

# **US Army Corps of Engineers®**

USACE, Detroit District

100% DESIGN DOCUMENT  
REPORT, GLLA SEDIMENT  
CLEANUP IN HOWARDS BAY,  
SUPERIOR, WISCONSIN

Contract No. W911XK-16-C-0019

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January 24, 2020

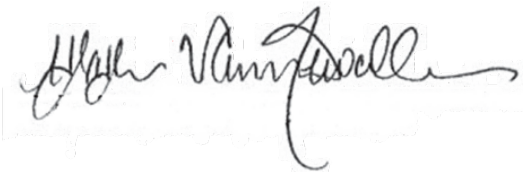
Updated March 8, 2022

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WISCONSIN**



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Contract No. W911XK-16-C-0019

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## CERTIFICATION

I, Mark O. Graveling, P.E., hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

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Mark O. Graveling, P.E. (WI# 44865)

## VERSION CONTROL

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Note: H. VanDewalker replaced D. Cowin as the Quality Assurance Manager in May 2017.



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## ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
Arcadis	Arcadis U.S., Inc.
BOD	Basis of Design
BUIs	Beneficial Use Impairments
CBSQG	Consensus-Based Sediment Quality Guidelines
City	City of Superior
CS	Cummings Slip
COCs	contaminants of concern
cy	cubic yards
DMU	dredge management unit
Draft DDR	Draft 65% Design Document Report
DSR	Sediment Data Summary Report
ENR	enhanced natural recovery
EVS	Earth Volumetric Studio
FC	Federal Channel
FFS	Focused Feasibility Study for Sediment Cleanup in Howards Bay
FOS	factor of safety
FP	Frog Pond
Fraser	Fraser Shipyards, Inc.
FS	Fraser Slip
GLLA	Great Lakes Legacy Act
GLNPO	Great Lakes National Program Office
HB	Howards Bay
HS	Hughitt Slip
IGLD 85	International Great Lakes Datum of 1985
IJC	International Joint Commission

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ITR	Internal Technical Review
LEL	lower explosive limit
LWD	low water datum
MEC	midpoint effect concentration
mg/kg	milligrams per kilogram
mg/kg-TOC%	milligrams of organic constituent per kilogram of dry-weight sediment normalized at 1% total organic carbon
MPCA	Minnesota Pollution Control Agency
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NTU	nephelometric turbidity units
PAH	polycyclic aromatic hydrocarbon
Partners	Howards Bay Project Partners
PEC	probable effect concentration
PID	photoionization detector
PM <sub>10</sub>	particulate matter less than 10 microns in diameter
PRG	Preliminary Remedial Goal
P&S	65% Plans and Specifications
RA	Remedial Action
RAO	Remedial Action Objective
RAP	Remedial Action Plan
site	Howards Bay
SLRAOC	St. Louis River Area of Concern
SND	strategic navigation dredging
SPI	sediment profile imagery
TEC	threshold effect concentration
µg/kg	micrograms per kilogram

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USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WDNR	Wisconsin Department of Natural Resources

## 1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) has prepared this 100% Design Document Report (DDR) for the Great Lakes Legacy Act (GLLA) sediment cleanup project in Howards Bay, located in the City of Superior in Douglas County in northwest Wisconsin (site; Figure 1). This DDR was prepared under contract W911XK-16-C-0019 to the United States Army Corps of Engineers (USACE) Detroit District and in coordination with the Howards Bay Project Partners (Partners), which include the United States Environmental Protection Agency (USEPA) Great Lakes National Program Office (GLNPO), the Wisconsin Department of Natural Resources (WDNR), the City of Superior (City), and Fraser Shipyards, Inc. (Fraser). The USACE is providing technical and engineering support to USEPA for this project.

This document presents the basis for the environmental dredging and cover design for sediment cleanup in Howards Bay. This DDR has been prepared in general accordance with: 1) USACE Engineer Regulation (ER)-1110-2-1150; 2) the Focused Feasibility Study for Sediment Cleanup in Howards Bay (FFS; Arcadis 2015); and 3) applicable USEPA guidance for contaminated sediment remediation (USEPA 2005). The remedial action (RA) activities described in this DDR were designed considering that federal navigation channel maintenance will be completed by the USACE as “Strategic Navigation Dredging” (SND), which is linked to the cleanup of contaminated sediment that is addressed in this DDR. Funding for the SND is provided under the Great Lakes Restoration Initiative, is contingent on the cleanup of the contaminated sediment in Howards Bay, and will be implemented in concert with the environmental dredging.

The elements of the project that are unique to the environmental dredging are described and developed herein and in the drawings and specifications, referenced herein and prepared under separate cover. The USACE will separately prepare the design drawings and specifications for the SND project. It is anticipated that the two designs will be combined by USACE as one set of contract documents and bid as one contract. This document will be provided as reference to the Contractor; however, the environmental dredging technical specifications and design drawings are considered the contract documents and supersede information in this document.

***This document has been updated to incorporate construction changes or modifications and resolution of critical changes during the 2021 and 2022 construction activities (2022 updates pending) in accordance with Contract Amendment P00018, Task 17. Updates are identified in bold, italicized font in the applicable sections. Documentation of the construction activities are provided in the Sediment Cleanup Documentation Report.***

### 1.1 Purpose

The RA activities are proposed to remediate impacted sediment and restore Howards Bay to ultimately achieve removal of beneficial use impairments (BUIs) identified for the St. Louis River Area of Concern (SLRAOC). Impacted sediments in Howards Bay potentially contribute to the following BUIs listed for the SLRAOC (Stage I Remedial Action Plan [RAP], Minnesota Pollution Control Agency [MPCA] and WDNR 1992):

- BUI 1: Fish Consumption Advisories

- BUI 3: Fish Tumors and Other Deformities
- BUI 4: Degradation of Benthos
- BUI 5: Restrictions on Dredging
- BUI 9: Loss of Fish and Wildlife Habitat

The project designed in this report is a refinement of the alternative that was selected by consensus among the project Partners with the recognition that areas, volumes, and other details would be refined during design (Partners 2015). Refer to Section 1.3.4 for a description of the selected alternative.

## 1.2 Report Organization

The organization of this DDR is presented as follows.

Section	Description
1 – Introduction	Presents the purpose of the DDR, summarizes the report organization, provides a description of site conditions, presents a description of the site characterization and nature and extent of environmental impacts, and outlines the remedial action objectives (RAOs) and the remedial action.
2 – Basis of Design	Presents the process and tools used to identify design components.
3 – Quantity and Cost Estimates	Provides the remedial areas and volumes, placement volumes, and summarizes the cost estimates to implement the remedial action.
4 – Technical Review Documentation	Presents the technical reviews conducted by staff not associated with the direct design of the project but have qualifications to accomplish the required work.
5 – References	Lists sources used to prepare this report.

Five appendices are included herein to supplement the contents of this DDR. These appendices provide additional information related to the implementation of the RA activities and include the following:

- Sediment Core Logs (Appendix A)
- Wisconsin Department of Natural Resources Communications (Appendix B)
- Calculations (Appendix C)
- Decision Tree (Appendix D)
- Technical Review Documentation (Appendix E)

Additionally, technical specifications and design drawings are generally referenced throughout this DDR. These documents have been prepared under separate cover and will be the basis for the contract documents and supersede information contained in this document.



## 1.3 Project Description and Existing Conditions

This section provides a summary of the site background and history, as well as the site characterization, nature and extent of environmental impacts, and the RA.

### 1.3.1 Site Description

Howards Bay is a priority area for remediation within the larger SLRAOC, in the City of Superior, Douglas County, Wisconsin (Figure 1). It has been the home of a series of shipyards, grain terminals, commercial fishing operations, and other industrial operations for over 100 years. It is located on the east side of the St. Louis River, and is bisected by the Interstate 535 (I-535) Bridge (Blatnik Bridge) crossing over Howards Bay. The Howards Bay study area includes the bay proper and three ship slips constructed along the south shore – the Fraser Slip (FS), Cummings Avenue Slip (CS), and Hughitt Avenue Slip (HS) – in addition to two dry docks along the south shore. The area at the head of Howards Bay is referenced as the Frog Pond (FP). Until this design, the site was divided into Area 1 and Area 2. For purposes of design and construction, this division is no longer necessary; however, a description of the breakdown can be found in the FFS (Arcadis 2015). The approximate size of the Howards Bay study area, including the three slips, is about 300 acres.

Several shoreline types are present around the bay and the associated slips, including sheet pile, rip-rap, former wooden and concrete wharf structures (some of which are dilapidated), existing and former bridge approaches and abutments, and earthen banks. These features are shown on Figure 2. Water depths in Howards Bay vary from shallow along the north shore to approximately 33 feet below the Lake Superior low water datum (LWD) within the federal channel (FC) that runs nearly the entire length of the bay. The Lake Superior LWD is at an elevation of 601.1 feet using the International Great Lakes Datum of 1985 (IGLD 85).

Commercial maritime needs in the bay are met by the federal navigation channel and access to the ship slips and dock areas. The federal channel ranges from approximately 100 to 275 feet wide with an authorized project depth of 27 feet below LWD (elevation of 574.1 feet) in the project area. Fraser, the City of Superior, and CHS Inc. own the large majority of land bordering Howards Bay. The Hughitt Avenue Slip is used for loading and unloading ships at the CHS Inc. grain elevators, and the Sivertson Fisheries docks and boats are situated at the south end of the slip. The Cummings Avenue Slip has most recently been used by Fraser for long-term layup of ships and by Lake Assault Boats LLC for launching small, aluminum craft. Fraser also has installed a boat ramp in the southern end of the slip. Uses during construction by others are expected to be limited to mooring for work barges and smaller craft in approximately the northern one third of the slip. The Fraser Slip is used by Fraser and local law enforcement for docking smaller boats and this is also the intended use for the future. Additional information on land ownership and use is provided in Section 2.4.

An outfall discharges stormwater drainage from the City of Superior into Cummings Slip and a drainage ditch functions as a tributary at the far east end of Howards Bay. Additional stormwater outfalls exist in Fraser Slip and the Hughitt Slip. Stormwater runoff from the Blatnik Bridge may enter Howards Bay as well (WDNR 2015).

At the time the FFS was undertaken, the former Baxter Avenue Embayment which consists of an area along the south shore of Howards Bay between the Cummings and Fraser Slips was open water;

however, the embayment is no longer part of the project area. The area was infilled in 2016 and isolated from the bay with a sheet pile bulkhead through a separate project to create additional ship berthing space along the federal channel. The area along the bulkhead will be utilized for staging and processing as part of the RA activities.

### **1.3.2 Summary of Sediment Investigations and Areas of Contamination**

A summary of the findings of sediment sampling activities conducted at the site in 2007, 2010, 2013, and 2014 is provided in the FFS and the Howards Bay Sediment Data Summary Report (DSR; Arcadis 2014). Additional sampling was conducted in 2015 and these data have been included in the basis of design (BOD) provided herein to refine the RA horizontal and vertical boundaries. The sediment data collected in 2007, 2010, 2013, 2014, and 2015 provide a refined understanding of the nature and extent of contamination at the site. The combined data sets include more than 500 sediment data points from approximately 160 attempted core or grab sample locations in Howards Bay. Additional samples were collected and analyzed in 2016 to characterize the SND material for disposal; however, these data are not germane to the RA and are not included in this DDR.

Based on a 2011 report prepared for USEPA (Weston 2011) to summarize data collected in 2010, polycyclic aromatic hydrocarbons (PAHs), tributyltin, and lead were identified as contaminants of concern (COCs; Partners 2014). USEPA and WDNR requested consideration of mercury as an additional COC as part of the DSR and the FFS. Concentrations of the COCs vary within Howards Bay sediments due to the history of various sources, dredging activity, construction projects and other activities within the bay, including but not limited to ship movements and ice breaking. As described in the DSR, the site sediment sample data were compared to the WDNR recommended sediment quality guidelines (WDNR 2003), including Threshold Effect Concentration (TEC) and Probable Effect Concentration (PEC) screening levels, which are levels at which the potential for toxicity to benthic organisms are predicted to be unlikely and probable, respectively. The Midpoint Effect Concentration (MEC) is the average of the TEC and PEC values. In comparison to the WDNR MEC values, the largest potential exposures to concentrations of the project COCs in surface sediment occur as follows: in the Cummings Avenue Slip, Fraser Slip, and east end of Howards Bay for lead; in the Cummings Avenue Slip and Hughitt Avenue Slip for mercury; at the head of the Cummings Avenue Slip and near the Blatnik Bridge for PAHs; and in the Hughitt Avenue Slip, adjacent to the Hughitt Avenue Slip in the federal channel, and near the head (i.e., west end) of the federal channel for tributyltin. The COC mass and associated volume of sediment represented by each sediment core with concentrations exceeding selected comparison values (that include the WDNR screening levels) provided an indication of relative mass distribution within the site (see Figure 4-8 of the DSR). COC mass inventories are concentrated in the three slips, in the southeastern end of the bay, in the head of the federal channel, and along the immediate margins of the federal channel. In the shallower water, north of the federal channel, there are large areas with comparatively little COC mass inventory.

Data gaps were identified during development of the design. Additional sampling was conducted in June 2017 by USEPA and WDNR. Results of these sampling activities were summarized in a memorandum drafted by WDNR and reviewed by the Partners (Appendix B). The data were used to refine the BOD between the 65% and 95% design phases.

### 1.3.3 Benthic Community and Toxicity Tests

As described in the FFS, human health and ecological risk assessments have not been completed for Howards Bay. Recreational contact with sediments as a result of wading (for example by fisherman) or other incidental contact with sediment along the north shore for the site is possible. Worker contact with sediments could occur in association with marine construction activities in the bay and shipyard activities, such as contact with anchors and other equipment or during dry-dock cleanout activities (removal of small amounts of sediment that may come in with bay water when ships are taken into dry-dock).

Ecological exposures may occur through the benthic community and could include higher level receptors that may accumulate bioaccumulative compounds through the food chain. Toxicity tests conducted with the crustacean *Hyalella azteca* and the insect *Chironomus dilutus* were performed to determine whether chemicals were present in the Howards Bay sediment at concentrations that would be harmful to the test organisms. These tests indicated spatially limited adverse effects on the benthic community of Howards Bay in comparison to reference and control samples, with the exception of one sample which resulted in genotoxicity to the bacterium *Vibrio fischeri* (see DSR for additional details on test results). This sample was located within Fraser Slip. A limited number of toxicity tests were conducted within the study area. Because of the variability among sample results, there is high uncertainty with respect to the representativeness of toxicity data for the whole study area.

Results of the benthic sampling described in the DSR showed a macroinvertebrate community that is typical of finer-grained sediments with organisms that often “burrow” in finer sediments, such as oligochaetes (39 percent [%] segmented worms), dipterans (36% fly larva) and nematodes (14% roundworms). The Partners decided that efforts to interpret the benthic community data relative to background, to evaluate the data with respect to need for remediation, or to use these data to develop potential remedial endpoints would not be undertaken for the purposes of this GLLA project. However, it was acknowledged that these data may be useful for post-cleanup comparisons at a future date if adequate data analysis is undertaken to control for sources of variability.

### 1.3.4 Remedial Action Objectives and Description of Remedial Action

This section summarizes the RAOs provided in the FFS, as well as the RA to be implemented to support achievement of these objectives.

As identified in the FFS, the following RAOs were developed for the COC-impacted sediments in Howards Bay:

1. Reduce potential for human health risks associated with exposure to COCs through direct contact with sediments and incidental sediment ingestion.
2. Reduce potential for risks to benthic organisms.
3. Reduce potential for risks to other organisms (fish, birds, mammals, etc.).
4. Reduce sediment concentrations of COCs to ultimately meet criteria, standards, and guidelines per International Joint Commission (IJC) and SLRAOC RAP documents.
5. Reduce the potential for contaminated sediment within Howards Bay to act as a source of contamination outside of Howards Bay in the St. Louis River Estuary.

MEC values were adopted as preliminary remedial goals (PRGs) for the project COCs. In formulating remedial alternatives, consideration was given to the degree to which PRGs were exceeded in the deeper sediments below the uppermost sample layer, specifically in comparison to whether the PEC value was also exceeded and the depth intervals within which the exceedances were observed. The following table lists the sediment PRG value for each COC:

**Table 1. Preliminary Remedial Goals**

COC	Sediment PRG Value
Total PAHs	12.2 mg/kg-TOC%
Tributyltin	0.0017 mg/kg-TOC%
Lead	83 mg/kg
Mercury	0.64 mg/kg

**Notes:** mg/kg = milligrams per kilogram; mg/kg-TOC% = milligrams of organic constituent per kilogram of dry-weight sediment normalized at 1% total organic carbon

The FFS identified and assessed a total of eight alternatives based on seven evaluation criteria (Arcadis 2015), and the Partners agreed on selection of Alternative A-4 as the preferred alternative due to moderate to high scorings on the criteria evaluated. Alternative A-4 includes sediment removal in refined dredge management units (DMUs), except for enhanced natural recovery (ENR) in Units 15D and 25B and No Action in Units 12B, 13B, 14B, 15B-C, 17B-C, 19A, 20, 22, 25A, 28. The Partners agreed that associated dredge limits and costs of Alternative A-4 would be refined in the remedial design phase. A preliminary revision to Alternative A-4 was completed in September 2015 to account for the 2014 and 2015 sample results, which were not considered in the FFS (Partners 2015). This preliminary revision included adjustments to the DMU boundaries, removal depths, and intended remedial action. Table 2 summarizes the changes to the DMU nomenclature following the FFS, and the current layout of DMUs is provided herein as Figures 3 and 4. Further DMU refinement conducted during the design process is discussed in Section 2.2.

Alternative A-4 considers that USACE is responsible for dredging sediments within the federal channel to achieve the SND authorized project depth of 27 feet below LWD (elevation of 574.1 feet) plus 1-foot of overdepth (elevation of 573.1 feet). The RA activities described herein address contaminated sediments that exist in some areas at elevations below the SND dredging limits as well as the contaminated sediments outside of the federal channel boundaries. The final elevation will be confirmed following completion of the SND dredging, and the environmental dredge design in these areas will be reevaluated as needed. For example, DMUs FC-7 and FC-11 are considered as “no action” areas based on the assumption that the impacted sediment in these units will be removed by the SND dredging. If SND overdepth removal does not proceed to sufficient elevations in these DMUs based on the bottom elevations of known impacts, additional dredging may be required during the environmental phase.

