surface, depending on sediment depth. The CES data had low levels of estimated TEQ values. The rest of the samples collected in 2003, 2008, and 2009 were composites of all depths; therefore, the CES data were not used for the site representative EPC estimation. The sampling completed in 2008 included a total of 22 sediment samples (and 23 waste characterization samples), and 4 elutriate samples were collected from the Wagner Creek and Seybold Canal sediments and associated water in 2008. Ten additional dioxin sediment samples and three elutriate samples were collected to further define the 'hot spot' areas at sample locations near NW 20th Street to sample location CH-13 (Sta 0+00 to Sta 22+50) in 2009. These data sets were combined for each of these as representative data groups: OS-1, OS-2, OS-3 to OS-5, and OS-6. Thus four different data groups were included for pre-excavation data sets. After excavation, OSs-3 to -6 all will have low levels of TEQs.

The data set used for EPCs, and the estimated EPCs as outputs from the EPA ProUCL tool, are included in Excel tables at the end of this appendix. The EPCs for the OS-1 group, OS-2 group, OS-3 to -5 group, and OS-6 group for sediment pre- and post-excavation are calculated. Reductions in the concentration are expected to occur after sediment removal in both Wagner Creek and Seybold Canal – which will encompass the entire length of this tributary. Therefore, the residual concentrations in excavated portions of Wagner Creek and Seybold Canal are assumed to be similar to the high-end background levels measured in the surface water bodies in northwest Florida of 78 parts per trillion (ppt) or nanograms per kilogram (ng/kg) by the U.S. Fish and Wildlife Service (USFWS, 2002). Therefore, excavated area samples were replaced with this surrogate background value for the residual EPC estimation.

Areas that are inaccessible for dredging are assumed to have sediments with concentrations measured by samples in adjacent areas. For example, concentrations detected at locations CH-08 and WC-6 are assumed to remain at the site. The EPC is the upper-bound confidence limit on the mean at 95% (UCL95%), per EPA and FDEP guidance, and was estimated using the EPA's ProUCL tool. The EPCs are estimated conservatively based on TEQ concentrations in sediments with highest concentrations removed, except for the areas around CH-02-08 and WC-6, which will remain in-place due to access limitations because of the presence of submerged utility lines at the proposed excavation depths. Therefore, residual sediment EPCs were estimated assuming that some of these higher concentrations at these select locations will remain in OS-1 after excavation. The estimated excess lifetime cancer risk (ELCR) and hazard index (HI) are below the target levels as described above and presented in Table F-1.

As previously stated, the data grouping included the data collected from OS-1, OS-2, OS-3 to-5 and OS-6. The assumption of TEQs residual concentrations at the highest background levels of 78 ppt (USFWS, 2002) in excavated area adds conservatism to the estimated potential risks for assumed future adult or youth receptors included in the risk estimations. The resulting risks and hazards are summarized below.

TABLE F-1
Risk Results Summary for Sediment Date Grouped for OS-1, OS-2, OS-3 to OS-5 Combined, and OS-6 (Pre and Post Excavation)
Wagner Creek and Seybold Canal, Miami, Florida

Operational Section	Receptor	Exposure Route	Baseline Risk (Pre-Excavation)		Residual Risk (Post-Excavation)[1,2]	
			Cancer Risk	**Hazard Index**	**Cancer Risk**	**Hazard Index**
OS-1	Recreational User (Adult)	Dermal Contact	8.60E-06	0.18	1.00E-06	0.02
	Recreational User (Youth)	Dermal Contact	8.10E-06	0.27	9.90E-07	0.03
OS-2	Recreational User (Adult)	Dermal Contact	2.90E-06	0.06	2.40E-07	0.005
	Recreational User (Youth)	Dermal Contact	2.80E-06	0.09	2.30E-07	0.008
OS-3 through 5 combined	Recreational User (Adult)	Dermal Contact	1.02E-06	0.02	2.40E-07	0.005
	Recreational User (Youth)	Dermal Contact	9.70E-07	0.03	2.30E-07	0.008
OS-6	Recreational User (Adult)	Dermal Contact	4.88E-07	0.01	2.40E-07	0.005
	Recreational User (Youth)	Dermal Contact	4.64E-07	0.02	2.30E-07	0.008

[1] - The target risks for dioxin TEQs are set at 1E-5 levels by EPA - for action level at 1000 ppt (=1 ppb).

[2] Assumes Wagner Creek and Seybold Canal post-excavation (dredging) concentrations at 78 ng/kg (ppt), which is the maximum concentration from the samples collected in the Panhandle Bay System (USFWS, 2002). *See full reference at the end of this appendix*.

F.2.1.2 Human Receptors and Exposure Factors

In this evaluation, adult and youth human receptors are assumed to have direct dermal (skin) exposure to the sediments in Wagner Creek and Seybold Canal. This is a conservatively assumed exposure scenario, as surface water is likely to wash off any sediment adhering to the skin during contact activities.

The youth is assumed to be someone between the ages of 6 to 20 years from nearby apartments or other urban residences, and is described as a recreational youth. An adult receptor is someone who might be entering Wagner Creek and Seybold Canal for activities previously described, above in Section F.2.1. The exposure assumptions used for these receptors are based on the FDEP recreational receptor scenario, and modified for the sediments at this site. The exposure factors used for intake estimation are included table below. Further details are provided in the Excel tables at the end of this appendix.

Exposure factors assumed are conservatively protective. For example, receptors are assumed to enter Wagner Creek and also Seybold Canal about once a week, resulting in approximately 45 times per year for a worker and 50 days per year for a youth. Wagner Creek extends through busy traffic areas, and canal edges are deep and not readily accessible for casual entry, thus requiring deliberate activity to enter the canal. Seybold

Canal is deep and direct contact with sediments is unlikely. If a person enters, he or she would have to swim in this deep water body to perform any essential activity such as retrieving a boat. A direct contact scenario was assumed only to estimate risks under a conservatively protective scenario. An ingestion exposure of sediments is not likely, as the submerged sediments are not expected to be ingested and no exposure scenario is identified for sediments to enter the human body through the mouth. Exposure assumptions used for dermal intake estimates for the dermal pathway are included in Table F-2.

FIGURE F-2
Exposure Assessment: Intake Equation and Exposure Assumption Factors and Intake
Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$\text{CDI} = \frac{\text{Csd} * \text{SA} * \text{AF} * \text{ABS} * \text{ET} * \text{EF} * \text{ED} * \text{CF}}{\text{BW} * \text{AT}}$$

		Adult	Youth
Csd =	Concentration in sediment (mg/kg)	EPC	EPC
SA =	Surface Area (cm^2) – wading	5700	4200
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	0.11
ABS =	Absorption Factor (unitless)	(Chemical Specific)	(Chemical Specific)
ET =	Exposure Time (6 hours per 24 hour day)	1.0	1.0
EF =	Exposure Frequency (day/year)	45	50
ED =	Exposure Duration (year)	25	14
CF =	Conversion Factor (kg/mg)	1.0E-06	1.0E-06
BW =	Body Weight (kg)	70	39
AT =	Averaging Time (days) –Non-carcinogens	ED x 365	ED x 365
AT =	Averaging Time (days) –Carcinogens	25550	25550

The majority of the exposure factors used are either conservative or default values from EPA and FDEP for similar exposure scenarios. Further details are included in risk calculation Excel tables at the end of this appendix. The frequency of exposure is site-specific and based on the site conditions as previously described above.