## 2 BASIS OF DESIGN AND KEY DESIGN ELEMENTS

As discussed in Section 1.3.4, the Partners agreed on refining the dredge limits of Alternative A-4 during the remedial design efforts. This section describes the process used to refine the dredge limits of Alternative A-4 and the general dredging approach for the RA activities, as well as the approach for the ENR areas, material handling, and safety considerations. The following items are discussed in this section, which includes the BOD and key design elements:

- Summary of pertinent data
- COC modeling summary
- Dredge prism development
- Access and permits
- Mobilization and site preparation
- Dredging
- Residuals cover
- ENR
- Material handling
- Project completion
- Safety considerations

### 2.1 Summary of Pertinent Data

The COC data, 2013, 2014, and 2015 bathymetry survey data, and top of sediment and top of clay elevation data for the core locations collected in 2007, 2010, 2013, 2014 and 2015 were used to refine the dredge limits of Alternative A-4 using the software Earth Volumetric Studio (EVS) from C Tech Development Corporation. Data from cores collected in 2017 were incorporated after the EVS model was complete as part of the dredge prism development (see Section 2.3).

The COC data compared to the MEC from the sediment sampling activities conducted at the site in 2007, 2010, 2013, 2014, and 2015 are shown on Figures 3 and 4. Additional sample locations and data from the 2017 sampling event are included in Appendix B. Harbor-wide bathymetry survey data from 2015 have been used in combination with survey data from 2013 and 2014 where 2015 survey data were not available. The survey data were collected and provided by USACE. The combined bathymetry data as generated using the EVS software are shown on Figure 5. This combined bathymetry surface prioritized the most recent survey information, and then supplemented with the older data as needed.

The project area is underlain by a distinct unit of native clay that is denser than the overlying soft sediment and where COC concentrations are less than RAOs; thus, the clay layer serves as a confining layer. Top of sediment elevation and top of native clay elevation data are provided in Table 3 for samples collected within the proposed work area. The core logs are included as Appendix A. Note that core logs were not recorded for samples collected in 2017; rather, sampling information was documented in a WDNR memorandum (Appendix B).

Not all core samples contained a plug of native red clay at the bottom – some cores met with refusal without recovering native clay (the native clay may have been too stiff or fallen out of the core or the core tube could have encountered other dense material limiting its advancement). Approximately 30% of the

sampling locations encountered the native red clay layer. Top of native clay elevations were estimated using top of sediment elevation and sediment coring field notes and core logs. Core stratigraphy logs indicate the approximate thickness (0 to 14 feet) of the sediment layer in the core tube overlying the plug of native red clay in the bottom of the core when it was present.

In general, the amount of sediment in the core samples is interpreted to be approximately equal to the thickness of soft sediment above native clay, where native clay is present<sup>1</sup>. Where native clay was not present, the total thickness of sediment was not inferred from core logs. Based on the top of sediment surface elevations assigned to each core and core stratigraphy logs, the bottom-of-sediment/top-of-native-clay elevation was established for each core with the native clay layer (Table 3). Based on the difference between this bottom-of-sediment/top-of-native-clay and the bathymetry, the estimated sediment thickness at each of these core locations was calculated. These data have high uncertainty in some areas, especially along the sides of the federal channel where bed slopes are greatest and core sampling was limited.

## 2.2 Modeling Summary

EVS software was used to refine the dredge limits of Alternative A-4 by creating a three-dimensional visualization of the removal areas to confirm removal limit assumptions. Detailed information regarding the software can be found at the manufacturer's website: <http://www.ctech.com/products/earth-volumetric-studio/>.

### 2.2.1 EVS Model Procedures

The following procedures were used in setting up and running the model to initially define and visualize removal areas. Once the dredging boundary conditions were defined, the design shifted from EVS to Microstation/Terramodel for development of the dredge prism, as discussed in Section 2.3.

Model setup:

- Bathymetric survey data collected by USACE in 2013, 2014, and 2015 were loaded into the model. An order of precedence was set to use the most recent survey data available in a given location.
- The sediment core locations were input with the top of core elevation for each location set as the sediment elevation at the time the core was collected. The elevation of each core strata and corresponding COC data were incorporated based on the top of core elevation at the time of collection and the representative core intervals (not from the bathymetric surface in the model).
- DMU boundaries were added to the model. The horizontal boundaries were taken from the revised Alternative A-4 figures (Partners 2015), with further refinements made along the shoreline to reflect site conditions (see Figures 3 and 4).

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<sup>1</sup> While using the measured recovered core sediment thickness provides a reasonable estimate of the actual in-situ sediment thickness for purposes of the design, the measured thickness may not be representative of the full, actual sediment thickness due to sampling limitations such as potential material compression or angled penetration of core tube into the bed.

- The vertical boundaries within the federal channel were set as the SND dredge elevation +1 foot overdepth (573.1 feet IGLD 85).

Model runs:

- The analytical data for the primary COCs (TPAH, TBT, lead, and mercury) were interpolated for the entire site using a Kriging method to generate a three-dimensional representation of the contaminant distribution (3D distribution) in the sediment bed and channel slopes.
- The core data were categorized as either having at least one COC above its MEC or no COCs exceeding an MEC. All COCs were treated as equal in identifying removal limits.
- The 3D Kriged chemical distributions were compared to the analytical core data, highlighting regions where any COC exceeded the MEC.
- The DMU areal boundaries were overlaid on the Kriged 3D distributions to isolate these areas for further evaluation and identify potential boundary modifications.
- The vertical extent of the Kriged 3D distributions were evaluated as follows:
  - Kriging was used to identify the bottom elevation of MEC exceedances (i.e., the elevation of contamination) for all DMUs. This step used both cores inside and outside of the DMU.
  - Top of native clay elevations, as determined from the core logs (Table 3), were added to the model where available. Interpolated clay elevations were applied to the DMU to refine the vertical extent. If the Kriged bottom elevation of MEC exceedances was above the interpolated clay elevation, then the bottom elevation of MEC exceedances was used as the extent of removal; if the Kriged bottom elevation of MEC exceedances was below the interpolated clay elevation, then the interpolated clay elevation was identified as the deepest elevation of contamination.
  - DMUs where MEC exceedances were observed at the bottom of the core and where there was no clay surface to bound the bottom elevation were evaluated on a case-by-case basis to review the Kriged bottom elevation. If the bottom elevation extended below the core but was supported by non-MEC exceedance data from adjacent cores, then this elevation was used as the extent of removal; if the surrounding cores all had MEC exceedances to the bottom of the core, then the bottom elevation was interpolated from the other sediment cores within the DMU.

Results from the modeling procedure provided above were reviewed by the Partners preliminarily to comment on the boundaries and identified elevations. Adjustments were made based on this interim review, and these adjusted removal area and elevations were used to develop the EVS model output as described in Section 2.2.3.

## 2.2.2 Placement Criteria Evaluation and Procedures

The COC concentrations in the refined DMUs, including the additional data collected in 2017, were compared to the Wisconsin Point Landfill placement criteria (Appendix B) to identify remedial dredging material suitable for disposal at this facility. For the material determined to be suitable for placement at Wisconsin Point Landfill, an additional comparison was also performed to identify material that could be



used as cover instead of subsurface fill. Remedial dredging material not acceptable for placement at Wisconsin Point Landfill will be placed at another offsite facility (i.e., Vonco Landfill in Duluth, Minnesota – see Section 2.9). SND material will be sent to the USACE's Erie Pier facility for disposal. The procedures outlined below were used in performing the placement criteria evaluation. The analysis was conducted using output from the EVS model and Microsoft Excel for the calculations.

- Screening was conducted only for sediment sample intervals that lie within the DMU boundaries.
- The Wisconsin Point Landfill placement criteria are provided in Appendix B. Specifically, the placement criteria are provided in Table 1 of the document “Site-Specific Residual Contamination Levels (RCLs) for Dredged Material from Howards Bay Proposed for Placement at the Closed Wisconsin Point Landfill in Superior, Wisconsin” dated April 19, 2017 (Appendix B), and the criteria of 5 times the values provided in Table 1 were used as screening criteria.
- Arithmetic average concentrations of the samples that lie within each individual DMU boundary (area and top/bottom elevation) were calculated and compared against the Table 1 criteria and 5 times the Table 1 criteria.
- Each DMU and associated volume was classified as follows:
  - Acceptable for surface cover: Arithmetic average of the samples that lie within individual DMU boundary for all COCs did not exceed criteria in Table 1. In addition, and in accordance with Wisconsin Administrative Code Chapter NR 720, the cumulative excess cancer risk did not exceed  $1 \times 10^{-5}$  and the hazard index for non-carcinogens did not exceed 1.
  - Acceptable for subsurface cover: Arithmetic average of the samples that lie within individual DMU boundary for all COCs did not exceed 5 times criteria in Table 1.
  - Not acceptable for placement at Wisconsin Point Landfill placement: Arithmetic average of the samples that lie within individual DMU boundary exceeded 5 times criteria in Table 1 for one or more of the COCs.

### 2.2.3 EVS Model Output Summary

The three-dimensional model files generated from the EVS software were used to determine the design approach (refer to Table 4) and initial removal extent for each DMU. These files included the footprint (i.e., horizontal limits) and target removal elevation (i.e., target dredge surface based on elevation of contamination) for each DMU. A screenshot of the typical model output is shown below (see Figure 6). The blue lines indicate DMU boundaries in plan view, the blue columns represent sample locations where COCs are below removal criteria, the orange columns represent sample locations where COCs are above removal criteria, the orange/brown octagons indicate the lowest extent of exceedances, and the grey squares indicate the presence of a clay layer.





## 2.3 Dredge Prism Development

### Dredge Prisms

For construction, the Contractor will be provided with a set of removal grades to be achieved as part of the RA, which are also referred to as a dredge prism (see drawings package provided under separate cover). The EVS model and information summarized in Table 4 were used to develop dredge prisms for construction using the following procedures:

- The final EVS removal limits (horizontal and vertical removal surfaces) were imported to Terramodel for use as the starting point for the prism.
- The proposed SND dredge prism based on EVS model, including an assumed 1 foot of overdepth was incorporated.
- Boundaries were adjusted based on the stability evaluation (Appendix C). This included adjusting horizontal boundaries of DMUs where setbacks will be required due to structural considerations (e.g., existing sheet pile, foundations, shoreline conditions, etc.), as well as an evaluation of existing (pre-dredging) slopes adjacent to the navigational channel in proposed dredge areas to determine if dredging is feasible and/or safe. Note that the 1963 dredging information was referenced to assist in this evaluation, and the final side slopes commonly were in the range of 1-1.5:1 (horizontal:vertical).
- Sloping was applied to the perimeter of DMUs based on the stability evaluation. This included determining the required dredge slope through the geotechnical evaluation for slope and shoreline stability. The required slope was then applied starting from the bottom of the DMU (the target dredge elevation) and extending out beyond the defined DMU boundary. In instances where adjacent features prevented sloping outside of the defined DMU boundary (e.g., adjacent obstruction, required offset, etc.), sloping started at the edge of the defined DMU boundary and sloped into the DMU.
- Removal grades were adjusted within the DMU for constructability (i.e., smooth dredge prism contours and transitions).
- Once the above procedures were implemented, select cross-sections were cut through the DMUs. These cross-sections are provided in the drawings package provided under separate cover.

For slope stability, a maximum of 2:1 (horizontal:vertical) side slopes along dredge cuts was determined based on USACE's intended practice for the SND work, site sediment properties, and common environmental dredging design practices. The 1963 dredging information showed steeper slopes were achieved post dredging, suggesting the proposed slope or steeper may be achievable. A maximum 3:1 (horizontal:vertical) slope would be required to provide a stable final grade for residual cover material (sand) based on the angle of repose of this material and additional considerations for fully saturated conditions. Sands have a minimum angle of repose of 27 degrees in their loosest state (Das 1997), and a factor of safety (FOS) of 1.5 or greater should be included in the design. The proposed slope is equivalent to 18.5 degrees. The FOS is calculated as:

$$\text{FOS} = \tan(\text{soil angle of repose}) / \tan(\text{slope angle}) = \tan(27) / \tan(18.5) = 1.52.$$

The Partners discussed that the preferred approach would be to dredge at a 2:1 (horizontal:vertical) slope to maximize COC removal and place residual cover to a final slope of 3:1 (horizontal:vertical) to allow stable conditions for the cover material following construction. The drawings package (provided under separate cover) includes a typical detail to illustrate the dredge slope in combination with the residual cover slope.

### Shoreline Stability / Setbacks

Another geotechnical consideration was shoreline stability, particularly for shorelines and existing structures and bulkheads adjacent to the dredge areas. The approach was to apply setbacks that provide a reasonable level of shoreline stability assurance based on documented existing shoreline conditions, sediment material and in-situ density, slope stability modeling in critical areas, and previous sediment and dredging engineering experience. The setbacks also are assumed to be acceptable to the owners of shoreline structures as they avoid creating shoreline instability as a result of dredging activities. This assumption will be verified by USACE as part of the access agreement process with the property owners. An evaluation was performed by USACE in January 2015 (Appendix L to the FFS; Arcadis 2015) that concluded several structures and embankments would not require any additional considerations due to limited dredging depths, while those that would require further considerations likely would require setbacks to the dredging. Shoring or other means of protection were not evaluated during design due to prohibitive costs and/or long-term concerns regarding adjacent property owners. The available data, including shoreline reconnaissance, photographs, hand-drawn cross sections, and narrative descriptions of conditions, were reviewed along with the current DMU boundaries and depths to determine what stability considerations were necessary at each location.

In all DMUs adjacent to the shoreline, a minimum (10-foot) setback with a 2:1 (horizontal:vertical) slope is specified to provide safe dredging conditions. Saturated sediment within the top 4 feet can slough without causing a stability concern for sediment behind it. This is based on the angle of repose of the saturated sediment (Das 1997). Deeper than 4 feet, sediment sloughing sediment could cause undermining or stability concerns for adjacent structures. As such, an assessment was conducted for areas along the shoreline with dredge depths over 4 feet. Areas with dredge depths less than 4 feet were not evaluated as the conditions do not pose a stability concern based on the stability of deeper cuts and common engineering practices. Five critical areas were identified for further evaluation based on shoreline structure stability concerns (i.e., Lake Superior Fishing Co. building, deteriorating wooden revetment walls, and steel sheet pile walls). The five areas consisted of three cross sections identified in the Hughitt Slip, one typical section in Cummings Slip, and an area near the Dry Docks adjacent to the deepest dredge depth. The evaluations included a comparative approach between the FOS of the existing conditions compared to the FOS for 2:1 and 3:1 dredge slopes using the GeoStudio program Slope/W (Geo-Slope International Ltd 2012). The resulting FOS indicate that a 2:1 slope with a 10 feet setback for the Cummings Slip, Dry Docks, and the northern end of Hughitt Slip will maintain stability of the shoreline structures. For the remainder of Hughitt Slip, it was determined a 3:1 slope with a 10 feet setback will be used to maintain stability of the shoreline structures including the Lake Superior Fishing Co. building on the west side of the slip and a deteriorating wooden revetment wall assumed to be surrounding the slip shoreline (Appendix L to the FFS; Arcadis 2015). The calculation package identifying specific sections evaluated and associated FOS can be found in Appendix C.

All scenarios were evaluated by a geotechnical engineer analyzing site conditions, dredging depths, and conditions at each DMU boundary based on professional judgement and experience, shoreline reconnaissance data, and sediment materials geotechnical parameters and typical behaviors under saturated/river conditions. These calculations were performed using the 65% design for these critical areas; however, changes to the design since this point do not warrant updates to this geotechnical evaluation and the results are still applicable. Additional analysis by a geotechnical engineer should be performed prior to additional work for areas where redredging based on confirmation sampling is proposed.

Once the geotechnical evaluation and associated slope modeling were complete, the recommended adjustments were applied to the dredge prism. The grades were reviewed again for constructability to produce the final dredge prism.

***Construction update: During construction, dredging and sloughing occurred outside the anticipated limits near the Hughitt Slip shoreline. An additional geotechnical analysis was required to assess shoreline stability and, based on this analysis, a backfill design was prepared to address stability concerns. The backfill design was provided to USACE (and the Contractor) as a response to Request for Information (RFI), the applicable RFI is included in Appendix F.***

## 2.4 Access and Permits

USACE will coordinate obtaining access for areas intended to be used for support or that will be impacted by RA activities. It is currently assumed that access agreements will be granted for all dredge and support areas as required to perform the work. Access to the work areas will be restricted to construction-related vehicles and personnel unless otherwise negotiated with individual property owners and/or interested parties. Notifications of construction activities will be submitted to property owners prior to construction by USACE.

Note that approximately one-third of the Cummings Avenue Slip is owned by the State of Wisconsin and leased to Fraser under the terms of a submerged land lease (No author 2010). The extent of the land-lease is provided in the drawings package (provided under separate cover). Any specific considerations or requirements for working within this portion of the site will be determined by USACE in coordination with WDNR and Fraser.

USACE and the Partners will also work with the property owner in Hughitt Slip (property currently for sale) regarding moving the docks to accommodate dredging. It is assumed that the docks will be moved such that dredging can occur per the design.

A summary of the permits required for the project is provided in Table 6. It is anticipated that Arcadis will complete the required permit applications with assistance from the Partners. Completed permits and applications for pending permits may be provided to potential Contractors during the bidding process. The selected Contractor will be required to follow the terms of all access agreements and permits.

***Construction update: Certain permit applications stipulated submittal of detailed sediment and erosion control plans that required Contractor input. As such, these permit applications were completed by the Contractor and submitted to the permitting entity after Partner review. Table 6 has been updated to identify the final permit applicant.***

Table 6. Summary of Required Permits

Entity	Permit	Permit Prepared By
City of Superior	Erosion Control Permit – Fraser Site	Contractor
City of Superior	Erosion Control Permit – Wisconsin Point Landfill	Contractor
USACE	Section 10/404	Arcadis
WDNR	Public Waters Permit	Arcadis
WDNR	401 Water Quality Permit	Arcadis
WDNR	Notice of Intent (NOI) for Land Disturbing Activity	Contractor
WDNR	Landfill Plan Modification	Arcadis
WDNR	Air Pollution Controls <sup>2</sup>	Not applicable

Additional coordination will also be required with Arcadis/Partners and the City of Superior for the wastewater discharge and Wisconsin Point Landfill Plan modification. The selected Contractor will be required to follow any actions or procedures resulting from these coordination efforts.

## 2.5 Mobilization and Site Preparation

### 2.5.1 Mobilization

Once access agreements are secured, pre-construction submittals are submitted and approved, and prior to commencing work, necessary personnel, equipment, and materials will be mobilized to the site. Field office trailers, sanitary facilities, and utilities will be established in accordance with the specifications (provided under separate cover). Video and/or photographic documentation of pre-construction conditions will be collected at all areas used for upland operations and at all shorelines, bulkheads, and/or other structures adjacent to the dredging areas.

All equipment will be decontaminated prior to delivery to the site. This includes decontamination of potential invasive species for in-water equipment in accordance with the WDNR procedures provided at the following website: <http://dnr.wi.gov/topic/Invasives/disinfection.html> .

### 2.5.2 Survey

Pre-construction survey will be performed in areas that will be impacted by the work, including upland support areas and municipal haul roads. Bathymetric survey will be referenced to North American Datum of 1983 (NAD83) State Plane Minnesota North horizontally and International Great Lakes Datum of 1985

<sup>2</sup> No permit required as the project will be short term with low emissions. Dust will be monitored and controlled as discussed in Section 2.5.5.

(IGLD85) vertically. Upland survey will be referenced to NAD83 State Plane Minnesota North horizontally and North American Vertical Datum of 1988 (NAVD88) vertically. This includes:

- Bathymetric survey of the in-water work areas (multi-beam where possible and single-beam near shore to tie into the shoreline)
- Survey of the upland staging and support areas
- Survey of the work area at the Wisconsin Point Landfill

Note that a bathymetry survey will be performed following the SND dredging activities to document sediment surface conditions and elevations prior to the start of the RA dredging activities. As needed, adjustments to the DMU surface elevations and associated quantity estimates may be made based on the actual SND overdepth elevations, especially in areas where limited or no RA dredging was assumed in the design.

### **2.5.3 Utility Clearance**

There are no known utilities within the dredge areas or at the Wisconsin Point Landfill based on a review of USACE and NOAA information, and known utilities in the vicinity of the upland staging area are shown on the drawings. The appropriate utility-locating agencies will be contacted by the Contractor prior to initiating intrusive activities, including land-based and water-based utilities.

### **2.5.4 Staging Areas**

The proposed staging areas are shown on Figure 7. Note that areas delineated as wetlands will not be infringed upon during the RA. Prior to construction, surface soils in the area to be used for sediment staging and processing will be sampled to document pre-construction conditions. Samples will be analyzed for site COCs, namely PAHs, tributyltin, mercury, and lead. Final required sampling may change pending the receipt of final property access agreements.

It is anticipated that the staging areas will be constructed with the following layers from the bottom up: 6 inches of sand, 12-ounce non-woven geotextile, 40 mil high-density polyethylene liner, 12-ounce non-woven geotextile, 6 inches crushed stone aggregate, and 4 inches of asphalt. The stone size and gradation will be determined by the Contractor to protect the liner from potential punctures based on the selected means and methods. The area will be surrounded with temporary berms constructed from either stone or general fill, depending on costs and availability. The area will be graded to drain to a collection sump.

Final determination of the size, location, and layout of staging areas will be made by the selected Contractor in accordance with any applicable requirements of access agreements. It is anticipated that the barge transfer, sediment staging and processing, and water treatment operations will be performed at the former Baxter Avenue Embayment area. Material and equipment staging, fill material staging, office trailers and support facilities, and other areas could be established at either the former Baxter Avenue Embayment or Cummings Slip staging area.

Staging areas and other site support areas will be maintained in a manner that controls stormwater runoff and runoff, and limits the potential for erosion or migration of sediment or other materials from the work area. Typical control requirements and products are detailed in the specifications and design drawings (provided under separate cover); however, final means and methods will be selected by the Contractor



and approved by USACE prior to implementation. Stormwater that collects in the sediment stabilization and decontamination areas will be collected for treatment.

## **2.5.5 Community Air Monitoring**

The COCs for Howards Bay are not volatile or in high enough concentrations that an air permit would be needed based on a mass balance. Section s. NR 406.04(1)(m)9, Wis. Adm. Code, specifically exempts procedures for the remediation or disposal of soil or water contaminated with organic compounds where emissions are below permitting thresholds.

Real-time community air monitoring will be implemented at the sediment staging area (Fraser property) for air quality. Such monitoring will be implemented for the protection of potential receptors at the surrounding properties. There will be at least three monitoring stations located near the boundaries of the work areas and located to allow coverage of potential receptors and typical shifts in the wind direction. Upwind and downwind locations will be determined daily through observations at the site or available meteorological data, with a minimum of one upwind and two downwind locations each day. Community air monitoring will include the use of a real-time air quality monitoring system and/or hand-held, direct-reading survey instruments. The meters selected for use during monitoring activities will be capable of calculating 15-minute running average concentrations. The requirements may be reduced or eliminated during construction based on monitoring data.

Community air monitoring is not required at Wisconsin Point Landfill as there are no potential receptors.

### **2.5.5.1 Monitoring Requirements**

At a minimum, a photoionization detector (PID) with an 11.7 eV bulb will be utilized at each area. Fugitive dust migration will be visually assessed during work activities, and reasonable dust suppression techniques will be used during site activities that may generate fugitive dust. Real-time airborne particulate monitoring will be conducted continuously during intrusive site remedial activities, including sediment and blending agent handling activities. Particulate monitoring will be conducted using instrumentation equipped with electronic data-logging capabilities. A PDR1000 (from Thermo Electron Corporation) or equivalent will be used to conduct real-time monitoring for particulate matter less than 10 microns in diameter (PM<sub>10</sub>). Fifteen-minute average real-time concentration readings will be recorded for comparison against action levels.

### **2.5.5.2 Action Levels**

If visual observation indicates that dust migration from the site is occurring during active construction (e.g., staging area, Wisconsin Point landfill, other support areas), reasonable dust suppression techniques will be applied, such as wetting roadways or covering material stockpiles.

Table 7 presents action levels and response actions for PID and particulate monitoring data. In general, if the conditions are outside of the normal operations range of values for the PID compared to lower explosive limits (LELs), work will be stopped, and the cause of the reading will be determined. Once identified, the proper emission control measures will be implemented. An air monitoring log will be maintained at the site and any measurements required by Table 7 will be recorded.

If the ambient 15-minute average air concentration of PM<sub>10</sub> at any one (or more) of the downwind perimeter locations is noted at levels in excess of 100 µg/m<sup>3</sup> above the upwind concentration, or if airborne dust is visually observed leaving the work area, then dust suppression techniques will be implemented, and air monitoring will continue. Work may continue following the implementation of dust-suppression techniques provided the PM<sub>10</sub> levels do not exceed 150 µg/m<sup>3</sup> above upwind.

If, after implementation of dust-suppression techniques, the downwind PM<sub>10</sub> levels are greater than 150 µg/m<sup>3</sup> above upwind, work will be stopped, and site activities will be re-evaluated. Once additional actions have been implemented, work may resume only if dust-suppression measures and other controls are successful in reducing the 15-minute average PM<sub>10</sub> levels to less than 150 µg/m<sup>3</sup> above upwind at the downwind perimeter of the site and if no visible dust is observed leaving the site.

## 2.5.6 Turbidity Monitoring

The turbidity monitoring program outlined herein has been developed to be consistent with WDNR's recommendations in the May 2017 memorandum regarding resuspension performance monitoring for sediment remediation, revised November 2018 (Appendix B). Monitoring will not be required during cover placement activities unless off-specification material is used. Monitoring will be conducted at a minimum of two performance locations – the project site boundary (see extent of project boundary line on Figure 2) and within 150 feet of active dredging or cover placement operations. Monitoring will be conducted with a continuous monitor at the background location and manually at project boundary and active locations with real-time meters, and readings will be collected from three depths within the water column at each the sampling location (1/3-depth below the water surface, mid-depth of the water column, and 2/3-depth below the water surface). Manual turbidity monitoring events will be performed twice daily (at least 2 hours after work has started/resumed). In addition, data will be collected from a background location positioned outside of the study area near the confluence of Howards Bay and the St. Louis River (approximately 500 feet beyond the I-535/Blatnik Bridge along the north shore). The background monitoring will be conducted using a continuous monitor that allows for remote data retrieval. The actual monitoring locations will be determined based on field conditions, active work areas, and health and safety considerations. Background turbidity data also may be supplemented using St. Louis River data collected by others at the Bong (Highway 2) and/or Blatnick bridge crossings.

An average value of spatially-integrated readings obtained from the performance monitoring locations will be compared against the background location reading at that time. The early warning level for turbidity will be a difference of 65 nephelometric turbidity units (NTU) or greater above background. If the early warning level is exceeded, the Contractor will perform the Warning Level actions outlined in Table 1 of WDNR's November 2018 turbidity memorandum (Appendix B). The action level for turbidity will be a difference of 87 NTU or greater above background at the performance monitoring location. If the action level is exceeded, the Contractor will perform the preventative actions outlined in Table 1 of WDNR's November 2018 turbidity memorandum (Appendix B). If turbidity levels exceed 110 NTU above background (the not-to-exceed level), work will cease, and the Contractor will perform the preventative actions outlined in Table 1 of WDNR's November 2018 turbidity memorandum (Appendix B).

Whenever the warning, action, or not-to-exceed levels are exceeded, the contractor will evaluate if the increase was caused by dredging or placement activities. If the increase above the action level is determined to be caused by non-dredging activities, such as storm water runoff or prop wash by non-



project related vessel traffic, and project oversight concurs, work can continue. If the turbidity increase is determined to be due to the dredging or cover placement activities, the contractor will re-assess the effectiveness of BMPs and take corrective measures to mitigate the exceedance of resuspension performance standards as identified in Table 1 of WDNR's November 2018 turbidity memorandum (Appendix B). The contractor may resume work when any operational changes have been made and turbidity levels in the area where the exceedance was measured drop below the NTE level for 30 minutes, DNR and EPA have been notified, and oversight concurs.

WDNR must be notified of the time, location, and level of exceedance in the event the not-to-exceed level is reached at a performance monitoring location. The notification must include the identified cause of the exceedance and any corrective measures taken. The notification must be made to the WDNR project manager with 24 hours of the exceedance and may be done by email.

## 2.6 Dredging

### 2.6.1 General Approach

It is assumed that the work will be conducted in the wet via barge-based mechanical dredging; however, the final determination of the dredging approach and specific means and methods will be determined by the selected Contractor. General requirements, including use of an environmental bucket and sealed transport barges, are included in the technical specifications (provided under separate cover). Construction activities and equipment operation will be managed to minimize resuspension during dredging and meet the requirements outlined in Section 2.5.6.

The total estimated neat-line dredge volume is 64,700 cy (Table 4). A 6-inch overdepth allotment will be allowed in the contract specification for the dredging work in all DMUs. For volume and cost estimating purposes, it is assumed that 50% of this overdepth allotment will be dredged and therefore the overdepth quantity is estimated at 6,200 cy. Additionally, the SND dredging will allow for 1 foot of overdepth dredging, and it is anticipated that 50% of this material by depth will be removed as part of the SND dredging. Table 4 includes an assumed 50% of this overdepth volume (approximately 4,000 cy) that would not be removed during the SND dredging and would require dredging as part of the work described in this DDR. These considerations bring the estimated total removal volume to 74,900 cy (Table 4).

Confirmation that dredging is complete in each location once the target elevation has been achieved based on post-dredging survey will be determined as described in the specifications. Confirmatory sampling will be conducted and the results of the samples will be analyzed to determine the need for further action (i.e., no action, residual cover, or additional dredging) in accordance with the Operational Decision Tree for Environmental and SND Dredging included in Appendix D. Additional stability analysis by a geotechnical engineer should be performed prior to additional work for areas where redredging based on confirmation sampling is proposed.

Removed dredged material will be handled as described in Section 2.9. The Contractor will not be allowed to overfill the transport barge and use of sealed barges will be required, which will help limit potential loss of sediment and/or turbid water back to Howards Bay.

In two areas, OC-4 and OC-9, relatively shallow water may restrict barge entry. It is anticipated that sequencing these areas to dredge from the southwest to the northeast will provide the required water

depth to continue work. The need for additional removal for access in these two areas, including potential volumes and costs, will be discussed with potential Contractors during the bid evaluation.

## 2.6.2 Debris Removal

The area of a known debris field exists in the eastern portion of dredge area FP-1 at the southeast end of Howards Bay (Figure 4). The debris field primarily consists of timber piles and reinforced concrete. This material will be removed to the extent practicable prior to or during dredging, as appropriate. If removal is not feasible per conditions outlined in the specifications, dredging will be performed as close to the design grades as possible in the vicinity of the debris. It is assumed that other debris that will be encountered includes woody vegetation, scrap metal, rubbish, and other items typically found in an industrial waterway. The other debris within the dredge area will be removed prior to or during dredging as determined by the Contractor. Debris removal likely will be required only in areas where SND dredging is not performed as it is assumed that debris within the SND area will be removed as part of the SND dredging. Debris outside the dredge area should remain in place; however, limited additional debris removal may be necessary for access to the dredging and to provide stable conditions at the completion of work.

## 2.6.3 DMU Sequencing

Dredging sequencing must consider the available construction season (May to November), potential for resuspension and deposition in previously dredged areas, and coordination with the SND timing/work locations. It is recommended to complete SND dredging prior to commencing environmental dredging. It is anticipated that the work will proceed in accordance with the following sequencing:

- Hughitt Slip
- Cummings Slip
- Fraser Slip
- Frog Pond area (Units FP-1 and FP-2)
- OC-1 through OC-5 followed by FC-1 and FC-2
- OC-6 through OC-8 followed by FC-3 through FC-4
- OC-9, followed by FC-5 and FC-6
- OC-12, followed by FC-9
- OC-14, followed by FC-12 and FC-13
- OC-16 and OC -17, followed by FC-17, FC-16, FC-15, and FC-14

***Construction update: The dredging sequence was updated during construction based on Partner input and considering analytical testing and turn-around times for results. The revised sequence is provided below.***

- ***Cummings Slip (CS-1 through CS-5)***
- ***Fraser Slip (FS-1 and FS-2)***
- ***OC-6***
- ***Frog Pond area FP-2***
- ***Hughitt Slip area HS-3***
- ***OC-4 and OC-5***

- **OC-2**
- **Frog Pond area FP-1**
- **Remaining area of Hughitt Slip (HS-1 and HS-2)**
- **OC-1, OC-3, OC-8, OC-9, FC-1, FC-12, and FC-13**
- **OC-12 and FC-9**
- **OC-14**
- **OC-16, OC-17, and FC-14 through FC-17**
- **FC-6**
- **FC-5**
- **OC-7 and FC-2 through FC-4**
- **OC-11**

#### **2.6.4 Engineering Controls**

The Contractor will be required to meet the water quality conditions of the permits, access agreements, and the action levels specified in Section 2.5.6. This can be achieved through operational means, engineering controls, or a combination of methods. Engineering controls will not be required during dredging; however, if necessary, based on turbidity monitoring data, turbidity curtains could be installed at or near the required dredge limits, and at the Contractor's discretion. If needed, each turbidity curtain could be depth adjustable, anchored to the shoreline, and include sorbent booms to mitigate sheen that may be generated during dredging. The curtains could be fitted with gates, as necessary, to allow access for construction-related traffic. Design of such a system would be the responsibility of the Contractor.

A potential alternative to a turbidity curtain is an air bubble curtain. The air bubble curtain would consist of an air compressor and a header pipe with air holes, anchored at the base of the river. The advantage of using an air bubble curtain over silt curtains is that boat traffic can pass through the project area with little disturbance to dredging operations. Air bubble curtains are typically used to: deter fish near pile driving projects (reduces the strength of pressure waves), disperse and contain floating spills on water, add dissolved oxygen to water, and reduce sediment deposition in ocean harbors at docking slips (creates turbulence that keeps sediments in suspension). Such systems are most effective in shallow and relatively low velocity water (e.g., bays, harbors, etc.), which matches the conditions present at this site. Air bubble curtains will be installed, operated, and maintained at the mouths of Fraser Slip, Cummings Slip, and Hughitt Slip. Use of an air bubbler system elsewhere would be at the Contractor's discretion and would require review and approval by the USACE and Project Partners.

Contingency resuspension control measures and sorbent booms will be kept on site for emergency use in the event of resuspension control measures failure, visible sheen or exceedances in turbidity at performance monitoring locations. Dredging operations and cover placement will not resume if resuspension control measures are not in place.

#### **2.6.5 Confirmation Sampling**

The decision tree and associated confirmation sampling work are described in Appendix D and the specification/drawings package provided under separate cover. In general, sediment samples will be collected from each removal area once the contract dredge depth is achieved as verified through survey.

Constituent concentrations will be compared to cleanup goals to determine what, if any, further activities are needed in the area represented by each confirmation sample (confirmation area). These could include additional dredging, placement of a residuals cover, or no further action.

***Construction update: The Partners adjusted the confirmation sampling approach during construction to reduce the number of confirmation samples required and introduce additional flexibility in determining the path forward for analytical results approaching the target levels (i.e., consider cover placement instead of re-dredging where possible). The revised sampling locations were provided in figures prepared by WDNR, copies of which are included in Appendix F).***

## 2.7 Residuals Cover

### 2.7.1 General Approach

As detailed in the Dredging Decision Tree in Appendix D, a residuals cover will be placed if needed over dredged areas based on confirmation sampling results.

The actual cover thickness will be determined in coordination with the USACE Quality Assurance Representative, but for purposes of the DDR, it is assumed that this cover will include the placement of a minimum 6-inch sand layer over each dredge unit where a cover is required. The material will be placed with a tolerance of +3 / -0 inches over 100% of the area. It is assumed that the residuals cover will be placed mechanically (e.g., excavator bucket, telebelt system, or spreader broadcast system); however, hydraulic equipment may provide increased control of material placement (e.g., slurry broadcast or slurry spreader manifold or similar systems). Residuals cover placement may occur with the same equipment used for dredging following decontamination of the equipment. Construction activities and equipment operation will be managed to minimize loss or migration of suspended material during placement. Placement monitoring will be conducted by collecting a minimum of one core per 3,600 square feet to verify the cover thickness. A bathymetric survey will be performed following completion of the work to document final conditions; however, this survey will not be used to verify cover thickness.

### 2.7.2 Engineering Controls

It is anticipated that the clean residuals cover materials will be placed without engineering controls or while any engineering controls utilized for dredging are still in place. Turbidity monitoring will be required during material placement, as noted in Section 2.5.6. The Contractor may implement controls to achieve water quality requirements included in permits, access agreements, and the action levels specified in Section 2.5.6. Refer to Section 2.6.4 for additional details on these controls.