F.2.1.3 Potential Risks to Human Receptors from Wagner Creek and Seybold Canal Sediments

As previously described, dermal (skin) contact with sediments is assumed for adult and youth receptors in this evaluation. This evaluation included a recreational youth and an adult receptor such as a utility worker occasionally contacting channel sediments while entering Wagner Creek to perform pipeline or utility line repairs. A youth receptor was also evaluated, since the risk to a potential trespassing youth can be estimated in this risk assessment, although such a scenario is unlikely. As previously discussed, Seybold Canal is deeper, further limiting direct exposure to sediments. However, a direct skin contact exposure scenario was evaluated for Seybold Canal to add further conservatism to this risk assessment

The conservatively estimated ELCRs are compared against the *de minimus* target risk levels set by EPA for TEQs in developing the action levels (USEPA, 1998 and CalEPA, 2009) of 10 in a million (i.e., 1E-5) and a target HI value of 1.0. The estimated risks and HI are well below the target ELCR and HI for post-excavation sediment dioxin EPCs, whereas they were slightly above target levels in OS-1 and OS-2 for the pre-excavation dioxin levels. The results are presented at the end of this appendix and are summarized in Table F-1.

F.2.2 Risk Characterization

F.2.2.1 OS-1 Risks and Hazard Index (HI) (see Table F-1)

The estimated ELCR for adult human receptors under pre-excavation conditions was at 8.4E-6, and for post-excavation conditions it was at 1E-6 for OS-1. The pre-excavation risks to a youth were at 8.1E-6 and post-excavation risks were at 9.9E-7 (close to 1E-6). All of the HI values were below 1.0 for both receptors. OS-1 had the highest dioxin levels in the entire Wagner Creek and Seybold Canal. This is also the area where some of the residual concentrations at elevated levels will be remaining because of constraints on excavation due to access limitations. The overall risks to human receptors under both pre- and post-excavation scenarios are lower than the target levels set by EPA at 1.0E-5 for remediation target levels of 1 ppb. Setting target risk levels is necessary as detection limits and background levels for TEQs tend to be associated with some level of risks. Overall, estimated risks from residual TEQs are either at or below the FDEP target risk levels of 1 in a million (1.0E-6) and HI value of 1.0, after the excavation is completed within OS-1. Thus residual concentrations resulting from TEQs left behind due to the access limitations at sample location CH-8 do not present an exposure concern to human receptors from short-term or long-term exposures.

F.2.2.2 OS-2 Risks and HI: (see Table F-1)

The risk from exposure to sediments from OS-2 under pre-excavation conditions was estimated at 2.9E-6, and under post-excavation conditions at 2.4E-7 for an adult. The risk under pre-excavation conditions was estimated at 2.8E-6 and under post-excavation conditions at 2.3E-7 for a youth, compared to an acceptable target level of 1E-5.Thus no significant risks are identified from OS-2 under both pre- and post-excavation conditions for either an adult or a youth. Risks were reduced further under post-excavation conditions. The estimated HIs are much lower than the target value of 1.0. Overall, no significant risks were identified for human receptors from OS-2 area. The residual levels under post-excavation conditions for TEQs are anticipated to be similar to the background levels for urban area surface water bodies, ranging between 1 and 78 ppb (USFWS, 2002); thus, risks for OS-2 and remaining water body along with the Seybold Canal is assumed to be the same concentration as maximum background levels. Estimated risks from TEQs are also below the FDEP target risk levels of 1 in a million (1.0E-6) and HI value of 1.0, after the excavation is completed within OS-2. The dredging activities will likely reduce TEQs to background levels or lower.

F.2.2.3 OS-3 to OS-5 Combined Area Risks and HI: (see Table F-1)

The risk from exposure to sediments from the combined area of OS-3 through OS-5 under pre-excavation conditions was estimated at 1.2E-6, and under post-excavation conditions at 2.4E-7 for an adult. The risk under pre-excavation conditions was estimated at 9.7E-7 and under post-excavation conditions at 2.3E-7 for a youth, compared to the acceptable target level of 1E-5; thus, no significant risks are identified from the OS-3 through -5 combined area under both pre- and post-excavation conditions. Risks were reduced further under post-excavation conditions. The estimated HIs are much lower than the target value of 1.0. Overall, no significant risks were identified for human receptors from the OS-3 through OS-5 combined area. Estimated risks from TEQs are also below the FDEP target risk levels of 1 in a million (1.0E-6) and HI value of 1.0, after the excavation is completed within OS-3 through -5. The dredging activities will likely reduce TEQs to background levels or lower.

F.2.2.4 OS-6 Area (Seybold Canal) Risks and HI: (see Table F-1)

The risk from exposure to sediments from OS-6 under pre-excavation conditions was estimated at 4.88E-7, and under post-excavation conditions at 2.4E-7 for an adult. The risk from pre-excavation conditions estimated at 4.64E-7 and under post-excavation conditions at 2.3E-7 for a youth, compared to an acceptable target level of 1E-5; thus, significant risks are identified from OS-6 under both pre- and post-excavation conditions. Risks were reduced further under post-excavation conditions. The estimated HIs are much lower than the target value of 1.0. Overall, no significant risks were identified for human receptors from OS-6. Estimated risks from TEQs are also below the FDEP target risk levels of 1 in a million (1.0E-6) and HI value of 1.0, after the excavation is completed within OS-6. The dredging activities will likely reduce TEQs to background levels or lower.

The overall potential exposures that may occasionally occur do not present significant risks to human receptors such as workers, or trespassing youths or residents in the area. No fish consumption type of exposures are expected, as Wagner Creek does not support a significant fish population, and there are more attractive recreational areas nearby in the Miami River, Atlantic Ocean, and associated water bodies. No fishing signs are posted along these waterways, as noted previously. Thus, fishing is not likely in the Wagner Creek and Seybold Canal. As a result, no indirect exposure to fish consumption is identified as a path of interest for this area.