## 2.8 Enhanced Natural Recovery

### 2.8.1 General Approach

ENR will include the placement of a 6-inch sand cover in units FC-10, OC-10, OC-13, and OC-15. The total estimated material placement volume is 900 cy over approximately 1.1 acres. The material will be placed with a tolerance of +3 / -0 inches over 100% of the area. Water depths in these areas range from

approximately 2.6 to 29.4 feet. It is assumed that the sand cover will be placed mechanically; however, hydraulic equipment (e.g., slurry broadcast) or spreaders (e.g., telebelt system) may provide increased control of material placement. Sand cover placement may occur with the same equipment used for dredging following decontamination of the equipment. The final means and methods will be determined by the Contractor. Construction activities and equipment operation will be managed to minimize resuspension during placement. Placement thickness monitoring will be conducted using the same methods described for residual cover placement confirmation.

## **2.8.2 Engineering Controls**

Due to the limited volume of sand to be placed, the shallow water depth, and use of uncontaminated borrow material, it is assumed that engineering controls will not be required during ENR cover placement. Turbidity monitoring will be required during material placement, as noted in Section 2.5.6. The Contractor may implement controls to achieve water quality requirements included in permits and/or access agreements. Refer to Section 2.6.4 for additional details on these controls.

## **2.9 Material Handling**

### **2.9.1 Debris Handling and Disposal**

Debris removed from the dredge areas will be placed on a barge for transport to the staging area shown on Figure 7. Once offloaded from the barge, debris will be segregated by type (e.g., wood, metal, etc.) and shipped to an appropriately-licensed offsite facility, such as Vonco Landfill, for recycling or disposal. Debris cannot be placed at Wisconsin Point Landfill.

### **2.9.2 Dredged Material Handling and Placement**

Dredged material will be placed on a barge for transport to an upland staging area as shown on Figure 7. Sediment that requires trucking over public roads will be required to pass the paint filter test (USEPA Method 9095B) prior to transportation. The sediment will be allowed to gravity dewater in the staging area for a minimum of 24 hours. Mechanical equipment may be used to turn the sediment to encourage the release of free liquids. A stabilization agent (e.g., Portland cement, cement kiln dust, etc.) will be blended with the sediment using the minimal amount needed to meet transportation, strength, and chemical mobility requirements (anticipated to be up to 10% by weight). Results from a treatability study performed to provide additional information on blending agents and ratios will be included in the specifications (provided under separate cover) for the Contractor; however, the Contractor may still elect to perform an independent treatability study prior to implementation.

Based on the placement analysis, 56,400 cy of dredged material can be sent to the Wisconsin Point Landfill for placement and 8,300 cy will need to be sent to an offsite facility for disposal. Sediment will be transported to the Wisconsin Point Landfill for surface or subsurface placement and grading according to the criteria discussed in Section 2.2.2. The location of the Wisconsin Point Landfill and proposed transport route is provided on Figure 8. Details on material placement at the landfill, including interim and permanent controls and best management practices, are included in the technical specifications and design drawings (provided under separate cover). The selected offsite disposal location is the Vonco

Landfill as shown on Figure 8. Note that it is not anticipated that additional processing requirements will be necessary prior to placement of the dredged sediments at Vonco Landfill.

***Construction update: The Contractor proposed an alternate approach, which was accepted by the Partners prior to implementation, to stabilize sediment on a barge prior to offloading. Stabilized materials would then be offloaded to the staging area to await offsite transportation.***

### 2.9.3 Water Handling and Treatment

The primary sources of water that will require treatment are the sediment handling barges and water (including stormwater) accumulating in the staging and decontamination areas. Prior to removing sediment from the barge, free water will be pumped out for treatment. Collection sumps will be installed at the staging and decontamination areas to allow collection of water for treatment.

The water treatment system will be set up at the Former Baxter Ave. Embayment staging area. The treatment system design will be performance based. The minimum system components are noted in the specifications package provided under separate cover, and include influent tanks, filtration, carbon vessels, and effluent tanks. Final design of the treatment system will be performed by the selected Contractor.

Based on discussions with the City of Superior, water will be discharged without a permit to an existing sewer line near the Cummings Slip (see Figure 2). Discharge of the water to the existing sewer must be coordinated by the Contractor with the City of Superior. The City of Superior's primary treatment criteria that the system must meet are total suspended solids and visual turbidity. Total suspended solids must be less than 500 ppm in water discharged to the City system. The City also requires that one sample be analyzed for pH, PAHs, mercury, lead, cadmium, and copper prior to the initial discharge to confirm levels are below the required limits. If the sample meets the required criteria, no further sampling will be required. If the sample does not meet the criteria, the Contractor will be required to adjust the system as necessary and at no additional cost and resample. Direct discharge to surface water is not permitted. Details of the testing and discharge criteria are included in the specifications.

## 2.10 Project Completion

The tasks below will be completed once dredging, residuals cover placement, ENR cover placement, and materials handling activities are complete. Due to the potential for construction to extend beyond one year, certain tasks discussed in this section may be initiated in 2021 to prepare the site for winter shutdown and then completed in 2022 following completion of the project.

### 2.10.1 Decontamination

All equipment that comes in contact with impacted material will be decontaminated prior to removal from the site. Decontamination activities will occur within specified decontamination areas. Decontamination will be performed to remove visual impacts. Liquid wastes generated during decontamination activities will be treated at the onsite wastewater treatment system or containerized and prepared for off-site disposal. Solid waste generated during decontamination activities will be containerized and prepared for off-site disposal.

### **2.10.2 Upland Restoration**

Following the completion of work activities, including decontamination, the upland areas disturbed during the work will be restored to pre-construction conditions, unless otherwise agreed upon in the access agreements. This includes restoration of disturbed areas at Wisconsin Point Landfill, the staging area at the former Baxter Avenue Embayment, equipment laydown and parking areas, access roads from the staging area to public roads, and public roads that are soiled or damaged as a direct result of the RA work.

### **2.10.3 Post-Construction Survey and Sampling**

A post-construction survey will be performed by USACE following restoration to document the conditions of the site. The survey will be utilized to compare pre- and post-construction conditions to verify that all upland support areas are restored as required in the access agreements. Post-construction samples will be collected from areas used to stage impacted materials to document that the restored areas do not exceed pre-construction conditions for site COCs. Samples will be analyzed for site COCs, namely PAHs, tributyltin, mercury, and lead. Samples will be collected from the same locations as pre-construction samples and at any locations where tears are observed in the liner system. If impacts are documented above the pre-construction sample results, the impacted soils will be removed and disposed at an appropriate landfill and the area restored to pre-construction conditions.

### **2.10.4 Demobilization**

Following the completion of all work activities, remaining staging and support areas will be dismantled, remaining equipment and materials will be cleaned/decontaminated, and all material and equipment will be removed from the site.

## **2.11 Safety Considerations**

The work will be performed in accordance with all federal, state, and local safety regulations, particularly 29 CFR 1910 and 1926. All onsite personnel will have 40-hour HAZWOPER training and up-to-date refresher training. All personnel working on the water will wear personal floatation devices at all times. Community air monitoring requirements are discussed in Section 2.5.5, and the Contractor will be required to prepare a Contractor's Health and Safety Plan that includes personnel monitoring. On-site safety personnel will coordinate with shipyard personnel as needed regarding site activities, ship traffic and logistical issues related to site truck and ship traffic.

The Contractor will prepare a Traffic Control Plan as required in the technical specifications. This plan will discuss traffic control within the Fraser site, at the Wisconsin Point Landfill, and on public roads (particularly access points). The plan will include proposed signage, flaggers, and other measures that will be implemented during construction.

Refer to USACE Safety and Health Requirements Manual EM 385-1-1 for additional safety requirements.



### 3 QUANTITY AND COST ESTIMATES

Estimated volumes are included in Table 4. The cost estimates were prepared using the MII system. It is currently estimated that the total removal volume will be approximately 74,900 cy, the total ENR cover placement volume will be 900 cy, and the project will cost approximately \$13.8 million. A cost summary table and assumptions used in generating the cost estimates, including assumed production rates, along with the MII output are provided under separate cover.

### 4 TECHNICAL REVIEW DOCUMENTATION

An Internal Technical Review (ITR) team reviewed this design document. The team consisted of Arcadis personnel with extensive experience in sediment dredging design and construction, cost estimation, and the federal sector design process. Comments were provided individually by the ITR team members, reviewed by the design team, and are reflected in this document prior to submission to the Partners for review. Certification of the ITR review by the ITR team members is included in Appendix E.

### 5 REFERENCES

- Arcadis. 2014. Howards Bay Sediment Data Summary Report, Superior, WI. Prepared for the Great Lakes Legacy Act (GLLA) Howards Bay Focused Feasibility Study and Remedial Design Project on behalf of the Howards Bay Project Partners. August.
- Arcadis. 2015. Focused Feasibility Study for Sediment Cleanup in Howards Bay, Superior, WI. Prepared for the Great Lakes Legacy Act (GLLA) Howards Bay Focused Feasibility Study and Remedial Design Project on behalf of the Howards Bay Project Partners. June.
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- MPCA and WDNR. 1992. The St. Louis River System Remedial Action Plan Stage One. Available at: <http://www.stlouisriver.org/rap.html>
- No author. 2010. Submerged Lands Lease between the State of Wisconsin, Board of Commissioners of Public Lands (Lessor) and FSY R/E Group, LLC (Lessee). October 1.
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- Partners. 2015. Project Manager Memorandum. July.
- USEPA. 2005. Contaminated Sediment Remediation Guidance for Hazardous Waste Sites. EPA-540-R-05-012. December.
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## 100% DESIGN DOCUMENT REPORT

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- WDNR. 2014. Field Report for September 9 – 13, 2013 Sediment Sampling in Howards Bay, St. Louis River Area of Concern, Superior, Wisconsin. March.
- WDNR. 2015. Evaluation of Sources, Contaminants in Sediment of Howards Bay, City of Superior, Wisconsin. October.
- Weston. 2011. Sediment Assessment Report Howards Bay – St. Louis River AOC, Superior, Douglas County, Wisconsin. October.

# TABLES



**Table 2: Summary of Changes to Dredge Management Units**  
**Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

2015 FFS DMU ID	Revised DMU IDs based on 9/9/15 Project Partner Call	2018 Design DMU ID	Dredge Unit Location	Final Selected Remedial Action	Comments
<b>Within Federal Channel and Slopes</b>					
3A	FC-1	FC-1	Federal Channel	Dredging	
3B	FC-2	FC-2	Federal Channel	Dredging	Boundary revised based on 9/9/2015 Project Partner decision (a portion of 3B became FC-3)
--	FC-3	FC-3	Federal Channel	Dredging	DMU created based on 9/9/2015 Project Partner decision
8	FC-4	FC-4	Federal Channel	Dredging	
9B	FC-5	FC-5	Federal Channel	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
13A	FC-6	FC-6	Federal Channel	Dredging	
14A	FC-7	FC-7	Federal Channel	No Action	DMU changed from dredging to no action in 2017 Design; may be reevaluated based on extent of SND
15A	FC-8	FC-8	Federal Channel	No Action	Boundary revised based on 9/9/2015 Project Partner decision; DMU changed from dredging to no action in the 2017 Design
16A	FC-10	FC-10	Federal Channel	ENR	DMU changed from dredging in FFS to ENR area based on 9/9/2015 Project Partner decision
17A	FC-9	FC-9	Federal Channel	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
17D	--	--	Federal Channel	No Action	A portion of 17D became part of 17B (then renamed to OC-12); 17D was removed from figures based on 9/9/2015 Project Partner decision
18	FC-11	FC-11	Federal Channel	No Action	DMU changed from dredging in FFS to ENR area based on 9/9/2015 Project Partner decision, and to no action in the 2017 Design; may be reevaluated based on extent of SND
22	--	--	Federal Channel	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
23	FC-12	FC-12	Federal Channel	Dredging	
24	FC-13	FC-13	Federal Channel	Dredging	
30A	--	--	Federal Channel	No Action	Removed from figures based on 9/9/2015 Project Partner decision
30B	FC-14	FC-14	Federal Channel	Dredging	
--	FC-15	FC-15	Federal Channel	Dredging	DMU created based on 9/9/2015 Project Partner decision
31A	FC-16	FC-16	Federal Channel	Dredging	
31C	FC-17	FC-17	Federal Channel	Dredging	
<b>Outside Federal Channel and Slopes</b>					
1A	FP-2	FP-2	Outside FC	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
1B	FP-1	FP-1	Outside FC	Dredging	
2A	OC-1	OC-1	Outside FC	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
--	OC-3	OC-3	Outside FC	Dredging	DMU created based on 9/9/2015 Project Partner decision
4	OC-2	OC-2	Outside FC	Dredging	
5	OC-5	OC-5	Outside FC	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
6	OC-4	OC-4	Outside FC	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
7	OC-6	OC-6	Outside FC	Dredging	
9A	OC-7	OC-7	Outside FC	Dredging	
9C	OC-8	OC-8	Outside FC	Dredging	
12A	OC-9	OC-9	Outside FC	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
12B	--	--	Outside FC	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
13B	--	--	Outside FC	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
14B	--	--	Outside FC	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
15B/15D	OC-10	OC-10	Outside FC	ENR	Boundary revised; 15B changed from no action to ENR and 15D remained as ENR based on 9/9/2015 Project Partner decision
16B	OC-11	OC-11	Outside FC	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
17B	OC-12	OC-12	Outside FC	Dredging	Boundary revised and changed from no action in FFS to dredging based on 9/9/2015 Project Partner decision
17C	--	--	Outside FC	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
20	OC-13	OC-13	Outside FC	ENR	DMU changed from no action in FFS to ENR based on 9/9/2015 Project Partner decision
21	OC-14	OC-14	Outside FC	Dredging	
25A	--	--	Outside FC	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
25B	OC-15	OC-15	Outside FC	ENR	ENR (No dredging)
31B	OC-16	OC-16	Outside FC	Dredging	Boundary revised based on 9/9/2015 Project Partner decision

**Table 2: Summary of Changes to Dredge Management Units**  
**Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

2015 FFS DMU ID	Revised DMU IDs based on 9/9/15 Project Partner Call	2018 Design DMU ID	Dredge Unit Location	Final Selected Remedial Action	Comments
<b>Cummings Avenue Slip</b>					
19A	--	--	Cummings Ave Slip	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
19E	CS-5	CS-5	Cummings Ave Slip	Dredging	
19B	CS-4	CS-4	Cummings Ave Slip	Dredging	Boundary revised based on 9/9/2015 Project Partner decision
19F	CS-3	CS-3	Cummings Ave Slip	Dredging	
19C	CS-2	CS-2	Cummings Ave Slip	Dredging	
19D	CS-1	CS-1	Cummings Ave Slip	Dredging	
<b>Hughitt Avenue Slip</b>					
26	HS-1	HS-1	Hughitt Ave Slip	Dredging	
27	HS-2	HS-2	Hughitt Ave Slip	Dredging	
28	--	--	Hughitt Ave Slip	No Action	No action in FFS; removed from figures based on 9/9/2015 Project Partner decision
29	HS-3	HS-3	Hughitt Ave Slip	Dredging	
<b>Fraser Slip</b>					
10	FS-2	FS-2	Fraser Slip	Dredging	
11	FS-1	FS-1	Fraser Slip	Dredging	

**Notes:**

CS = Cummings Avenue Slip  
DMU = dredge management unit  
ENR = enhanced natural recovery  
FC = within Federal Channel and slopes  
FFS = Focused Feasibility Study  
FP = Frog Pond Dock  
FS = Fraser Slip  
HS = Hughitt Avenue Slip  
OC = outside Federal Channel and slopes  
SND = strategic navigation dredging

**References:**

Arcadis. 2015. Focused Feasibility Study for Sediment Cleanup in Howards Bay, Superior, WI. Prepared for the Great Lakes Legacy Act (GLLA) Howards Bay Focused Feasibility Study and Remedial Design Project on behalf of the Howards Bay Project Partners. June 2015.

**Table 3: Estimated Top of Sediment and Top of Clay Elevations**  
**Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

Location ID	RD Unit ID	Collection Date	Best Estimate of Sediment Surface Elevation (feet) <sup>1,2</sup>	Depth to Native Clay <sup>3</sup> (feet)	Native Clay Surface Elevation	Sediment Core Encountered Native Clay
HB13-03	FP-2	9/9/2013	585.5	3.8	581.7	X
HB13-06	OC-2	9/9/2013	581.9	4.0	577.9	X
HB13-09	OC-6	9/11/2013	581.2	0.0	581.2	X
HB13-10	Outside RD Units	9/10/2013	581.3	0.0	581.3	X
HB13-11A	FC-4	9/11/2013	575.6	4.1	571.5	X
HB13-12B	Outside RD Units	9/10/2013	596.2	0.5	595.7	X
HB13-13	Outside RD Units	9/11/2013	572.6	0.1	572.5	X
HB13-16A	Outside RD Units	9/12/2013	575.1	2.2	572.9	X
HB13-18	Outside RD Units	9/12/2013	577.8	0.8	576.9	X
HB13-22	FC-7	9/12/2013	576.7	2.0	574.7	X
HB13-23	Outside RD Units	9/12/2013	573.8	2.3	571.5	X
HB13-30	Outside RD Units	9/10/2013	577.1	5.0	572.1	X
HB13-31	FC-16	9/13/2013	573.8	2.3	571.6	X
HB13-32	FC-14	9/13/2013	573.4	2.2	571.2	X
HB13-34A	Outside RD Units	9/13/2013	567.9	0.0	567.9	X
HB13-35A	Outside RD Units	9/13/2013	569.8	0.3	569.5	X
HB13-36	HS-3	9/10/2013	573.6	0.0	573.6	X
HB13-39	HS-2	9/13/2013	585.4	2.3	583.1	X
HB13-42	CS-3	9/11/2013	586.7	2.8	583.9	X
HB13-44	HS-3	9/13/2013	570.2	0.0	570.2	X
HB13-46	Outside RD Units	9/11/2013	581.4	0.0	581.4	X
HB13-47A	FS-1	9/10/2013	590.8	2.6	588.2	X
HB10-1-11	Outside RD Units	10/16/2010	585.9	1.8	584.2	X
HB10-1-27	Outside RD Units	10/18/2010	574.8	0.0	574.8	X
HB10-1-29	CS-1	10/17/2010	592.7	7.0	585.7	X
HB10-1-31	OC-11	10/18/2010	576.3	3.0	573.3	X
HB10-2-34	FC-7	10/18/2010	573.7	0.5	573.2	X
HB10-2-38	OC-6	10/18/2010	583.3	3.2	580.1	X
HB14-02	FC-15	2014	572.24	14.0	558.2	X
HB14-04	Outside RD Units	2014	573.53	2.5	571.0	X
HB14-06	Outside RD Units	2014	571.53	2.0	569.5	X
HB14-07	Outside RD Units	2014	584.9	4.0	580.9	X
HB14-08	Outside RD Units	2014	583.75	2.0	581.8	X
HB14-12	Outside RD Units	2014	574.1	2.7	571.4	X
HB14-13	Outside RD Units	2014	572.5	0.3	572.3	X
HB15-01 <sup>6</sup>	HS-1	2015	590.79	4.8	586.0	X
HB15-04 <sup>6</sup>	HS-1	2015	583.49	4.9	578.6	X
HB15-09 <sup>6</sup>	CS-3	2015	587.45	1.4	586.1	X
HB15-10	Outside RD Units	2015	599.92	1.0	598.9	X
HB15-16	FP-1	2015	590.33	1.0	589.3	X
HB15-20	OC-3	2015	581.98	2.0	580.0	X
HB15-23	FS-1	2015	590.84	3.9	586.9	X
HB15-24	Outside RD Units	2015	ND	0.0	ND	X
HB15-25 <sup>6</sup>	OC-1	2015	586.49	6.5	580.0	X
HB15-26 <sup>6</sup>	FC-2	2015	574	2.7	571.3	X
HB15-30	FC-7	2015	582.54	3.1	579.5	X
HB15-33	Outside RD Units	2015	581.35	1.8	579.5	X
HB15-35 <sup>6</sup>	FC-16	2015	572.7	5.8	566.9	X
HB15-37	OC-9	2015	583.28	4.0	579.3	X
HB15-38	OC-9	2015	595.88	7.4	588.5	X

**Notes:**

X = core encountered dense native clay

1. Table only shows sediment cores that encountered native clay.
2. Elevations are provided in International Great Lakes Datum (IGLD) 1985.
3. For 2013 samples, data for staff gage located at the site are used (staff gage reading of 10.10 is equivalent to an elevation of 603.48 feet [IGLD 85]). For 2010 samples, data for NOAA staff gage at Duluth, MN are used.
4. Sediment surface elevation based on best estimate between staff gage readings/water depth in the following descending order of priority:
  - (a) Difference between measured surface water elevation and water depth.
  - (b) Elevations estimated based on bathymetric contours developed by Arcadis based on survey conducted by U.S. Army Corps of Engineers in the year of core collection.
5. Source for 2014-2015 data: 2014 Wisconsin Department of Natural Resources (WDNR) Field Report and 2015 Final Core Logs provided by WDNR.
6. Some clay present; presence of native clay not confirmed.

Table 4: Remedial Design Units and Estimated Quantities  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

RD Unit ID	Dredge Unit Location	95% Plans and Specifications				95% DDR/65% Plans and Specifications				65% DDR Plan						
		Neatline Cleanup Volume (cy)	Dredge Unit Footprint (sf)	Volume Percent Change	Area Percent Change	Neatline Cleanup Volume (cy)	Dredge Unit Footprint (sf)	Volume Percent Change	Area Percent Change	Initial Neatline Cleanup Volume (cy)	Initial Unit Footprint (sf)	Bottom elevation defined by:			1' Minimum Dredging	Level Cut
												MVS Model Results				
										Base of Krige MEC Union Plume	Top of Clay	Lowest MEC Exceedance in Cores				
CS-1	Cummings Ave Slip	2,718	12,271	0%	0%	2,718	12,271	66%	-13%	1,641	14,156		X	X		
CS-2	Cummings Ave Slip	4,186	26,288	0%	0%	4,186	26,288	-25%	-8%	5,564	28,672			X		
CS-3	Cummings Ave Slip	1,189	16,068	0%	0%	1,189	16,068	-11%	-6%	1,332	17,025	X		X		
CS-4	Cummings Ave Slip	833	6,771	0%	0%	832	6,771	-5%	31%	873	5,182			X		
CS-5	Cummings Ave Slip	1,139	14,356	-5%	0%	1,197	14,356	-8%	12%	1,241	12,845			X		
FC-1	Federal Channel	1,203	10,479	0%	0%	1,203	10,479	-2%	0%	1,222	10,477					X
FC-2	Federal Channel	5,808	54,926	38%	1%	4,199	54,142	18%	11%	4,911	49,435					X
FC-3	Federal Channel	2,350	28,468	12%	0%	2,091	28,468	14%	18%	2,055	24,125					X
FC-4	Federal Channel	3,380	48,771	33%	1%	2,541	48,527	35%	15%	2,509	42,485					X
FC-5	Federal Channel	326	5,044	3%	0%	317	5,044	70%	-28%	191	7,049	X		X		
FC-6	Federal Channel	706	6,867	23%	0%	572	6,867	56%	95%	453	3,528			X		
FC-7	Federal Channel	No Action as determined during 10/25/16 meeting; may be reevaluated based on extent of SND dredging														
FC-8	Federal Channel	No Action as determined during 10/25/16 meeting														
FC-9	Federal Channel	63	2,529	--	--	No Action as determined during 10/25/16 meeting; partial dredging added based on June 2017 sampling data										
FC-10 (ENR)	Federal Channel	ENR (No dredging)														
FC-11 (ENR)	Federal Channel	No Action as determined during 10/25/16 meeting; may be reevaluated based on extent of SND dredging														
FC-12	Federal Channel	76	1,005	0%	-46%	76	1,861	5%	-91%	73	11,392	X				
FC-13	Federal Channel	367	4,207	0%	-35%	367	6,463	64%	-31%	223	6,096			X		
FC-14	Federal Channel	506	9,791	-2%	-2%	519	10,038	-5%	-37%	534	15,495	X	X		X	
FC-15	Federal Channel	1,266	22,873	0%	0%	1,266	22,877	-4%	0%	1,322	22,867	X	X	X		
FC-16	Federal Channel	1,783	15,532	-3%	-7%	1,836	16,636	11%	-1%	1,602	15,759	X	X	X		
FC-17	Federal Channel	128	3,655	-85%	-30%	864	5,252	22%	-42%	105	6,353	X		X		
FP-1	Outside FC	4,330	49,702	2%	0%	4,258	49,702	-6%	17%	4,604	42,628	X	X	X	X	
FP-2	Outside FC	3,816	56,080	11%	0%	3,438	56,080	-26%	-2%	5,163	57,328	X	X	X	X	
FS-1	Fraser Slip	1,421	12,498	2%	0%	1,396	12,498	-47%	-21%	2,693	15,724	X	X	X		
FS-2	Fraser Slip	2,241	16,413	17%	0%	1,909	16,413	-1%	-7%	2,254	17,592	X		X		
HS-1	Hughitt Ave Slip	8,995	52,065	9%	0%	8,229	52,066	-19%	-10%	11,159	57,589	X	X	X		
HS-2	Hughitt Ave Slip	1,921	29,765	0%	0%	1,919	29,765	-69%	-11%	6,145	33,459	X	X	X	X	
HS-3	Hughitt Ave Slip	1,213	23,761	2%	0%	1,185	23,761	-37%	-1%	1,920	23,962	X	X	X	X	
OC-1	Outside FC	2,960	17,607	26%	0%	2,349	17,607	26%	9%	2,348	16,100	X	X	X	X	
OC-2	Outside FC	2,405	25,477	-6%	0%	2,553	25,482	-32%	-9%	3,547	27,879	X	X	X	X	
OC-3	Outside FC	663	3,534	-21%	0%	837	3,534	-6%	6%	704	3,339	X		X	X	
OC-4	Outside FC	764	4,034	0%	0%	765	4,034	-25%	14%	1,023	3,547	X		X		
OC-5	Outside FC	686	10,296	-27%	5%	944	9,770	181%	-12%	245	11,659	X	X	X		
OC-6	Outside FC	832	13,238	-25%	-3%	1,106	13,692	-50%	-13%	1,659	15,148	X	X	X	X	
OC-7	Outside FC	274	4,666	-76%	-78%	1,145	20,937	-80%	-80%	1,394	23,115			X	X	
OC-8	Outside FC	241	3,831	-16%	-1%	286	3,884	-2%	-25%	246	5,120	X		X		
OC-9	Outside FC	1,582	22,748	-1%	0%	1,590	22,748	8%	12%	1,471	20,292	X		X		
OC-10 (ENR)	Outside FC	ENR (No dredging)														
OC-11	Outside FC	963	10,207	-2%	0%	978	10,207	-51%	-51%	1,983	20,832	X	X	X		
OC-12	Outside FC	314	5,344	-78%	-42%	1,400	9,261	-40%	45%	526	3,688	X		X		
OC-13 (ENR)	Outside FC	ENR (No dredging)														
OC-14	Outside FC	198	4,244	-1%	0%	199	4,244	-34%		298	7,972	X		X		
OC-15 (ENR)	Outside FC	ENR (No dredging)														
OC-16	Outside FC	714	8,481	-16%	-14%	849	9,825	-11%	13%	802	7,508	X		X	X	
OC-17	Outside FC	174	4,861	-5%	-2%	183	4,982	9%	13%	159	4,293			X	X	
<b>SUBTOTAL</b>		<b>64,732</b>	<b>668,752</b>	<b>2%</b>	<b>-3%</b>	<b>63,488</b>	<b>692,899</b>	<b>-15%</b>	<b>-6%</b>	<b>76,193</b>	<b>711,713</b>					
SND Overdepth		3,966	214,146			4,012	216,654			3,983	215,061					
ENV Overdepth		6,192	668,752			6,416	692,899			6,590	711,713					
<b>TOTAL</b>		<b>74,889</b>				<b>73,916</b>				<b>86,765</b>						

Notes:  
 CS = Cummings Avenue Slip  
 cy = cubic yards  
 DUS = Defined Uniform Slope  
 ENR = Enhanced Natural Recovery  
 EoC = Elevation of Contamination  
 FC = within Federal Channel and slopes  
 FFS = Focused Feasibility Study  
 fow = feet of water  
 FP = Frog Pond Dock  
 FS = Fraser Slip  
 FC = within Federal Channel and slopes  
 FFS = Focused Feasibility Study  
 fow = feet of water  
 FP = Frog Pond Dock  
 FS = Fraser Slip  
 HS = Hughitt Avenue Slip  
 LC = Level Cut  
 MEC = midpoint effect concentration  
 OC = outside Federal Channel and slopes  
 RD = Remedial Design  
 sf = square feet  
 SND = strategic navigation dredging  
 TBD = to be determined  
 TBT = tributyltin  
 UT = Uniform Thickness

- This table presents the 95% DDR/65% Plans & Specifications estimated quantities as well as the 65% DDR EVS results and estimated quantities for comparison.
- Estimated dredging volumes are based on bathymetry data collected by USACE in 2013, 2014, and 2015. An order of precedence was set to use the most recent survey data available in a given location.
- Cleanup volumes include dredged material volume deeper than 27 fow + 1 ft overdepth (or 573.1 feet IGLD85) within the federal channel and material outside of the federal channel to be dredged as part of the cleanup project.
- SND overdepth volume calculation assumes an average of 0.5 ft of overdepth material would remain in the navigation channel following completion of the SND removal and would therefore be included in the total cleanup volume.
- ENV overdepth volume calculation assumes an average of 0.25 ft of overdepth material would be removed from all DMUs and would therefore be included in the total cleanup volume.
- The estimated EVS model volume is the highest of the following: 1) the bottom of the MEC union plume; 2) the interpolated clay surface; or 3) the interpolated surface of lowest MEC exceedances in cores.





Fluoranthene 2390			Fluorene 2390			Naphthalene 5.52			Pyrene 1790			Thallium 3.04			1-Methylnaphthalene 17.6		
<=Criteria (2390 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (2390 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (5.52 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (1790 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (3.04 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (17.6 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria
CS-1			CS-1			CS-1			CS-1			CS-1			CS-1		
CS-2			CS-2			CS-2			CS-2			CS-2			CS-2		
CS-3			CS-3			CS-3			CS-3			CS-3			CS-3		
CS-4			CS-4			CS-4			CS-4			CS-4			CS-4		
CS-5			CS-5			CS-5			CS-5			CS-5			CS-5		
FC-1			FC-1			FC-1			FC-1			FC-1			FC-1		
FC-2			FC-2			FC-2			FC-2			FC-2					
FC-3			FC-3			FC-3			FC-3			FC-3			FC-3		
FC-4			FC-4			FC-4			FC-4			FC-4					
FC-5			FC-5			FC-5			FC-5			FC-5					
FC-6			FC-6			FC-6			FC-6			FC-6					
FC-9			OC-12	FC-9		FC-9			FC-9			FC-9					
FC-12/FC-13			FC-12/FC-13			FC-12/FC-13			FC-12/FC-13			FC-12/FC-13			FC-12/FC-13		
FC-14			FC-14			FC-14			FC-14			FC-14			FC-14		
FC-15			FC-15			FC-15			FC-15					FC-15			
FC-16			FC-16			FC-16			FC-16			FC-16			FC-16		
FC-17			FC-17			FC-17			FC-17			FC-17					
FP-1			FP-1			FP-1			FP-1			FP-1			FP-1		
FP-2			FP-2			FP-2			FP-2			FP-2			FP-2		
FS-1			FS-1			FS-1			FS-1			FS-1			FS-1		
FS-2			FS-2			FS-2			FS-2			FS-2					
HS-1			HS-1			HS-1			HS-1			HS-1			HS-1		
HS-2			HS-2			HS-2			HS-2			HS-2					
HS-3			HS-3			HS-3			HS-3			HS-3			HS-3		
OC-1			OC-1			OC-1			OC-1								
OC-2			OC-2			OC-2			OC-2			OC-2					
OC-3			OC-3			OC-3			OC-3			OC-3			OC-3		
OC-4			OC-4			OC-4			OC-4								
OC-5			OC-5			OC-5			OC-5			OC-5			OC-5		
OC-6			OC-6			OC-6			OC-6			OC-6					
OC-7			OC-7			OC-7			OC-7			OC-7			OC-7		
OC-8			OC-8			OC-8			OC-8								
OC-9			OC-9			OC-9			OC-9								
OC-11			OC-11			OC-11			OC-11			OC-11					
OC-12			OC-12			OC-12			OC-12			OC-12			OC-12		
OC-14			OC-14			OC-14			OC-14			OC-14			OC-14		
OC-16			OC-16			OC-16			OC-16					OC-16			
OC-17			OC-17			OC-17			OC-17			OC-17			OC-17		

Methylnaphthale 239			Benzo(k)fluoranthene 11.5			Indeno(1,2,3-cd)pyrene 4.47			Lead 400			Mercury 3.13			Tributyltin 73.7		
<=Criteria (239 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (11.5 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (4.47 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (400 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (3.13 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria (73.7 mg/kg)	>Criteria and <=5xCriteria	>5xCriteria
CS-1			CS-1			CS-1			CS-1			CS-1			CS-1		
CS-2			CS-2			CS-2			CS-2			CS-2			CS-2		
CS-3			CS-3			CS-3			CS-3			CS-3			CS-3		
CS-4			CS-4			CS-4			CS-4			CS-4			CS-4		
CS-5			CS-5			CS-5			CS-5			CS-5			CS-5		
FC-1			FC-1			FC-1			FC-1			FC-1			FC-1		
FC-2			FC-2			FC-2			FC-2			FC-2			FC-2		
FC-3			FC-3			FC-3			FC-3			FC-3			FC-3		
FC-4			FC-4			FC-4			FC-4			FC-4			FC-4		
FC-5			FC-5			FC-5			FC-5			FC-5			FC-5		
FC-6			FC-6			FC-6			FC-6			FC-6			FC-6		
FC-9			FC-9			FC-9			FC-9			FC-9			FC-9		
FC-12/FC-13			FC-12/FC-13			FC-12/FC-13			FC-12/FC-13			FC-12/FC-13			FC-12/FC-13		
FC-14			FC-14			FC-14			FC-14			FC-14			FC-14		
FC-15			FC-15			FC-15			FC-15			FC-15			FC-15		
FC-16			FC-16			FC-16			FC-16			FC-16			FC-16		
FC-17			FC-17			FC-17			FC-17			FC-17			FC-17		
FP-1			FP-1			FP-1			FP-1			FP-1			FP-1		
FP-2			FP-2			FP-2			FP-2			FP-2			FP-2		
FS-1			FS-1			FS-1			FS-1			FS-1			FS-1		
FS-2			FS-2			FS-2			FS-2			FS-2			FS-2		
HS-1			HS-1			HS-1			HS-1			HS-1			HS-1		
HS-2			HS-2			HS-2			HS-2			HS-2			HS-2		
HS-3			HS-3			HS-3			HS-3			HS-3			HS-3		
OC-1			OC-1			OC-1			OC-1			OC-1		HS-3	OC-1		
OC-2			OC-2			OC-2			OC-2			OC-2			OC-2		
OC-3			OC-3			OC-3			OC-3			OC-3			OC-3		
OC-4			OC-4			OC-4			OC-4			OC-4			OC-4		
OC-5			OC-5			OC-5			OC-5			OC-5			OC-5		
OC-6			OC-6			OC-6			OC-6			OC-6			OC-6		
OC-7			OC-7			OC-7			OC-7			OC-7			OC-7		
OC-8			OC-8			OC-8			OC-8			OC-8			OC-8		
OC-9			OC-9			OC-9			OC-9			OC-9			OC-9		
OC-11			OC-11			OC-11			OC-11			OC-11			OC-11		
OC-12			OC-12			OC-12			OC-12			OC-12			OC-12		
OC-14			OC-14			OC-14			OC-14			OC-14			OC-14		
OC-16			OC-16			OC-16			OC-16			OC-16			OC-16		
OC-17			OC-17			OC-17			OC-17			OC-17			OC-17		

All COCs			Volume (cy)		
<=Criteria	>Criteria and <=5xCriteria	>5xCriteria	<=Criteria	>Criteria and <=5xCriteria	>5xCriteria
		CS-1			2718
		CS-2			4186
	CS-3			1189	
	CS-4			833	
	CS-5			1139	
FC-1			1203		
FC-2			5808		
FC-3			2350		
FC-4			3380		
FC-5			326		
FC-6			706		
FC-9			63		
FC-12/FC-13			443		
FC-14			506		
FC-15			1266		
FC-16			1783		
FC-17			128		
FP-1			4330		
	FP-2			3816	
	FS-1				1421
	FS-2			2241	
HS-1			8995		
HS-2			1921		
	HS-3			1213	
OC-1			2960		
OC-2			2405		
OC-3			663		
OC-5	OC-4			764	
OC-7	OC-6		686		
OC-8			274		
OC-9			241		
OC-11			1582		
OC-12			963		
OC-14			314		
OC-16			198		
OC-17			714		
			174		
			44,379	12,028	8,325