F.2.3 Fate and Transport Properties of Dioxin TEQs in Sediments

Dioxins are characterized by low solubility (0.00042 to 0.0000078 milligrams per liter [mg/L]), and high affinity to organic carbon in the sediments; thus they tend to remain bound to sediment particles. Since humus and organic carbon rich sediments tend to be at the surface, dioxin TEQs are likely to be higher in top layers of sediments or in locations where organic carbon risk material is present. Dioxins have low water solubility, with solubility decreasing with increasing chlorine substitutions. They also have high lipophilicity, indicating that dioxins could bioconcentrate in aquatic organisms, although to a much smaller extent than previously anticipated (ATSDR, 1998). Because dioxins are not very soluble, they are not expected to be present in surface water in dissolved form (detections are likely due to suspended particles), nor are they expected to leach to subsurface. However, they are expected to migrate with suspended particles to downstream locations. They also degrade slowly, and thus persist in the environment. They are expected to bioaccumulate in adipose tissue of aquatic animals such as fish (ATSDR, 1998).

In the long-term, TEQs are likely to remain bound to sediments in Wagner Creek, partitioned into the organic carbon layer of the sediment, and move downstream as suspended particles with stormwater flow within Wagner Creek and Seybold Canal. The water from rain events and other industrial discharges within Wagner Creek and Seybold Canal eventually reaches the Miami River and then ultimately flows into Biscayne Bay and the Atlantic Ocean, with partial settling of suspended particles in the process.

After dredging is completed, most parts of Wagner Creek and Seybold Canal will likely have a bottom depth of 6 feet or greater. Tidal influence is likely to cause limited disturbance to the sediments in the Seybold Canal section, whereas sediments in Wagner Creek OS-1 and OS-2 are likely to move with storm events, and to a very limited extent by tidal fluctuations. However, areas that could not be dredged will remain shallow and will not provide a uniform flow or access through the channel.

F.2.4 Dioxin TEQ Background Levels

Dioxins and furans are unique among the large number of organochlorine compounds, in that they were never intentionally produced as commercial products. Typically, TEQs are unintentionally produced during various uncontrolled chemical reactions involving the use of chlorine and during various combustion and incineration processes. Most of the atmospheric TEQs result from various combustion and incineration processes, including all forms of waste incineration (municipal, industrial, and medical), many types of metal production (iron, steel, magnesium, nickel, lead, and aluminum), and fossil fuel and wood combustion (ATSDR, 1998). The air-borne dioxins are washed with rain and deposited into surface areas, which eventually wash off and reach drainage waters and partition into sediments.

The surface water bodies in urban areas typically receive runoff from surrounding drainage basins, thus accumulating organic chemicals (such as dioxins). The detected chemicals in the Wagner Creek sediments may represent the sediment accumulation with time from general discharges from non-point source releases within the drainage basins, such C-6 Basin of the Miami metropolitan area. As previously discussed, dioxins are unintentional products of combustion or incineration under controlled or uncontrolled conditions. The background dioxin TEQs were characterized in various types of urban backgrounds across the United States and other developed countries (ATSDR, 1998). The Florida-specific sediment background levels were published for the northwest region (USFWS, 2002) as discussed below.

Table F-3 lists the guidelines and standards adopted by various countries and agencies, excerpted from California State guidance (CalEPA, 2009). Dioxins occur in all environments based on the vast number of reports published to date. Most of the States established background levels for dioxin TEQs (ATSDR, 1998). The sediment concentrations in various urban environments were previously characterized through different investigations and the findings were summarized in the toxicological profile (ATSDR, 1998). The dioxin congener 1,2,3,7,8-PeCDD was detected in estuarine sediments from Black Rock Harbor (79–95 ppt), New Bedford Harbor (21–29 ppt), and Eagle Harbor (5 ppt). HxCDD, HpCDD, and OCDD were also detected in sediments from all three estuaries at concentrations ranging from approximately 10–100 ppt, 500–3,000 ppt, and 2,000–37,000 ppt, respectively. The highest concentrations of HpCDD (>1,000 ppt) were detected in Narragansett Bay sediments, while the highest concentration of OCDD (37,000 ppt) was detected in Eagle Harbor sediments. The levels of CDDs reported for all samples were for dry weight (air dried) concentrations (Section 5.0, ATSDR 1998).

TABLE F-3
Current Dioxin-TEQ Guidelines/Standards*
Wagner Creek and Seybold Canal, Miami, Florida

Country/Entity	Landscape Scenario	ng/kg TEQ dry matter (ppt)	Comments
Finland	Agricultural/Residential	500	Limit value
Germany	Residential	<1,000	Presumed to be a limit value
	Industrial	<10,000	Limit value
	Playground	<100	Limit value
	Agricultural	5 – 40	
	Agricultural	<5	Target concentration
The Netherlands	Agricultural	1	
	Dairy Farming	10	
Sweden	Sensitive use	10	
	Less sensitive use	250	
Japan	?	1000 (WHO-TEQ)	Environmental Standard
US EPA	Residential	1000	Action level
	Commercial/Industrial	5,000 – 20,000	Action level
ATSDR	Child-Soil Ingestion	50	limit value, EMEG**
			Endpoint: Neurobehavioral effects
Michigan	Direct contact	90	10-5 target risk level
Cal/EPA	Residential CHHSL	4.6	10-6 target risk level
	Commercial/Industrial CHHSL	19	10-6 target risk level
California Background	Urban	7-20	Mean ~ 9
	Rural	1-6	Mean ~ 3

* California Environmental Protection Agency: 'Human health Risk Assessment (HHRA) Note 2.Remedial Goals for Dioxins and Dioxin-like Compounds for Consideration at California Hazardous Waste Sites' Draft Rev 1, February 2009.

**EMEG: Environmental Media Evaluation Guide

Several project sites within the State of Florida have established background dioxin levels. For example, the City of Jacksonville established dioxin soil background levels during the Jacksonville Ash sites investigations. Several other states published background levels for dioxin TEQs in soils. For example, Michigan indicates background soil dioxin levels ranging between 6 and 35 ppt (ng/kg). The ATSDR toxicity profile indicated higher concentrations and more frequent occurrence of soil dioxins in urban soils than in rural soils, mostly due to air-borne emissions from nearby sources. There is wide variation in the dioxin levels reported between various sites. Contaminated sites typically have dioxin levels well above the 1 ug/kg (ppb) level (ATSDR, 1995). The sediment investigations conducted by the USFWS in the northwest Florida region reported TEQs ranging between 1 and 78 ppt in various regional estuarine systems. Various water bodies across the USA and Canada reported TEQ levels ranging between 1 and 7600 ppt (USFWS, 2002).

The TEQ target level of 1000 ppt is recommended by DERM, and is based on the EPA residential action level. The industrial action levels range between 5000 and 20000 ppt (US EPA, 1998). Table F-3 includes the TEQ guidelines and standards from various countries and agencies extracted from CalEPA guidance (CalEPA, 2009).

The persistent widespread presence of dioxin TEQs in urban environments indicate that achieving levels below the typical background levels is not likely to prevent recurrence of such chemicals over time due to continued non-point source contributions to the ambient sediments.