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	NA	NA	Perylene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	NA	NA	Perylene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.35	0.35	Perylene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.17	0.17	Perylene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.11	0.11	Perylene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.26 J-	0.26	Perylene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.19	0.19	Perylene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.11 J-	0.11	Perylene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	NA	NA	Perylene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	NA	NA	Perylene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	NA	NA	Perylene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.12	0.12	Perylene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	NA	NA	Perylene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	NA	NA	Perylene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	NA	NA	Perylene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	NA	NA	Perylene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	NA	NA	Perylene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	NA	NA	Perylene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	NA	NA	Perylene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	NA	NA	Perylene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	NA	NA	Perylene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	NA	NA	Perylene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.081	0.081	Perylene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.23	0.23	Perylene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.026	0.026	Perylene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	NA	NA	Perylene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	NA	NA	Perylene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	NA	NA	Perylene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	NA	NA	Perylene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	NA	NA	Perylene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	NA	NA	Perylene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	NA	NA	Perylene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	NA	NA	Perylene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	NA	NA	Perylene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	NA	NA	Perylene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.07	0.07	Perylene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	NA	NA	Perylene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	NA	NA	Perylene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	NA	NA	Perylene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.12 U	0.12	Perylene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.48	0.48	Perylene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	NA	NA	Perylene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	NA	NA	Perylene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	NA	NA	Perylene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.11	0.11	Perylene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	NA	NA	Perylene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	NA	NA	Perylene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.24	0.24	Perylene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.066 J	0.066	Perylene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	NA	NA	Perylene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.11	0.11	Perylene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	NA	NA	Perylene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	NA	NA	Perylene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.12	0.12	Perylene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	NA	NA	Perylene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	NA	NA	Perylene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	NA	NA	Perylene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.14	0.14	Perylene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	NA	NA	Perylene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	NA	NA	Perylene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	NA	NA	Perylene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0056	0.0056	Perylene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	NA	NA	Perylene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.12	0.12	Perylene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	Perylene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.2	0.2	Perylene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.086	0.086	Perylene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.28	0.28	Perylene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.036 J	0.036	Perylene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.10 J	0.1	Perylene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	NA	NA	Perylene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	NA	NA	Perylene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	NA	NA	Perylene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.064 J	0.064	Perylene	CS-4	0	6	36.0047496			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.13	0.13	Perylene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.23 U	0.23	Perylene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	NA	NA	Perylene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	NA	NA	Perylene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	NA	NA	Perylene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	NA	NA	Perylene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	NA	NA	Perylene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	NA	NA	Perylene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.11	0.11	Perylene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.3	0.3	Perylene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	1.8 U	1.8	Perylene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.55	0.55	Perylene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.66	0.66	Perylene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	NA	NA	Perylene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	NA	NA	Perylene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.014	0.014	Perylene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	NA	NA	Perylene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	NA	NA	Perylene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.028	0.028	Perylene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	NA	NA	Perylene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	NA	NA	Perylene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.035	0.035	Perylene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	NA	NA	Perylene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	NA	NA	Perylene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	NA	NA	Perylene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 U	0.21	Perylene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	NA	NA	Perylene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	NA	NA	Perylene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	NA	NA	Perylene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	NA	NA	Perylene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.039 J	0.039	Perylene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	NA	NA	Perylene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	NA	NA	Perylene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.15 U	0.15	Perylene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	NA	NA	Perylene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	NA	NA	Perylene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	NA	NA	Perylene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.39	0.39	Perylene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	NA	NA	Perylene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	NA	NA	Perylene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.075	0.075	Perylene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Perylene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	NA	NA	Perylene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.012	0.012	Perylene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	NA	NA	Perylene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	NA	NA	Perylene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	NA	NA	Perylene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	NA	NA	Perylene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	NA	NA	Perylene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Perylene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	NA	NA	Perylene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Perylene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Perylene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Perylene		18	24	29.9960004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
 Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Perylene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Perylene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Perylene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Perylene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	NA	NA	Perylene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	NA	NA	Perylene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Perylene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Perylene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Perylene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Perylene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Perylene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Perylene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Perylene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	NA	NA	Perylene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	NA	NA	Perylene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Perylene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Perylene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Perylene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Perylene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Perylene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Perylene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Perylene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Perylene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Perylene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Perylene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Perylene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	NA	NA	Perylene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	NA	NA	Perylene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	NA	NA	Perylene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	NA	NA	Perylene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Perylene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	NA	NA	Perylene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Perylene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	NA	NA	Perylene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Perylene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Perylene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Perylene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Perylene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	NA	NA	Perylene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Perylene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Perylene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Perylene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Perylene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Perylene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	NA	NA	Perylene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Perylene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Perylene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	NA	NA	Perylene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Perylene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Perylene		0	6	26.0000004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Perylene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Perylene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Perylene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Perylene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	NA	NA	Perylene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	NA	NA	Perylene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	NA	NA	Perylene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Perylene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Perylene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Perylene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Perylene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Perylene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Perylene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Perylene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	NA	NA	Perylene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Perylene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Perylene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	NA	NA	Perylene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Perylene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Perylene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	NA	NA	Perylene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Perylene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Perylene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	NA	NA	Perylene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Perylene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Perylene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Perylene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Perylene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Perylene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Perylene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Perylene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Perylene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Perylene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Perylene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Perylene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	NA	NA	Perylene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Perylene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	NA	NA	Perylene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Perylene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Perylene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	NA	NA	Perylene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Perylene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	NA	NA	Perylene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	NA	NA	Perylene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	NA	NA	Perylene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Perylene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	NA	NA	Perylene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Perylene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Perylene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Perylene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Perylene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Perylene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	NA	NA	Perylene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Perylene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Perylene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Perylene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	NA	NA	Perylene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Perylene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Perylene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Perylene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Perylene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Perylene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Perylene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Perylene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Perylene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Perylene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Perylene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Perylene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Perylene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Perylene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Perylene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Perylene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Perylene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Perylene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	NA	NA	Perylene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.48	0.48	Perylene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.21	0.21	Perylene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.13	0.13	Perylene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	NA	NA	Perylene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	2.9	2.9	Perylene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Perylene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.16	0.16	Perylene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.38	0.38	Perylene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	0.93	0.93	Perylene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	NA	NA	Perylene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	NA	NA	Perylene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Perylene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	NA	NA	Perylene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	NA	NA	Perylene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	NA	NA	Perylene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Perylene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Perylene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Perylene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Perylene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Perylene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Perylene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Perylene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Perylene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Perylene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Perylene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Perylene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Perylene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Perylene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Perylene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Perylene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Perylene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Perylene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Perylene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Perylene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Perylene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Perylene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Perylene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Perylene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Perylene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Perylene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Perylene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Perylene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Perylene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Perylene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Perylene	OC-16	0	12	12.003804			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Perylene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Perylene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Perylene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Perylene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Perylene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	NA	NA	Perylene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	NA	NA	Perylene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	NA	NA	Perylene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	NA	NA	Perylene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	NA	NA	Perylene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Perylene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Perylene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Perylene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Perylene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Perylene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Perylene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Perylene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Perylene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Perylene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	NA	NA	Perylene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	NA	NA	Perylene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Perylene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	NA	NA	Perylene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Perylene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Perylene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	NA	NA	Perylene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Perylene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Perylene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	NA	NA	Perylene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Perylene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Perylene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	NA	NA	Perylene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Perylene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Perylene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Perylene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	72	84	90.9955116			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	NA	NA	Perylene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Perylene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Perylene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Perylene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Perylene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Perylene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Perylene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Perylene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Perylene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Perylene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Perylene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Perylene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Perylene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Perylene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Perylene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Perylene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Perylene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Perylene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Perylene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Perylene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Perylene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Perylene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Perylene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Perylene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Perylene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Perylene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Perylene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Perylene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Perylene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Perylene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Perylene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	NA	NA	Perylene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Perylene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Perylene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Perylene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Perylene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Perylene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Perylene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Perylene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Perylene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Perylene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Perylene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Perylene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Perylene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Perylene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Perylene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Perylene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Perylene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Perylene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Perylene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Perylene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Perylene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Perylene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Perylene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Perylene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Perylene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Perylene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Perylene		0	12	43.776			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?	
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft				
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Perylene		12	24	43.776			Yes	Include	
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Perylene		24	36	43.776			Yes	Include	
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Perylene		36	50	43.776			Yes	Include	
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Perylene		0	12					Exclude	
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Perylene		12	20					Exclude	
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Perylene	SND-4	0	12	11.995236			Yes	Include	
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Perylene	SND-4	12	26	11.995236			No	Exclude	
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Perylene		0	12	26.292			Yes	Include	
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Perylene		12	24	26.292			Yes	Include	
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Perylene		24	39	26.292			Yes	Include	
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Perylene	FC-11	0	12		35.52	exclude		Exclude	
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Perylene	FC-11	12	24		35.52	exclude		Exclude	
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Perylene	FC-11	24	32		35.52	exclude		Exclude	
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Perylene	FC-16	0	12	74.28			include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Perylene	FC-16	12	24	74.28			include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Perylene	FC-16	24	36	74.28			include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Perylene	FC-16	36	48	74.28			include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Perylene	FC-16	48	60	74.28			include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Perylene	FC-16	60	72	74.28			include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Perylene		15	36					Exclude	
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Perylene	OC-9	0	12	51.048			Yes	Include	
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Perylene	OC-9	12	24	51.048			Yes	Include	
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Perylene	OC-9	24	36	51.048			Yes	Include	
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Perylene	OC-9	36	48	51.048			Yes	Include	
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Perylene	OC-9	48	60	51.048			Yes	Include	
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Perylene	OC-9	60	74	51.048			No	Exclude	
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Perylene	OC-9	0	12	83.184			Yes	Include	
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Perylene	OC-9	12	24	83.184			Yes	Include	
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Perylene	OC-9	24	36	83.184			Yes	Include	
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Perylene	OC-9	36	48	83.184			Yes	Include	
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Perylene	OC-9	48	60	83.184			Yes	Include	
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Perylene	OC-9	60	72	83.184			Yes	Include	
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Perylene	OC-9	72	84	83.184			Yes	Include	
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Perylene	OC-9	84	96	83.184			No	Exclude	
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Perylene		0	6					Exclude	
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Perylene	OC-13	0	6	6.003036			Yes	Include	
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	6	48.00432			Yes	Include	
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	6	24	48.00432			Yes	Include	
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	24	48	48.00432			Yes	Include	
HB2A_6	0 - 5	5/2/2007	Area 1	NA	NA	1-Methylnaphthalene		0	5					Exclude	
HB2A_7	0 - 5	5/10/2007	Area 1	NA	NA	1-Methylnaphthalene	SND-1	0	5					Exclude	
HB2A_8	0 - 5	5/10/2007	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude	
HB2A_11	0 - 5	5/10/2007	Area 1	NA	NA	1-Methylnaphthalene		0	5					Exclude	
HB2A_13	0 - 5	5/2/2007	Area 1	NA	NA	1-Methylnaphthalene		0	5					Exclude	
HB2A_16	0 - 5	5/2/2007	Area 1	NA	NA	1-Methylnaphthalene		0	5					Exclude	
HB2A_210	0 - 6	5/16/2007	Area 1	NA	NA	1-Methylnaphthalene		0	6					Exclude	
HB2A_210	6 - 24	5/16/2007	Area 1	NA	NA	1-Methylnaphthalene		6	24					Exclude	
HB2A_210	24 - 48	5/16/2007	Area 1	NA	NA	1-Methylnaphthalene		24	48					Exclude	
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	NA	NA	1-Methylnaphthalene		0	5					Exclude	
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	0	6	24.005676			Yes	Include	
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	6	24	24.005676			Yes	Include	
HB2B_18	0 - 6	5/7/2007	Area 2	NA	NA	1-Methylnaphthalene	FP-1	0	6	47.997552			Yes	Include	
HB2B_18	6 - 24	5/7/2007	Area 2	NA	NA	1-Methylnaphthalene	FP-1	6	24	47.997552			Yes	Include	
HB2B_18	24 - 48	5/7/2007	Area 2	NA	NA	1-Methylnaphthalene	FP-1	24	48	47.997552			Yes	Include	
HB2B_19	0 - 6	5/2/2007	Area 2	NA	NA	1-Methylnaphthalene	OC-1	0	6	6.001728			Yes	Include	
HB2B_19	6 - 24	5/2/2007	Area 2	NA	NA	1-Methylnaphthalene	OC-1	6	24	6.001728			Yes	Include	
HB2B_20	0 - 6	5/2/2007	Area 2	NA	NA	1-Methylnaphthalene	OC-9	0	6	23.997336			Yes	Include	
HB2B_20	6 - 24	5/2/2007	Area 2	NA	NA	1-Methylnaphthalene	OC-9	6	24	23.997336			Yes	Include	
HB2B_20	24 - 48	5/2/2007	Area 2	NA	NA	1-Methylnaphthalene	OC-9	24	48	23.997336			No	Exclude	
HB2B_21	0 - 5	5/2/2007	Area 2	NA	NA	1-Methylnaphthalene		0	5					Exclude	
HB2B_22	0 - 5	5/2/2007	Area 2	NA	NA	1-Methylnaphthalene	OC-5	0	5	5.0028204			Yes	Include	
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	NA	NA	1-Methylnaphthalene		0	5					Exclude	
HB10-1-01	0 - 6	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene		0	6					Exclude	
HB10-1-01	0 - 12	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene		0	12					Exclude	
HB10-1-01	36 - 40	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene		36	40					Exclude	
HB10-1-02	0 - 6	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene		0	6	23.0027508			Yes	Include	
HB10-1-02	12 - 23	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene		12	23	23.0027508			Yes	Include	
HB10-1-03	0 - 6	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude	
HB10-1-03	0 - 12	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude	
HB10-1-03	12 - 36	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude	
HB10-1-03	36 - 60	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-17	36	60	59.99475	49.872	include	Yes	Include	
HB10-1-03	60 - 84	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-17	60	84	59.99475	49.872	include	No	Exclude	
HB10-1-04	0 - 6	10/17/2010	Area 1	0.0062	0.0062	1-Methylnaphthalene		0	6					Exclude	
HB10-1-04	0 - 12	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		0	12					Exclude	
HB10-1-04	12 - 36	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		12	36					Exclude	

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB10-1-04	36 - 50	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.0093	0.0093	1-Methylnaphthalene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.35	0.35	1-Methylnaphthalene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.02	0.02	1-Methylnaphthalene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.063 U	0.063	1-Methylnaphthalene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.013	0.013	1-Methylnaphthalene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	NA	NA	1-Methylnaphthalene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.017	0.017	1-Methylnaphthalene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.032	0.032	1-Methylnaphthalene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.015	0.015	1-Methylnaphthalene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	1-Methylnaphthalene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	NA	NA	1-Methylnaphthalene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.0082	0.0082	1-Methylnaphthalene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	1-Methylnaphthalene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.036	0.036	1-Methylnaphthalene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.021	0.021	1-Methylnaphthalene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.047 U	0.047	1-Methylnaphthalene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.0044 J	0.0044	1-Methylnaphthalene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	R	R	1-Methylnaphthalene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	NA	NA	1-Methylnaphthalene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.016	0.016	1-Methylnaphthalene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.051	0.051	1-Methylnaphthalene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.053	0.053	1-Methylnaphthalene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	NA	NA	1-Methylnaphthalene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.072 U	0.072	1-Methylnaphthalene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.072 U	0.072	1-Methylnaphthalene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	0.42	0.42	1-Methylnaphthalene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.16	0.16	1-Methylnaphthalene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.24	0.24	1-Methylnaphthalene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	NA	NA	1-Methylnaphthalene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.007	0.007	1-Methylnaphthalene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	NA	NA	1-Methylnaphthalene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.007	0.007	1-Methylnaphthalene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0058	0.0058	1-Methylnaphthalene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.019	0.019	1-Methylnaphthalene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	OC-6	36	38	38.0013			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-2-39	0 - 6	10/18/2010	Area 2	0.0062 J	0.0062	1-Methylnaphthalene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.024	0.024	1-Methylnaphthalene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.17	0.17	1-Methylnaphthalene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.027	0.027	1-Methylnaphthalene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0063	0.0063	1-Methylnaphthalene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	NA	NA	1-Methylnaphthalene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	36	42	48			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	SND-5	18	24	27			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	1-Methylnaphthalene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	NA	NA	1-Methylnaphthalene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	1-Methylnaphthalene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	1-Methylnaphthalene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	1-Methylnaphthalene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	1-Methylnaphthalene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	1-Methylnaphthalene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.2	0.2	1-Methylnaphthalene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.047	0.047	1-Methylnaphthalene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.027	0.027	1-Methylnaphthalene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	0.23	0.23	1-Methylnaphthalene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.092	0.092	1-Methylnaphthalene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.22	0.22	1-Methylnaphthalene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	0.25	0.25	1-Methylnaphthalene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	NA	NA	1-Methylnaphthalene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	6	24	45.9999996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	NA	NA	1-Methylnaphthalene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	1-Methylnaphthalene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	1-Methylnaphthalene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	1-Methylnaphthalene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	1-Methylnaphthalene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	NA	NA	1-Methylnaphthalene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	NA	NA	1-Methylnaphthalene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	NA	NA	1-Methylnaphthalene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	NA	NA	1-Methylnaphthalene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	NA	NA	1-Methylnaphthalene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	1-Methylnaphthalene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	1-Methylnaphthalene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	1-Methylnaphthalene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	1-Methylnaphthalene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	1-Methylnaphthalene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	48	57	51.096			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	1-Methylnaphthalene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene	FP-2	12	24	23.999508			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	1-Methylnaphthalene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	1-Methylnaphthalene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	1-Methylnaphthalene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	1-Methylnaphthalene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	1-Methylnaphthalene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	1-Methylnaphthalene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	1-Methylnaphthalene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	24	48	48.00432			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB2A_6	0 - 5	5/2/2007	Area 1	NA	NA	2-Methylnaphthalene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	NA	NA	2-Methylnaphthalene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	NA	NA	2-Methylnaphthalene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	NA	NA	2-Methylnaphthalene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	NA	NA	2-Methylnaphthalene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	NA	NA	2-Methylnaphthalene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	NA	NA	2-Methylnaphthalene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	NA	NA	2-Methylnaphthalene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	NA	NA	2-Methylnaphthalene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	NA	NA	2-Methylnaphthalene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	NA	NA	2-Methylnaphthalene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	NA	NA	2-Methylnaphthalene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	NA	NA	2-Methylnaphthalene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	NA	NA	2-Methylnaphthalene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	NA	NA	2-Methylnaphthalene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	NA	NA	2-Methylnaphthalene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	NA	NA	2-Methylnaphthalene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	NA	NA	2-Methylnaphthalene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	NA	NA	2-Methylnaphthalene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	NA	NA	2-Methylnaphthalene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	NA	NA	2-Methylnaphthalene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.028	0.028	2-Methylnaphthalene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	2-Methylnaphthalene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	2-Methylnaphthalene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.014 J	0.014	2-Methylnaphthalene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.010 J	0.01	2-Methylnaphthalene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.028	0.028	2-Methylnaphthalene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.012	0.012	2-Methylnaphthalene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.012	0.012	2-Methylnaphthalene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.038	0.038	2-Methylnaphthalene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.038	0.038	2-Methylnaphthalene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.0082	0.0082	2-Methylnaphthalene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.034	0.034	2-Methylnaphthalene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.027	0.027	2-Methylnaphthalene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.024	0.024	2-Methylnaphthalene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.013	0.013	2-Methylnaphthalene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.44	0.44	2-Methylnaphthalene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.045	0.045	2-Methylnaphthalene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.023	0.023	2-Methylnaphthalene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	2-Methylnaphthalene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.027	0.027	2-Methylnaphthalene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.026	0.026	2-Methylnaphthalene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.084	0.084	2-Methylnaphthalene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.063 U	0.063	2-Methylnaphthalene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.018	0.018	2-Methylnaphthalene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.030 J	0.03	2-Methylnaphthalene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.024	0.024	2-Methylnaphthalene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.065	0.065	2-Methylnaphthalene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.016	0.016	2-Methylnaphthalene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.05	0.05	2-Methylnaphthalene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.048	0.048	2-Methylnaphthalene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.024	0.024	2-Methylnaphthalene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.048	0.048	2-Methylnaphthalene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.019	0.019	2-Methylnaphthalene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.027	0.027	2-Methylnaphthalene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.043	0.043	2-Methylnaphthalene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.054	0.054	2-Methylnaphthalene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	2-Methylnaphthalene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.033	0.033	2-Methylnaphthalene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.012	0.012	2-Methylnaphthalene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	2-Methylnaphthalene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.049	0.049	2-Methylnaphthalene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.028	0.028	2-Methylnaphthalene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.049	0.049	2-Methylnaphthalene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.0063 J	0.0063	2-Methylnaphthalene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.023 J	0.023	2-Methylnaphthalene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.019	0.019	2-Methylnaphthalene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.049	0.049	2-Methylnaphthalene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.092	0.092	2-Methylnaphthalene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.022	0.022	2-Methylnaphthalene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.086	0.086	2-Methylnaphthalene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.088	0.088	2-Methylnaphthalene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.023	0.023	2-Methylnaphthalene		0	6	6.0057			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-27	0 - 6	10/18/2010	Area 1	0.0089 U	0.0089	2-Methylnaphthalene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.039	0.039	2-Methylnaphthalene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.04	0.04	2-Methylnaphthalene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.042	0.042	2-Methylnaphthalene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.057	0.057	2-Methylnaphthalene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.097	0.097	2-Methylnaphthalene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.018	0.018	2-Methylnaphthalene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.072 U	0.072	2-Methylnaphthalene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.075	0.075	2-Methylnaphthalene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	0.5	0.5	2-Methylnaphthalene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.17	0.17	2-Methylnaphthalene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.26	0.26	2-Methylnaphthalene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.054	0.054	2-Methylnaphthalene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.11	0.11	2-Methylnaphthalene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.065	0.065	2-Methylnaphthalene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.028	0.028	2-Methylnaphthalene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.053	0.053	2-Methylnaphthalene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.057	0.057	2-Methylnaphthalene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.082	0.082	2-Methylnaphthalene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.035	0.035	2-Methylnaphthalene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.051	0.051	2-Methylnaphthalene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.0095	0.0095	2-Methylnaphthalene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.024 J	0.024	2-Methylnaphthalene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.0079 UJ	0.0079	2-Methylnaphthalene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.01	0.01	2-Methylnaphthalene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.031	0.031	2-Methylnaphthalene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.043	0.043	2-Methylnaphthalene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0092	0.0092	2-Methylnaphthalene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.021	0.021	2-Methylnaphthalene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.053	0.053	2-Methylnaphthalene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.056	0.056	2-Methylnaphthalene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.021	0.021	2-Methylnaphthalene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.0093	0.0093	2-Methylnaphthalene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.0076 U	0.0076	2-Methylnaphthalene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.034	0.034	2-Methylnaphthalene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.16	0.16	2-Methylnaphthalene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.0073 J	0.0073	2-Methylnaphthalene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.011	0.011	2-Methylnaphthalene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.0088 U	0.0088	2-Methylnaphthalene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.033	0.033	2-Methylnaphthalene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.015	0.015	2-Methylnaphthalene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	2-Methylnaphthalene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	2-Methylnaphthalene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.19	0.19	2-Methylnaphthalene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.01	0.01	2-Methylnaphthalene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.0080 U	0.008	2-Methylnaphthalene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.035	0.035	2-Methylnaphthalene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	2-Methylnaphthalene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.071	0.071	2-Methylnaphthalene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.008	0.008	2-Methylnaphthalene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.11	0.11	2-Methylnaphthalene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.074	0.074	2-Methylnaphthalene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.089	0.089	2-Methylnaphthalene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.029	0.029	2-Methylnaphthalene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.1	0.1	2-Methylnaphthalene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	2-Methylnaphthalene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene		36	42	29.9960004			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.61	0.61	2-Methylnaphthalene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.29	0.29	2-Methylnaphthalene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.96	0.96	2-Methylnaphthalene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.12	0.12	2-Methylnaphthalene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.15	0.15	2-Methylnaphthalene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.3	0.3	2-Methylnaphthalene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.38	0.38	2-Methylnaphthalene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.21	0.21	2-Methylnaphthalene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.17	0.17	2-Methylnaphthalene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.23	0.23	2-Methylnaphthalene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.1	0.1	2-Methylnaphthalene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	2-Methylnaphthalene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.023	0.023	2-Methylnaphthalene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.033	0.033	2-Methylnaphthalene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		18	24	26.0000004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.18	0.18	2-Methylnaphthalene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.039	0.039	2-Methylnaphthalene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	2-Methylnaphthalene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.021	0.021	2-Methylnaphthalene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.036	0.036	2-Methylnaphthalene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.031	0.031	2-Methylnaphthalene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.013	0.013	2-Methylnaphthalene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	2-Methylnaphthalene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.22	0.22	2-Methylnaphthalene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.044	0.044	2-Methylnaphthalene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.017	0.017	2-Methylnaphthalene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.013 U	0.013	2-Methylnaphthalene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.045	0.045	2-Methylnaphthalene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.053	0.053	2-Methylnaphthalene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	2-Methylnaphthalene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.027	0.027	2-Methylnaphthalene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.027	0.027	2-Methylnaphthalene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	2-Methylnaphthalene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	2-Methylnaphthalene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	2-Methylnaphthalene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	2-Methylnaphthalene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	2-Methylnaphthalene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.51	0.51	2-Methylnaphthalene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.033	0.033	2-Methylnaphthalene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.26	0.26	2-Methylnaphthalene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.031	0.031	2-Methylnaphthalene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	2-Methylnaphthalene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.25	0.25	2-Methylnaphthalene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.19	0.19	2-Methylnaphthalene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.59	0.59	2-Methylnaphthalene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.087	0.087	2-Methylnaphthalene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.076	0.076	2-Methylnaphthalene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	2-Methylnaphthalene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	0.32	0.32	2-Methylnaphthalene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.19	0.19	2-Methylnaphthalene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.53	0.53	2-Methylnaphthalene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	0.69	0.69	2-Methylnaphthalene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.51	0.51	2-Methylnaphthalene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	0.6	0.6	2-Methylnaphthalene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	0.99	0.99	2-Methylnaphthalene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.89	0.89	2-Methylnaphthalene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	0.51	0.51	2-Methylnaphthalene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.43	0.43	2-Methylnaphthalene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.34	0.34	2-Methylnaphthalene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.73	0.73	2-Methylnaphthalene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	2-Methylnaphthalene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	2-Methylnaphthalene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	2-Methylnaphthalene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	2-Methylnaphthalene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	OC-16	36	48	12.003804			No	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.077	0.077	2-Methylnaphthalene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.13	0.13	2-Methylnaphthalene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.28	0.28	2-Methylnaphthalene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.74	0.74	2-Methylnaphthalene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.33	0.33	2-Methylnaphthalene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	2-Methylnaphthalene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	2-Methylnaphthalene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	2-Methylnaphthalene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	2-Methylnaphthalene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.17	0.17	2-Methylnaphthalene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	0.55	0.55	2-Methylnaphthalene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.74	0.74	2-Methylnaphthalene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.7	0.7	2-Methylnaphthalene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.27	0.27	2-Methylnaphthalene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.38	0.38	2-Methylnaphthalene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	2-Methylnaphthalene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	1	1	2-Methylnaphthalene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	0.93	0.93	2-Methylnaphthalene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	1	1	2-Methylnaphthalene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	1.2	1.2	2-Methylnaphthalene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	0.91	0.91	2-Methylnaphthalene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	1	1	2-Methylnaphthalene	CS-2	12	24	65.997804			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	0.95	0.95	2-Methylnaphthalene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	2-Methylnaphthalene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	2-Methylnaphthalene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	2-Methylnaphthalene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.2	0.2	2-Methylnaphthalene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	2-Methylnaphthalene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene		36	50	43.776			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?	
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft				
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene		0	12					Exclude	
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene		12	20					Exclude	
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	SND-4	0	12	11.995236			Yes	Include	
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	SND-4	12	26	11.995236			No	Exclude	
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene		0	12	26.292			Yes	Include	
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene		12	24	26.292			Yes	Include	
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene		24	39	26.292			Yes	Include	
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-11	0	12		35.52	exclude		Exclude	
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-11	12	24		35.52	exclude		Exclude	
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-11	24	32		35.52	exclude		Exclude	
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-16	0	12	74.28			include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-16	12	24	74.28			include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-16	24	36	74.28			include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-16	36	48	74.28			include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-16	48	60	74.28			include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	FC-16	60	72	74.28			include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	2-Methylnaphthalene		15	36					Exclude	
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	0	12	51.048			Yes	Include	
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	12	24	51.048			Yes	Include	
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	24	36	51.048			Yes	Include	
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	36	48	51.048			Yes	Include	
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	48	60	51.048			Yes	Include	
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	60	74	51.048			No	Exclude	
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	0	12	83.184			Yes	Include	
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	12	24	83.184			Yes	Include	
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	24	36	83.184			Yes	Include	
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	36	48	83.184			Yes	Include	
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	48	60	83.184			Yes	Include	
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	60	72	83.184			Yes	Include	
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	72	84	83.184			Yes	Include	
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	2-Methylnaphthalene	OC-9	84	96	83.184			No	Exclude	
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	2-Methylnaphthalene		0	6					Exclude	
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	2-Methylnaphthalene	OC-13	0	6	6.003036			Yes	Include	
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.024	0.024	Acenaphthene	HS-1	0	6	48.00432			Yes	Include	
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.11 J-	0.11	Acenaphthene	HS-1	6	24	48.00432			Yes	Include	
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.02	0.02	Acenaphthene	HS-1	24	48	48.00432			Yes	Include	
HB2A_6	0 - 5	5/2/2007	Area 1	0.04	0.04	Acenaphthene		0	5					Exclude	
HB2A_7	0 - 5	5/10/2007	Area 1	0.038	0.038	Acenaphthene	SND-1	0	5					Exclude	
HB2A_8	0 - 5	5/10/2007	Area 1	0.024	0.024	Acenaphthene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude	
HB2A_11	0 - 5	5/10/2007	Area 1	0.041 J-	0.041	Acenaphthene		0	5					Exclude	
HB2A_13	0 - 5	5/2/2007	Area 1	0.03	0.03	Acenaphthene		0	5					Exclude	
HB2A_16	0 - 5	5/2/2007	Area 1	0.010 J-	0.01	Acenaphthene		0	5					Exclude	
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Acenaphthene		0	6					Exclude	
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Acenaphthene		6	24					Exclude	
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Acenaphthene		24	48					Exclude	
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.079	0.079	Acenaphthene		0	5					Exclude	
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.039	0.039	Acenaphthene	FS-2	0	6	24.005676			Yes	Include	
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.016	0.016	Acenaphthene	FS-2	6	24	24.005676			Yes	Include	
HB2B_18	0 - 6	5/7/2007	Area 2	0.027	0.027	Acenaphthene	FP-1	0	6	47.997552			Yes	Include	
HB2B_18	6 - 24	5/7/2007	Area 2	0.021	0.021	Acenaphthene	FP-1	6	24	47.997552			Yes	Include	
HB2B_18	24 - 48	5/7/2007	Area 2	0.044	0.044	Acenaphthene	FP-1	24	48	47.997552			Yes	Include	
HB2B_19	0 - 6	5/2/2007	Area 2	0.014	0.014	Acenaphthene	OC-1	0	6	6.001728			Yes	Include	
HB2B_19	6 - 24	5/2/2007	Area 2	0.0052 U	0.0052	Acenaphthene	OC-1	6	24	6.001728			Yes	Include	
HB2B_20	0 - 6	5/2/2007	Area 2	0.023	0.023	Acenaphthene	OC-9	0	6	23.997336			Yes	Include	
HB2B_20	6 - 24	5/2/2007	Area 2	0.019	0.019	Acenaphthene	OC-9	6	24	23.997336			Yes	Include	
HB2B_20	24 - 48	5/2/2007	Area 2	0.009	0.009	Acenaphthene	OC-9	24	48	23.997336			No	Exclude	
HB2B_21	0 - 5	5/2/2007	Area 2	0.013	0.013	Acenaphthene		0	5					Exclude	
HB2B_22	0 - 5	5/2/2007	Area 2	0.024	0.024	Acenaphthene	OC-5	0	5	5.0028204			Yes	Include	
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.0065 BL	0.0065	Acenaphthene		0	5					Exclude	
HB10-1-01	0 - 6	10/16/2010	Area 1	0.017	0.017	Acenaphthene		0	6					Exclude	
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Acenaphthene		0	12					Exclude	
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Acenaphthene		36	40					Exclude	
HB10-1-02	0 - 6	10/16/2010	Area 1	0.0070 U	0.007	Acenaphthene		0	6	23.0027508			Yes	Include	
HB10-1-02	12 - 23	10/16/2010	Area 1	0.006	0.006	Acenaphthene		12	23	23.0027508			Yes	Include	
HB10-1-03	0 - 6	10/16/2010	Area 1	0.012	0.012	Acenaphthene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude	
HB10-1-03	0 - 12	10/16/2010	Area 1	0.007	0.007	Acenaphthene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude	
HB10-1-03	12 - 36	10/16/2010	Area 1	0.007	0.007	Acenaphthene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude	
HB10-1-03	36 - 60	10/16/2010	Area 1	0.024	0.024	Acenaphthene	FC-17	36	60	59.99475	49.872	include	Yes	Include	
HB10-1-03	60 - 84	10/16/2010	Area 1	0.015	0.015	Acenaphthene	FC-17	60	84	59.99475	49.872	include	No	Exclude	
HB10-1-04	0 - 6	10/17/2010	Area 1	0.011	0.011	Acenaphthene		0	6					Exclude	
HB10-1-04	0 - 12	10/17/2010	Area 1	0.029	0.029	Acenaphthene		0	12					Exclude	
HB10-1-04	12 - 36	10/17/2010	Area 1	0.034	0.034	Acenaphthene		12	36					Exclude	
HB10-1-04	36 - 50	10/17/2010	Area 1	0.011	0.011	Acenaphthene		36	50					Exclude	
HB10-1-05	0 - 6	10/16/2010	Area 1	0.024	0.024	Acenaphthene	OC-17	0	6	5.9987496			Yes	Include	
HB10-1-07	0 - 6	10/17/2010	Area 1	0.81	0.81	Acenaphthene	OC-15	0	6	6.0057			Yes	Include	