F.3 Technical Basis for Excavation and Disposal Considerations

The channel excavation activities will remove a total of ~44,315 cubic yards of sediments. Some of the excavated sediment materials will be sent for disposal as ″hot″ due to the presence of dioxin TEQs at concentrations above 1 ppb in some portion of these sediments. Based on the distance between clean (“cold”) samples on either the upstream or downstream side of the sample with elevated (“hot”) dioxin levels, approximately 3,258 tons is conservatively estimated to be above the 1-ppb dioxin level, and will be disposed of in a designated landfill located in Emelle, Alabama. Remaining sediments that have a weighted average TEQ concentration ≤ 1 ppb will be sent to the closest Subtitle D non-hazardous landfills at one of the two available facilities: Waste Management’s Central and Medley Landfills.

The approach of grouping sediments with concentrations above 1 ppb, based on the highest detected sample to the next clean (“cold”) sample on either the upstream or downstream side of the exceeding sample, is an overly conservative approach for sediment disposal as “hot” because of three main reasons:

1) Dioxin TEQs tend to accumulate in the organic carbon layer of the sediment deposits, and these carbon rich sediments tend to be in the uppermost layer of sediments where much of the humus material is present. Because of this partitioning, they do not occur as a contiguous area of contamination in sediments. This is indicated by the sampling results from Wagner Creek OS-1 and OS-2. For example, the sample at CH-08 had the highest detected dioxin level and an adjacent sample at WC-6 within a few feet had a concentration 4 times less than the CH-08 sample. Because extensive sampling and analysis for dioxins is time-consuming and cost-prohibitive, this proposed conservatively protective assumption is accepted for grouping of excavated sediments for disposal. However, where the disposal costs would be cost-prohibitive and few additional samples could be useful in reducing the disposal volume, limited additional sampling may be conducted to reduce the area of excavated sediments for offsite disposal as “hot” waste.

2) The mass of the sediments for disposal at a designated landfill is estimated based on the assumption that high concentrations of dioxins are found at all depths in the location where high concentrations were detected in the composite sample. As previously discussed, dioxins tend to remain in the top layers of sediments. The 2003 sampling conducted by CES involved sampling 12 locations within the creek channel and each

location was sampled at 2 to 4 different depths. Except for one anomalous detection in one out of the 12 sample locations, all other 11 samples had TEQs with highest levels in the upper 2 feet of sediment deposits. Majority of the samples did not have detections at depths below 4 ft. None of the other sediment samples collected by CES exceeded the removal action level of 1000 ppt (i.e., 1 ppb). Thus, while excavation will be conducted to remove all the sediments up to 6 ft, the upper 2 ft should be included for offsite contained landfill disposal, as most of the TEQs are likely in organic carbon rich top layers of sediments, which is corroborated by the only study conducted on vertical concentration profiling during the 2003 CES sampling. Additional sampling should be conducted to provide data on the depth profile of TEQ distributions in the sediments. A limited number of 4 to 5 locations at 3 depths should be sampled to establish the TEQs distribution profile in the canal. Thus, additional samples should be collected across Sections OS-1 and OS-2 to determine the depth profile of the TEQs for disposal considerations.

3) Excavation and loading of sediments to trucks are likely to mix surface and deep sediment, thus resulting in dioxin concentrations of the composited materials that are closer to the average concentrations for the excavated material in a section. Therefore, average concentrations for a portion of the OS that will be mixed during excavation and disposal will be used in determining if the waste is "cold" or "hot."

The removal activities will eliminate the majority of the sediments from contaminated areas. Though TEQs, lead, and PAHs were present in site sediments above target levels, TEQs were selected as the indicator parameter for removal actions due to their conservatively protective removal target level resulting in a larger volume of sediment removal, and the presence of the other contaminants in the same locations as some of the TEQs which will be removed simultaneously. Thus, focusing the removal efforts on TEQs also addresses the other constituents identified in the sediments.

The offsite disposal of excavated sediments should be based on the average concentration of the "hot" sample along with the clean samples on either side, as sediments tend to become mixed during excavation and loading into trucks. Therefore, the contiguous samples that will be mixed during excavation will be averaged to determine the concentrations of sediments that will be sent to the offsite designated landfill. When the average dioxin TEQ concentration exceeds the 1 ppb for an area, that material will be sent to the designated landfill. Sediments with dioxin TEQ averages below 1 ppb will be sent to the local landfill. Overall, the sediment dioxin levels in Wagner Creek and Seybold Canal are similar to those found in several other urban water bodies (USFWS, 2002 and ATSDR, 1998) and actions planned for the Wagner Creek and Seybold Canal sediments will achieve sufficient human health protection. Considering that non-point source runoff contributions tend to occur over time, the future occurrence of similar elevated dioxin levels cannot be prevented by these planned actions. The technical basis included here can provide a sound basis for more economical implementation of the excavation and disposal of the sediments from the creek and canal dredging.

F.3.2 Turbidity During Excavation

Mechanical disturbance of the sediments under water is likely to make water more turbid during the dredging process. A simulation of sediment suspension was conducted and particulate levels were observed from the field sample. The turbidity cleared within minutes after mechanical disturbance ceased. Thus, suspended particulates settle within minutes after mechanical stirring activity ends. It is anticipated that colloidal particles will settle within 2days; therefore, the turbidity of the water is not expected to have long-term impacts on aquatic organisms (e.g., manatees) in the canal. Any migration to downstream locations is not likely to have significant impacts on the overall water quality of the canal The elutriate samples collected did not have any organic chemicals (based on filtration through a 0.45 micron filter). The total suspended solids (TSS) were measured in three discrete samples from three transect samples, which ranged between 7 mg/L and 20 mg/L, with an average TSS concentration of 12 mg/L. The total estimated TEQ at the maximum detected sediment sample location that will be dredged at CH-02-01 is 5140 ng/kg (i.e., pg/gm). Thus, assuming the maximum detected TEQ levels and the maximum detected TSS levels are in the same place, the suspended solids may contain 0.1 ng/L of TEQ, derived based on the maximum measured TSS value of 20 mg/L multiplied by the 0.00514 ng/mg of TEQ (derived from maximum detected concentration of 5140 pg/g sediments = 5.14 pg/mg = 20 x 5.14 pg in every liter of water = 102.8 pg/L or 0.103 ng/L or ppt). Thus, under the worst-case scenario, 0.1 ng/L of TEQs is estimated. This is a short-term worst-case turbidity-based exposure scenario from the highest detect concentration. These suspended particulate bound TEQs are not considered a significant issue during the dredging.

Alternative measures to control turbidity were considered, as discussed in Section 2.10.5 of CAP2.

F.4 Reference

ATSDR, 1998. Toxicological Profile for Chlorinated Dibenzo-p-dioxins. U.S. Department of Health and Human Services. Public Health Service, Agency for Toxic Substances and Disease Registry, December 1998.

CH2M HILL, 2008. Corrective Action Plan Canal-Version 1, Wagner Creek/Seybold, Submitted to City of Miami. Project No. B-50643, September 2008.

CalEPA, 2009. California Environmental Protection Agency: 'Human Health Risk Assessment (HHRA) Note 2. Remedial Goals for Dioxins and Dioxin-like Compounds for Consideration at California Hazardous Waste Sites' Draft Rev 1, February 2009.

USFWS 2002. ‘Survey of Dioxin and Furan Compounds in Sediments of Florida Panhandle Bay Systems.’ Jon M. Hemming Michael S. Brim, and Robert B. Jarvis, U.S. Fish and Wildlife Services, Publication No. PCFO-EC 02-01. 2002.

US EPA, 1998. U.S. Environmental Protection Agency. Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200.4-26. April 13, 1998.

USEPA. 2000. Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. EPA Region 4, originally published November 1995, Website version last updated May 2000 (currently under revision) (http://www.epa.gov/Region4/waste/ots/healtbul.htm)

Excel Tables

Input Data for Dioxin Concentrations Used in Residual Risk Evaluation

	TCDD-TEQ	Sample Event		Residual Dioxins after sediment removal	
May 2009	pg/g = ng/kg		mg/kg	pg/g = ng/kg	mg/kg
OS 1					
WC-1	0.45	Dec 2003	0.00000045	78	0.000078
CH-02	356.9	June-July 2008	0.0003569	78	0.000078
WC-2	4.26	Dec 2003	0.00000426	78	0.000078
CES-3	588.648	April-May 2003	0.0005886	78	0.000078
CH-02-01	5140.0	May 2009	0.00514	78	0.000078
WC-3	3.45	Dec 2003	0.00000345	78	0.000078
CH-02-02	1870.0	May 2009	0.00187	78	0.000078
CH-04	2417.0	June-July 2008	0.002417	78	0.000078
WC-4	4.71	Dec 2003	0.00000471	78	0.000078
CH-02-03	1150.0	May 2009	0.00115	78	0.000078
CH-02-04	587.0	May 2009	0.000587	78	0.000078
WC-5	24.35	Dec 2003	0.00002435	78	0.000078
CH-06	951.3	June-July 2008	0.0009513	78	0.000078
CH-02-05	754.0	May 2009	0.000754	78	0.000078
CES-4	148.2	April-May 2003	0.0001482	78	0.000078
CH-02-06	537.0	May 2009	0.000537	78	0.000078
CH-08	5697.4	June-July 2008	0.0056974	5697.4	0.0056974
WC-6	50.17	Dec 2003	0.00005017	50.17	0.00005017
OS 2					
CH-02-07	142.0	May 2009	0.000142	78	0.000078
CES-5	85.1	April-May 2003	0.0000851	78	0.000078
CH-10	164.9	June-July 2008	0.0001649	78	0.000078
CH-02-08	444.0	May 2009	0.000444	78	0.000078
CH-02-09	542.0	May 2009	0.000542	78	0.000078
CH-12	2049.4	June-July 2008	0.0020494	78	0.000078
CH-02-10	214.0	May 2009	0.000214	78	0.000078
CH-14-DUP	350.9	June-July 2008	0.0003509	78	0.000078
CES-6	138.9	April-May 2003	0.0001389	78	0.000078
OS 3 - 5					
CH-16	759.1	June-July 2008	0.0007591	78	0.000078
CES-7	152.7	April-May 2003	0.0001527	78	0.000078
CH-18	400.0	June-July 2008	0.0004	78	0.000078
CES-8	123.5	April-May 2003	0.0001235	78	0.000078
CH-20	347.8	June-July 2008	0.0003478	78	0.000078
CH-22	188.6	June-July 2008	0.0001886	78	0.000078
CES-9	194.9	April-May 2003	0.0001949	78	0.000078
CH-24	203.0	June-July 2008	0.000203	78	0.000078
CH-26	124.1	June-July 2008	0.0001241	78	0.000078
CH-28	147.9	June-July 2008	0.0001479	78	0.000078
CES-10	34.5	April-May 2003	0.0000345	78	0.000078
CH-30	120.4	June-July 2008	0.0001204	78	0.000078
CH-32	69.7	June-July 2008	0.0000697	78	0.000078
OS 6					
CES-11	12.7	April-May 2003	0.0000127	78	0.000078
CH-34	96.0	June-July 2008	0.000096	78	0.000078
CH-36	151.0	June-July 2008	0.000151	78	0.000078
CH-38	195.4	June-July 2008	0.0001954	78	0.000078
CH-40	227.6	June-July 2008	0.0002276	78	0.000078
CH-42	82.2	June-July 2008	0.0000822	78	0.000078
CES-12	37.7	April-May 2003	0.0000377	78	0.000078
CH-44	54.9	June-July 2008	0.0000549	78	0.000078
Averages	586.24		0.00058625	194.49	0.00019449

	General UCL Statistics for Full Data Sets		
User Selected Options			
From File	C:\Documents and Settings\tcarleto\My Documents\city of miami\ProUCL_OS 1 input_baseline.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
TCDD TEQ, mg/kg			
General Statistics			
Number of Valid Observations	18	Number of Distinct Observations	18
Raw Statistics		**Log-transformed Statistics**	
Minimum	4.5E-07	Minimum of Log Data	-14.61
Maximum	0.0057	Maximum of Log Data	-5.168
Mean	0.00113	Mean of log Data	-8.621
Median	0.000562	SD of log Data	2.793
SD	0.0017		
Coefficient of Variation	1.511		
Skewness	2.043		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.682	Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.00183	95% H-UCL	0.449
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0188
95% Adjusted-CLT UCL	0.00199	97.5% Chebyshev (MVUE) UCL	0.0251
95% Modified-t UCL	0.00186	99% Chebyshev (MVUE) UCL	0.0374
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.341	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.00331		
MLE of Mean	0.00113		
MLE of Standard Deviation	0.00193		
nu star	12.27		
Approximate Chi Square Value (.05)	5.406	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.00179
Adjusted Chi Square Value	4.974	95% Jackknife UCL	0.00183
		95% Standard Bootstrap UCL	0.00178
Anderson-Darling Test Statistic	0.292	95% Bootstrap-t UCL	0.00255
Anderson-Darling 5% Critical Value	0.829	95% Hall's Bootstrap UCL	0.0044
Kolmogorov-Smirnov Test Statistic	0.123	95% Percentile Bootstrap UCL	0.0018
Kolmogorov-Smirnov 5% Critical Value	0.219	95% BCA Bootstrap UCL	0.002
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00288
		97.5% Chebyshev(Mean, Sd) UCL	0.00363
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.00512
95% Approximate Gamma UCL	0.00256		

95% Adjusted Gamma UCL	0.00278		
Potential UCL to Use		Use 95% Adjusted Gamma UCL	0.00278

	General UCL Statistics for Full Data Sets		
User Selected Options			
From File	C:\Documents and Settings\tcarleto\My Documents\city of miami\ProUCL_OS 2 input_baseline.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
TCDD TEQ, mg/kg			
General Statistics			
Number of Valid Observations	9	Number of Distinct Observations	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.0000851	Minimum of Log Data	-9.372
Maximum	0.00205	Maximum of Log Data	-6.19
Mean	0.000459	Mean of log Data	-8.184
Median	0.000214	SD of log Data	0.961
SD	0.0006162		
Coefficient of Variation	1.342		
Skewness	2.655		
Warning: There are only 9 Values in this data			
Note: It should be noted that even though bootstrap methods may be performed on this data set,			
the resulting calculations may not be reliable enough to draw conclusions			
The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.			
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.613	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.000841	95% H-UCL	0.00129
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.00101
95% Adjusted-CLT UCL	0.0009911	97.5% Chebyshev (MVUE) UCL	0.00127
95% Modified-t UCL	0.0008713	99% Chebyshev (MVUE) UCL	0.00178
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.836	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0005494		
MLE of Mean	0.000459		
MLE of Standard Deviation	0.0005022		
nu star	15.04		
Approximate Chi Square Value (.05)	7.29	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0007969
Adjusted Chi Square Value	6.187	95% Jackknife UCL	0.000841
		95% Standard Bootstrap UCL	0.000778
Anderson-Darling Test Statistic	0.672	95% Bootstrap-t UCL	0.00165

Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	0.00202
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	0.0008371
Kolmogorov-Smirnov 5% Critical Value	0.286	95% BCA Bootstrap UCL	0.0009512
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00135
		97.5% Chebyshev(Mean, Sd) UCL	0.00174
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0025
95% Approximate Gamma UCL	0.0009471		
95% Adjusted Gamma UCL	0.00112		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0009471

	General UCL Statistics for Full Data Sets		
User Selected Options			
From File	C:\Documents and Settings\tcarleto\My Documents\city of miami\ProUCL_OS 3 - 5 input_baseline.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
TCDD TEQ, mg/kg			
General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	13
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0000345	Minimum of Log Data	-10.27
Maximum	0.0007591	Maximum of Log Data	-7.183
Mean	0.0002205	Mean of log Data	-8.697
Median	0.0001527	SD of log Data	0.776
SD	0.0001907		
Coefficient of Variation	0.865		
Skewness	2.14		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.762	Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0003148	95% H-UCL	0.0003939
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0004367
95% Adjusted-CLT UCL	0.000341	97.5% Chebyshev (MVUE) UCL	0.0005306
95% Modified-t UCL	0.00032	99% Chebyshev (MVUE) UCL	0.0007152
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.553	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.000142		
MLE of Mean	0.0002205		
MLE of Standard Deviation	0.0001769		
nu star	40.38		
Approximate Chi Square Value (.05)	26.82	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0301	95% CLT UCL	0.0003075
Adjusted Chi Square Value	25.26	95% Jackknife UCL	0.0003148
		95% Standard Bootstrap UCL	0.0003054
Anderson-Darling Test Statistic	0.458	95% Bootstrap-t UCL	0.0004053
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	0.0006847
Kolmogorov-Smirnov Test Statistic	0.218	95% Percentile Bootstrap UCL	0.0003131
Kolmogorov-Smirnov 5% Critical Value	0.24	95% BCA Bootstrap UCL	0.000338
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.000451
		97.5% Chebyshev(Mean, Sd) UCL	0.0005508
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0007468
95% Approximate Gamma UCL	0.000332		

95% Adjusted Gamma UCL	0.0003525		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.000332

	General UCL Statistics for Full Data Sets		
User Selected Options			
From File	C:\Documents and Settings\tcarleto\My Documents\city of miami\ProUCL_OS 6 input_baseline.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
TCDD TEQ, mg/kg			
General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.0000127	Minimum of Log Data	-11.27
Maximum	0.0002276	Maximum of Log Data	-8.388
Mean	0.0001072	Mean of log Data	-9.457
Median	0.0000891	SD of log Data	0.958
SD	7.694E-05		
Coefficient of Variation	0.718		
Skewness	0.492		
Warning: There are only 8 Values in this data			
Note: It should be noted that even though bootstrap methods may be performed on this data set,			
the resulting calculations may not be reliable enough to draw conclusions			
The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.			
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0001587	95% H-UCL	0.0004114
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0002879
95% Adjusted-CLT UCL	0.000157	97.5% Chebyshev (MVUE) UCL	0.0003628
95% Modified-t UCL	0.0001595	99% Chebyshev (MVUE) UCL	0.0005098
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.165	**Data appear Normal at 5% Significance Level**	
Theta Star	9.198E-05		
MLE of Mean	0.0001072		
MLE of Standard Deviation	9.929E-05		
nu star	18.65		
Approximate Chi Square Value (.05)	9.859	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0195	95% CLT UCL	0.0001519
Adjusted Chi Square Value	8.293	95% Jackknife UCL	0.0001587
		95% Standard Bootstrap UCL	0.0001492
Anderson-Darling Test Statistic	0.179	95% Bootstrap-t UCL	0.0001669

Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	0.0001575
Kolmogorov-Smirnov Test Statistic	0.141	95% Percentile Bootstrap UCL	0.0001516
Kolmogorov-Smirnov 5% Critical Value	0.298	95% BCA Bootstrap UCL	0.0001529
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0002258
		97.5% Chebyshev(Mean, Sd) UCL	0.0002771
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0003779
95% Approximate Gamma UCL	0.0002027		
95% Adjusted Gamma UCL	0.000241		
Potential UCL to Use		Use 95% Student's-t UCL	0.0001587

	General UCL Statistics for Full Data Sets		
User Selected Options			
From File	C:\Documents and Settings\tcarleto\My Documents\city of miami\ProUCL_OS 1 input_residual_high.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
TCDD TEQ, mg/kg			
General Statistics			
Number of Valid Observations	18	Number of Distinct Observations	3
Raw Statistics		Log-transformed Statistics	
Minimum	5.017E-05	Minimum of Log Data	-9.9
Maximum	0.0057	Maximum of Log Data	-5.168
Mean	0.0003886	Mean of log Data	-9.245
Median	0.000078	SD of log Data	1.023
SD	0.00132		
Coefficient of Variation	3.409		
Skewness	4.242		
Warning: There are only 3 Distinct Values in this data			
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.			
Those methods will return a 'N/A' value on your output display!			
It is necessary to have 4 or more Distinct Values to compute bootstrap methods.			
However, results obtained using 4 to 9 distinct values may not be reliable.			
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.			
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.255	Shapiro Wilk Test Statistic	0.301
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0009319	95% H-UCL	0.0003162
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0003394
95% Adjusted-CLT UCL	0.00124	97.5% Chebyshev (MVUE) UCL	0.0004186
95% Modified-t UCL	0.0009839	99% Chebyshev (MVUE) UCL	0.0005741
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.422	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0009209		
MLE of Mean	0.0003886		
MLE of Standard Deviation	0.0005983		
nu star	15.19		
Approximate Chi Square Value (.05)	7.396	Nonparametric Statistics	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.0009023
Adjusted Chi Square Value	6.878	95% Jackknife UCL	0.0009319

		95% Standard Bootstrap UCL	N/A
Anderson-Darling Test Statistic	6.617	95% Bootstrap-t UCL	N/A
Anderson-Darling 5% Critical Value	0.808	95% Hall's Bootstrap UCL	N/A
Kolmogorov-Smirnov Test Statistic	0.579	95% Percentile Bootstrap UCL	N/A
Kolmogorov-Smirnov 5% Critical Value	0.216	95% BCA Bootstrap UCL	N/A
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00175
		97.5% Chebyshev(Mean, Sd) UCL	0.00234
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0035
95% Approximate Gamma UCL	0.0007984		
95% Adjusted Gamma UCL	0.0008585		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0035

OS-1 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

CDI =

$$\frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	5700	d	5700	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	45	a	45	a
ED =	Exposure Duration (year)	25	a	25	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	70	a	70	a
AT =	Averaging Time (days)	25550	c	9125	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.
c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure
d = Surface area of includes face, hands, forearms, and lower legs assumed to be same for sediment and surfacewater adapted from U.S.EPA Exposure Factors Handbook, August 1997.
e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.
g = 1 hr per visit are assumed to be spent in the canal

OS-1 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

									Dermal
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.30E+05	2.60E+05	2.78E-03	0.50	0.03	3.29E-11	9E-06
	Total Risk								**8.6E-06**

Total Risk = 8.6E-06

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

OS-1 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	2.78E-03	0.5	0.03	9.21E-11	0.18420
	Hazard Index								**0.18**
								Total HI=	**0.18**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OS-2 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$CDI = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	5700	d	5700	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	45	a	45	a
ED =	Exposure Duration (year)	25	a	25	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	70	a	70	a
AT =	Averaging Time (days)	25550	c	9125	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure

d = Surface area of includes face, hands, forearms, and lower legs assumed to be same for sediment and surfacewater adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.

OS-2 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.30E+05	2.60E+05	9.47E-04	0.50	0.03	1.12E-11	3E-06
	Total Risk								**2.9E-06**

Total Risk = 2.9E-06

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
ELCR = Excess Lifetime Cancer Risk

OS-2 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	9.47E-04	0.5	0.03	3.14E-11	0.06275
	Hazard Index								**0.06**
								Total HI=	**0.06**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OSs- 3 to 5 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

CDI = $\frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$

		Carcinogenic		**Noncarcinogenic**	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	5700	d	5700	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (6 hours per 24 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	45	a	45	a
ED =	Exposure Duration (year)	25	a	25	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	70	a	70	a
AT =	Averaging Time (days)	25550	c	9125	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure

d = Surface area of includes face, hands, forearms, and lower legs assumed to be same for sediment and surfacewater adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.

OSs- 3 to 5 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.30E+05	2.60E+05	3.32E-04	0.50	0.03	3.93E-12	1E-06
	Total Risk								**1.0E-06**

Total Risk = 1.0E-06

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

OSs- 3 to 5 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	3.32E-04	0.5	0.03	1.10E-11	0.02199
	Hazard Index								**0.02**
								Total HI=	**0.02**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OSs-6 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$CDI = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	5700	d	5700	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (6 hours per 24 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	45	a	45	a
ED =	Exposure Duration (year)	25	a	25	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	70	a	70	a
AT =	Averaging Time (days)	25550	c	9125	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure

d = Surface area of includes face, hands, forearms, and lower legs assumed to be same for sediment and surfacewater adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.

OSs-6 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.30E+05	2.60E+05	1.59E-04	0.50	0.03	1.88E-12	5E-07
	Total Risk								**4.9E-07**

Total Risk = 4.9E-07

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
ELCR = Excess Lifetime Cancer Risk

OSs-6 Sediment (Pre-Ecavation) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	1.59E-04	0.5	0.03	5.26E-12	0.01052
	Hazard Index								**0.01**
								Total HI=	**0.01**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient
HI = Hazard Index

OS-1 Sediment Residual (Post Removal) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$CDI = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	5700	d	5700	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (6 hours per 24 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	45	a	45	a
ED =	Exposure Duration (year)	25	a	25	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	70	a	70	a
AT =	Averaging Time (days)	25550	c	9125	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of includes face, hands, forearms, and lower legs assumed to be same for sediment and surfacewater adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.

OS-1 Sediment Residual (Post Removal) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.30E+05	2.60E+05	3.39E-04	0.50	0.03	4.02E-12	1.0E-06
	Total Risk								**1.0E-06**

Total Risk = 1.0E-06

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
ELCR = Excess Lifetime Cancer Risk

OS-1 Sediment Residual (Post Removal) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	3.39E-04	0.5	0.03	1.12E-11	0.02249
	Hazard Index								**0.02**
								Total HI=	**0.02**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotie
HI = Hazard Index

OS-2, OSs 3-5, & OS-6 Sediment Residual (Post Removal) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$\mathrm{CDI} = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	5700	d	5700	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hours per day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	45	a	45	a
ED =	Exposure Duration (year)	25	a	25	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	70	a	70	a
AT =	Averaging Time (days)	25550	c	9125	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of includes face, hands, forearms, and lower legs assumed to be same for sediment and surfacewater adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.

OS-2, OSs 3-5, & OS-6 Sediment Residual (Post Removal) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.30E+05	2.60E+05	7.80E-05	0.50	0.03	9.23E-13	2E-07
	Total Risk								**2.4E-07**

Total Risk = 2.4E-07

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
ELCR = Excess Lifetime Cancer Risk

OS-2, OSs 3-5, & OS-6 Sediment Residual (Post Removal) - Hypothetical Future Recreational or Worker (Adult) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	7.80E-05	0.5	0.03	2.58E-12	0.00517
	Hazard Index								**0.01**
								Total HI=	**0.01**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OS-1 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$\text{CDI} = \frac{\text{Csd} * \text{SA} * \text{AF} * \text{ABS} * \text{ET} * \text{EF} * \text{ED} * \text{CF}}{\text{BW} * \text{AT}}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (6 hours per 24 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.

g = 1 hr per visit are assumed to be spent in the canal

OS-1 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	2.78E-03	0.50	0.03	2.71E-11	8E-06
	Total Risk								**8E-06**
								8.1E-06	

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

OS-1 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	2.78E-03	0.5	0.03	1.35E-10	0.27
	Hazard Index								**0.27**
								Total HI=	**0.27**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OS-2 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$CDI = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils adapted from U.S.EPA Exposure Factors Handbook, August 1997.

g = 1 hr per visit are assumed to be spent in the canal

OS-2 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	9.47E-04	0.50	0.03	9.22E-12	2.8E-06
	Total Risk								**2.8E-06**

Total Risk = 2.8E-06

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

OS-2 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	9.47E-04	0.5	0.03	4.61E-11	0.09221
	Hazard Index								**0.0922**
								Total HI=	**0.09**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
HQ = Hazard Quotient; HI = Hazard Index

OSs-3 to 5 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$CDI = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.0	g	1.0	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils

g - 1 hr per visit is assumed ot be spent in the canal

OSs-3 to 5 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	3.32E-04	0.50	0.03	3.23E-12	9.7E-07
	Total Risk								**9.7E-07**

Total Risk = 9.7E-07

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

OSs-3 to 5 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	3.32E-04	0.5	0.03	1.62E-11	0.032
	Hazard Index								**0.032**
								Total HI=	**0.032**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OSs-6 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

CDI = $\frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.0	g	1.0	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils

g - 1 hr per visit is assumed ot be spent in the canal

OSs-6 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	1.59E-04	0.50	0.03	1.55E-12	4.6E-07
	Total Risk								**4.6E-07**

Total Risk = 4.6E-07

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

OSs-6 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	1.59E-04	0.5	0.03	7.73E-12	0.015
	Hazard Index								**0.015**
								Total HI=	**0.015**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OS-1 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

CDI = $$\frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (6 hours per 24 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils

g - 1 hr per visit is assumed ot be spent in the canal

OS-1 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	3.39E-04	0.50	0.03	3.30E-12	9.9E-07
	Total Risk								**9.9E-07**

Total Risk = 9.9E-07

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
ELCR = Excess Lifetime Cancer Risk

OS-1 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	3.39E-04	0.5	0.03	1.65E-11	0.03305
	Hazard Index								**0.03**
							Total HI=		**0.03**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OS-2, & OSs3-5, OS-6 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$CDI = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils

g - 1 hr per visit is assumed ot be spent in the canal

OS-2, & OSs3-5, OS-6 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	7.80E-05	0.50	0.03	7.59E-13	2.3E-07
	Total Risk								**2.3E-07**

Total Risk = 2.3E-07

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

OS-2, & OSs3-5, OS-6 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	7.80E-05	0.5	0.03	3.80E-12	0.008
	Hazard Index								**0.008**
								Total HI=	**0.008**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Hazard Quotient; HI = Hazard Index

OSs-6 Sediment (Pre-excavation) - Hypothetical Future Recreational (Youth) Scenario
Wagner Creek and Seybold Canal, Miami, Florida

		Carcinogenic		Noncarcinogenic	
Dermal:					
CDI =	$\frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$				
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.0	g	1.0	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils

g - 1 hr per visit is assumed ot be spent in the canal

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	1.59E-04	0.50	0.03	1.55E-12	4.6E-07
	Total Risk								**4.6E-07**

Total Risk = 4.6E-07

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; ELCR = Excess Lifetime Cancer Risk

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	1.59E-04	0.5	0.03	7.73E-12	0.015
	Hazard Index								**0.015**
								Total HI=	**0.015**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Haza
HI = Hazard Index

OS-1 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

CDI = $$\frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (6 hours per 24 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils

g - 1 hr per visit is assumed ot be spent in the canal

Defense Distribution Depot Memphis, Tennessee, Remedial Investigation Report

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	3.39E-04	0.50	0.03	3.30E-12	9.9E-07
	Total Risk		**#N/A**						**9.9E-07**
							Total Risk =	**9.9E-07**	

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
ELCR = Excess Lifetime Cancer Risk

Defense Distribution Depot Memphis, Tennessee, Remedial Investigation Report

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	3.39E-04	0.5	0.03	1.65E-11	0.03305
	Hazard Index		**#N/A**						**0.03**
							Total HI=		**0.03**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Haza
HI = Hazard Index

OS-2, & OSs3-5, OS-6 Sediment Residual (Post Removal) - Hypothetical Future Recreational (Youth) Scenario

Wagner Creek and Seybold Canal, Miami, Florida

Dermal:

$$\mathbf{CDI} = \frac{Csd * SA * AF * ABS * ET * EF * ED * CF}{BW * AT}$$

		Carcinogenic		Noncarcinogenic	
Csd =	Concentration in sediment (mg/kg)	RME		RME	
SA =	Surface Area (cm^2) - wading	4200	d	4200	d
AF =	Soil-Skin Adherence Factor (mg/cm^2)	0.11	e	0.11	e
ABS =	Absorption Factor (unitless)	(Chemical Specific)	f	(Chemical Specific)	f
ET =	Exposure Time (1 hour day)	1.00	g	1.00	g
EF =	Exposure Frequency (day/year)	50	a	50	a
ED =	Exposure Duration (year)	14	a	14	a
CF =	Conversion Factor (kg/mg)	1.00E-06		1.00E-06	
BW =	Body Weight (kg)	39	a	39	a
AT =	Averaging Time (days)	25550	c	5110	c

Inhalation: Not an applicable pathway

References:

a = Values suggested by Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Interim, November 1995.

c = U.S. EPA, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors," OSWER Directive 9285.6-03, March 25, 1991.

d = Surface area of hands, 1/2 arms, 1/2 legs and feet of a youth (9-18 yrs) assumed to be same for sediment and surfacewater, adapted from U.S.EPA Exposure Factors Handbook, August 1997.

e = FDEP Recreational scenario for soils

g - 1 hr per visit is assumed ot be spent in the canal

								Dermal	
Units	**Chemical**	**WOE**	**SFo**	**SFd**	**RME**	**DE**	**ABS**	**CDI**	**ELCR**
MG/KG	TCDD Equivalent	B2	1.50E+05	3.00E+05	7.80E-05	0.50	0.03	7.59E-13	2.3E-07
	Total Risk								**2.3E-07**
							Total Risk =	**2.3E-07**	

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration;
ELCR = Excess Lifetime Cancer Risk

								Dermal	
Units	**Chemical**	**WOE**	**RfDo**	**RfDd**	**RME**	**DE**	**ABS**	**CDI**	**HQ**
MG/KG	TCDD Equivalent	B2	1.00E-09	5.00E-10	7.80E-05	0.5	0.03	3.80E-12	0.008
	Hazard Index								**0.008**
								Total HI=	**0.008**

Notes: WOE = Weight of Evidence; CDI = Chronic Daily Intake; RME = Reasonable Maximum Exposure Concentration; HQ = Haza
HI = Hazard Index