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-07	0 - 12	10/17/2010	Area 1	0.018	0.018	Acenaphthene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.011	0.011	Acenaphthene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Acenaphthene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.020 J	0.02	Acenaphthene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.014	0.014	Acenaphthene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.029	0.029	Acenaphthene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.22	0.22	Acenaphthene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.0098	0.0098	Acenaphthene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.013 J	0.013	Acenaphthene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.014	0.014	Acenaphthene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.018	0.018	Acenaphthene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.0090 U	0.009	Acenaphthene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.046	0.046	Acenaphthene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.032	0.032	Acenaphthene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.038	0.038	Acenaphthene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.05	0.05	Acenaphthene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.021	0.021	Acenaphthene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.012 J	0.012	Acenaphthene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.02	0.02	Acenaphthene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.025	0.025	Acenaphthene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	Acenaphthene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.028	0.028	Acenaphthene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.03	0.03	Acenaphthene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	Acenaphthene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.056	0.056	Acenaphthene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.016 J	0.016	Acenaphthene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.14	0.14	Acenaphthene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.0078 J	0.0078	Acenaphthene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.027 J	0.027	Acenaphthene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.008	0.008	Acenaphthene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.019	0.019	Acenaphthene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.026	0.026	Acenaphthene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.037 J	0.037	Acenaphthene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.04	0.04	Acenaphthene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.067	0.067	Acenaphthene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.011	0.011	Acenaphthene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.0089 U	0.0089	Acenaphthene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.043	0.043	Acenaphthene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.044	0.044	Acenaphthene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.068	0.068	Acenaphthene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.029	0.029	Acenaphthene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.091	0.091	Acenaphthene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.015	0.015	Acenaphthene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.081	0.081	Acenaphthene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.19	0.19	Acenaphthene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	0.85	0.85	Acenaphthene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.36	0.36	Acenaphthene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.57	0.57	Acenaphthene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.023	0.023	Acenaphthene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.13	0.13	Acenaphthene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.093	0.093	Acenaphthene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.024	0.024	Acenaphthene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.019	0.019	Acenaphthene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.024	0.024	Acenaphthene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.028	0.028	Acenaphthene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.018 J	0.018	Acenaphthene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.014	0.014	Acenaphthene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.0069	0.0069	Acenaphthene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.018	0.018	Acenaphthene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.33	0.33	Acenaphthene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.0048	0.0048	Acenaphthene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.012	0.012	Acenaphthene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.02	0.02	Acenaphthene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0056	0.0056	Acenaphthene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.0091	0.0091	Acenaphthene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.051	0.051	Acenaphthene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.023 J	0.023	Acenaphthene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 U	0.21	Acenaphthene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.0051	0.0051	Acenaphthene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.0076 U	0.0076	Acenaphthene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.023 J	0.023	Acenaphthene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.15	0.15	Acenaphthene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.0057 J	0.0057	Acenaphthene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.0067	0.0067	Acenaphthene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.0088 U	0.0088	Acenaphthene		12	28	6.0012996			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-2-40	0 - 6	10/18/2010	Area 2	0.025	0.025	Acenaphthene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.0052 U	0.0052	Acenaphthene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Acenaphthene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Acenaphthene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.48	0.48	Acenaphthene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.004	0.004	Acenaphthene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.0080 U	0.008	Acenaphthene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.029	0.029	Acenaphthene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Acenaphthene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.037	0.037	Acenaphthene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0065	0.0065	Acenaphthene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.095	0.095	Acenaphthene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.025	0.025	Acenaphthene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.051	0.051	Acenaphthene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.014	0.014	Acenaphthene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.045	0.045	Acenaphthene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Acenaphthene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Acenaphthene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.16	0.16	Acenaphthene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.057	0.057	Acenaphthene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.42	0.42	Acenaphthene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.022	0.022	Acenaphthene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Acenaphthene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Acenaphthene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Acenaphthene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Acenaphthene		6	12					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Acenaphthene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Acenaphthene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Acenaphthene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Acenaphthene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Acenaphthene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Acenaphthene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.095	0.095	Acenaphthene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.1	0.1	Acenaphthene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.14	0.14	Acenaphthene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.047	0.047	Acenaphthene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Acenaphthene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.06	0.06	Acenaphthene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.073	0.073	Acenaphthene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.023	0.023	Acenaphthene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Acenaphthene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Acenaphthene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Acenaphthene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.0094 U	0.0094	Acenaphthene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.0091 U	0.0091	Acenaphthene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Acenaphthene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.052 U	0.052	Acenaphthene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.013 U	0.013	Acenaphthene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Acenaphthene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Acenaphthene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Acenaphthene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Acenaphthene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Acenaphthene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Acenaphthene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Acenaphthene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.016 U	0.016	Acenaphthene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.013 U	0.013	Acenaphthene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Acenaphthene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.012 U	0.012	Acenaphthene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Acenaphthene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Acenaphthene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.011 U	0.011	Acenaphthene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Acenaphthene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Acenaphthene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Acenaphthene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Acenaphthene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Acenaphthene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Acenaphthene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Acenaphthene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Acenaphthene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.28	0.28	Acenaphthene	HS-3	0	24	6			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Acenaphthene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.015	0.015	Acenaphthene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Acenaphthene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Acenaphthene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.014 U	0.014	Acenaphthene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Acenaphthene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.013 U	0.013	Acenaphthene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.013 U	0.013	Acenaphthene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.012 U	0.012	Acenaphthene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Acenaphthene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Acenaphthene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.022	0.022	Acenaphthene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.02	0.02	Acenaphthene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Acenaphthene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Acenaphthene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Acenaphthene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Acenaphthene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Acenaphthene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Acenaphthene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Acenaphthene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.36	0.36	Acenaphthene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.033	0.033	Acenaphthene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.21	0.21	Acenaphthene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.046	0.046	Acenaphthene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Acenaphthene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.18	0.18	Acenaphthene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.072	0.072	Acenaphthene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.28	0.28	Acenaphthene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.088	0.088	Acenaphthene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.13	0.13	Acenaphthene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Acenaphthene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	1.7	1.7	Acenaphthene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Acenaphthene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.049	0.049	Acenaphthene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.24	0.24	Acenaphthene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	0.47	0.47	Acenaphthene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.5	0.5	Acenaphthene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	0.4	0.4	Acenaphthene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	0.88	0.88	Acenaphthene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.41	0.41	Acenaphthene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	0.36	0.36	Acenaphthene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthene	FS-2	42	46	45.9999996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.11	0.11	Acenaphthene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.3	0.3	Acenaphthene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.23	0.23	Acenaphthene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Acenaphthene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Acenaphthene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Acenaphthene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Acenaphthene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Acenaphthene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Acenaphthene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Acenaphthene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Acenaphthene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Acenaphthene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Acenaphthene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Acenaphthene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Acenaphthene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Acenaphthene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Acenaphthene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Acenaphthene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Acenaphthene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Acenaphthene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Acenaphthene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Acenaphthene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Acenaphthene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Acenaphthene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Acenaphthene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Acenaphthene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Acenaphthene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Acenaphthene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Acenaphthene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Acenaphthene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Acenaphthene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Acenaphthene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.023	0.023	Acenaphthene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.033	0.033	Acenaphthene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.0560 J	0.056	Acenaphthene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.16	0.16	Acenaphthene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.1	0.1	Acenaphthene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Acenaphthene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Acenaphthene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Acenaphthene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Acenaphthene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Acenaphthene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Acenaphthene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Acenaphthene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Acenaphthene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Acenaphthene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.065	0.065	Acenaphthene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	1.1	1.1	Acenaphthene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.13	0.13	Acenaphthene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.081	0.081	Acenaphthene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.0195 U	0.0195	Acenaphthene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.072	0.072	Acenaphthene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Acenaphthene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	24	36	48.000696			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	0.65	0.65	Acenaphthene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	1.9	1.9	Acenaphthene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	0.77	0.77	Acenaphthene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	0.85	0.85	Acenaphthene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	1.3	1.3	Acenaphthene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	0.84	0.84	Acenaphthene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	0.6	0.6	Acenaphthene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Acenaphthene		24	32					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Acenaphthene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.067	0.067	Acenaphthene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Acenaphthene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Acenaphthene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Acenaphthene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Acenaphthene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Acenaphthene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Acenaphthene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Acenaphthene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Acenaphthene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Acenaphthene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Acenaphthene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Acenaphthene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.015 U	0.015	Acenaphthylene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.027 UJ	0.027	Acenaphthylene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.0088	0.0088	Acenaphthylene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.26		Acenaphthylene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.03	0.03	Acenaphthylene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.023	0.023	Acenaphthylene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB2A_11	0 - 5	5/10/2007	Area 1	0.042 J-	0.042	Acenaphthylene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.027	0.027	Acenaphthylene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.011 J-	0.011	Acenaphthylene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Acenaphthylene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Acenaphthylene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Acenaphthylene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.045	0.045	Acenaphthylene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.013	0.013	Acenaphthylene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.0086	0.0086	Acenaphthylene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.018	0.018	Acenaphthylene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.011	0.011	Acenaphthylene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.01	0.01	Acenaphthylene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.0075	0.0075	Acenaphthylene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0022 J	0.0022	Acenaphthylene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.016	0.016	Acenaphthylene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.013	0.013	Acenaphthylene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.0036 J	0.0036	Acenaphthylene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.018	0.018	Acenaphthylene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.029	0.029	Acenaphthylene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.0045	0.0045	Acenaphthylene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.009	0.009	Acenaphthylene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Acenaphthylene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Acenaphthylene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.011	0.011	Acenaphthylene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.007	0.007	Acenaphthylene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.019	0.019	Acenaphthylene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.008	0.008	Acenaphthylene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.008	0.008	Acenaphthylene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.017	0.017	Acenaphthylene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.019	0.019	Acenaphthylene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.0058	0.0058	Acenaphthylene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.0091	0.0091	Acenaphthylene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.012	0.012	Acenaphthylene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.011	0.011	Acenaphthylene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.013	0.013	Acenaphthylene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.11 U	0.11	Acenaphthylene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.024	0.024	Acenaphthylene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.016	0.016	Acenaphthylene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Acenaphthylene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.020 J	0.02	Acenaphthylene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.012	0.012	Acenaphthylene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.025	0.025	Acenaphthylene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.063 U	0.063	Acenaphthylene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.0087	0.0087	Acenaphthylene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.015 J	0.015	Acenaphthylene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.015	0.015	Acenaphthylene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.024	0.024	Acenaphthylene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.01	0.01	Acenaphthylene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.029	0.029	Acenaphthylene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.025	0.025	Acenaphthylene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.016	0.016	Acenaphthylene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.024	0.024	Acenaphthylene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.013	0.013	Acenaphthylene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.0098	0.0098	Acenaphthylene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.021	0.021	Acenaphthylene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.018	0.018	Acenaphthylene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	Acenaphthylene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.024	0.024	Acenaphthylene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.011	0.011	Acenaphthylene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	Acenaphthylene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.047	0.047	Acenaphthylene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.019 J	0.019	Acenaphthylene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.12	0.12	Acenaphthylene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.0069 J	0.0069	Acenaphthylene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	R	R	Acenaphthylene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.012	0.012	Acenaphthylene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.02	0.02	Acenaphthylene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.037	0.037	Acenaphthylene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.012 J	0.012	Acenaphthylene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.032	0.032	Acenaphthylene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.037	0.037	Acenaphthylene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.0094	0.0094	Acenaphthylene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.0089 U	0.0089	Acenaphthylene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.039	0.039	Acenaphthylene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.034	0.034	Acenaphthylene	HS-1	0	12	84.0057			Yes	Include

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	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.031	0.031	Acenaphthylene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.027	0.027	Acenaphthylene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.058	0.058	Acenaphthylene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.015	0.015	Acenaphthylene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.072 U	0.072	Acenaphthylene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.072 U	0.072	Acenaphthylene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	0.19	0.19	Acenaphthylene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.11	0.11	Acenaphthylene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.13	0.13	Acenaphthylene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.031	0.031	Acenaphthylene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.094	0.094	Acenaphthylene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.049	0.049	Acenaphthylene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.025	0.025	Acenaphthylene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.025	0.025	Acenaphthylene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.028	0.028	Acenaphthylene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.03	0.03	Acenaphthylene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.029	0.029	Acenaphthylene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.02	0.02	Acenaphthylene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.0047 U	0.0047	Acenaphthylene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.006	0.006	Acenaphthylene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.017 J	0.017	Acenaphthylene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.0061	0.0061	Acenaphthylene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.028	0.028	Acenaphthylene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.018	0.018	Acenaphthylene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0051	0.0051	Acenaphthylene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.0079	0.0079	Acenaphthylene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.024	0.024	Acenaphthylene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.024	0.024	Acenaphthylene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.0082 J	0.0082	Acenaphthylene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.012	0.012	Acenaphthylene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.0076 U	0.0076	Acenaphthylene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.016 J	0.016	Acenaphthylene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.039	0.039	Acenaphthylene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.0088 J	0.0088	Acenaphthylene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.025	0.025	Acenaphthylene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.021	0.021	Acenaphthylene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.019	0.019	Acenaphthylene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.0062	0.0062	Acenaphthylene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Acenaphthylene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Acenaphthylene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.047 J	0.047	Acenaphthylene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.005	0.005	Acenaphthylene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.0080 U	0.008	Acenaphthylene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.016	0.016	Acenaphthylene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	0.039	0.039	Acenaphthylene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.02	0.02	Acenaphthylene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0039 U	0.0039	Acenaphthylene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.026	0.026	Acenaphthylene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.03	0.03	Acenaphthylene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.029	0.029	Acenaphthylene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.0099	0.0099	Acenaphthylene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.022	0.022	Acenaphthylene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Acenaphthylene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthylene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthylene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthylene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthylene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthylene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthylene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Acenaphthylene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.12 U	0.12	Acenaphthylene	FP-2	0	24	46.0040004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46 *	9/9/2013	Area 2	0.047 U	0.047	Acenaphthylene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62 *	9/9/2013	Area 2	0.21 U	0.21	Acenaphthylene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66 *	9/9/2013	Area 2	0.012	0.012	Acenaphthylene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Acenaphthylene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.049 U	0.049	Acenaphthylene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.049	0.049	Acenaphthylene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.052	0.052	Acenaphthylene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.033	0.033	Acenaphthylene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.049 U	0.049	Acenaphthylene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.061	0.061	Acenaphthylene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.014	0.014	Acenaphthylene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Acenaphthylene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.0094 U	0.0094	Acenaphthylene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.0091 U	0.0091	Acenaphthylene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	12	18	24	16.2	include	Yes	Include



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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.052 U	0.052	Acenaphthylene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.013 U	0.013	Acenaphthylene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Acenaphthylene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Acenaphthylene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Acenaphthylene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Acenaphthylene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Acenaphthylene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Acenaphthylene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Acenaphthylene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.016 U	0.016	Acenaphthylene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.013 U	0.013	Acenaphthylene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.012 U	0.012	Acenaphthylene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.011 U	0.011	Acenaphthylene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Acenaphthylene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Acenaphthylene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Acenaphthylene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Acenaphthylene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Acenaphthylene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Acenaphthylene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Acenaphthylene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.065	0.065	Acenaphthylene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Acenaphthylene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.012 U	0.012	Acenaphthylene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Acenaphthylene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Acenaphthylene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.014 U	0.014	Acenaphthylene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Acenaphthylene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.013 U	0.013	Acenaphthylene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.013 U	0.013	Acenaphthylene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.012 U	0.012	Acenaphthylene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Acenaphthylene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Acenaphthylene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.012 U	0.012	Acenaphthylene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.011 U	0.011	Acenaphthylene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Acenaphthylene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Acenaphthylene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Acenaphthylene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Acenaphthylene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Acenaphthylene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Acenaphthylene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthylene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Acenaphthylene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Acenaphthylene		0	6	0.5000004			Yes	Include

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HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.13 U	0.13	Acenaphthylene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.011 U	0.011	Acenaphthylene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.047 U	0.047	Acenaphthylene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.014 U	0.014	Acenaphthylene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Acenaphthylene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.081	0.081	Acenaphthylene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.041	0.041	Acenaphthylene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.19	0.19	Acenaphthylene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.054	0.054	Acenaphthylene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.038	0.038	Acenaphthylene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Acenaphthylene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	0.2	0.2	Acenaphthylene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.063	0.063	Acenaphthylene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.2	0.2	Acenaphthylene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	1.2	1.2	Acenaphthylene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.12 U	0.12	Acenaphthylene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	0.12	0.12	Acenaphthylene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	0.19	0.19	Acenaphthylene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.16	0.16	Acenaphthylene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	0.13 U	0.13	Acenaphthylene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.11	0.11	Acenaphthylene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.061	0.061	Acenaphthylene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.15	0.15	Acenaphthylene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Acenaphthylene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Acenaphthylene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Acenaphthylene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Acenaphthylene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthylene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Acenaphthylene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthylene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Acenaphthylene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthylene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Acenaphthylene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Acenaphthylene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Acenaphthylene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Acenaphthylene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthylene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Acenaphthylene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Acenaphthylene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Acenaphthylene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthylene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Acenaphthylene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Acenaphthylene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Acenaphthylene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Acenaphthylene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Acenaphthylene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Acenaphthylene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Acenaphthylene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Acenaphthylene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Acenaphthylene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Acenaphthylene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Acenaphthylene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Acenaphthylene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.018	0.018	Acenaphthylene		0	6	54.005544			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-10	6 - 18	8/20/2014	Area 1	0.021	0.021	Acenaphthylene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.0520 J	0.052	Acenaphthylene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.064	0.064	Acenaphthylene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.062	0.062	Acenaphthylene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Acenaphthylene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Acenaphthylene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Acenaphthylene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Acenaphthylene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Acenaphthylene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Acenaphthylene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Acenaphthylene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Acenaphthylene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Acenaphthylene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.0340 J	0.034	Acenaphthylene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	0.130 U	0.13	Acenaphthylene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.0350 U	0.035	Acenaphthylene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.0620 J	0.062	Acenaphthylene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.043	0.043	Acenaphthylene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.14	0.14	Acenaphthylene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Acenaphthylene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	0.22	0.22	Acenaphthylene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	0.36	0.36	Acenaphthylene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	0.22	0.22	Acenaphthylene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	0.25	0.25	Acenaphthylene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	0.19	0.19	Acenaphthylene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	0.18	0.18	Acenaphthylene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	0.17	0.17	Acenaphthylene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-2	48	60	65.997804			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Acenaphthylene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthylene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Acenaphthylene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Acenaphthylene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Acenaphthylene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Acenaphthylene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.015	0.015	Acenaphthylene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Acenaphthylene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Acenaphthylene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthylene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Acenaphthylene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Acenaphthylene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthylene	SND-4	0	12	11.995236			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Acenaphthylene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthylene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Acenaphthylene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Acenaphthylene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Acenaphthylene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Acenaphthylene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Acenaphthylene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Acenaphthylene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Acenaphthylene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.054 J-L-M	0.054	Anthracene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.21 J-L-M	0.21	Anthracene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.034 J-L-M	0.034	Anthracene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.32	0.32	Anthracene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.12	0.12	Anthracene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.073	0.073	Anthracene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.14 J-	0.14	Anthracene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.10 BL	0.1	Anthracene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.029 JBL	0.029	Anthracene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0046 JM-H	0.0046	Anthracene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 UJM-H	0.0083	Anthracene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJM-H	0.0061	Anthracene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.22 BL	0.22	Anthracene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.089 J-L-M	0.089	Anthracene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.041 J-L-M	0.041	Anthracene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.076 J-M-	0.076	Anthracene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.055 J-M-	0.055	Anthracene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.14 J-M-	0.14	Anthracene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.041 J-M-	0.041	Anthracene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0030 JM-	0.003	Anthracene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.054 J-M-	0.054	Anthracene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.045 J-M-	0.045	Anthracene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.014 J-M-	0.014	Anthracene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.044 BL	0.044	Anthracene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.079 BL	0.079	Anthracene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.024	0.024	Anthracene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.046	0.046	Anthracene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Anthracene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Anthracene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.035 J	0.035	Anthracene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.030 J	0.03	Anthracene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.059	0.059	Anthracene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.032	0.032	Anthracene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.029	0.029	Anthracene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.076	0.076	Anthracene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.061	0.061	Anthracene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.028	0.028	Anthracene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.088	0.088	Anthracene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.036	0.036	Anthracene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.078	0.078	Anthracene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.12	0.12	Anthracene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	2.1	2.1	Anthracene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.093	0.093	Anthracene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.054	0.054	Anthracene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Anthracene	OC-15	60	64	6.0057			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-08	0 - 6	10/17/2010	Area 1	0.071 U	0.071	Anthracene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.052	0.052	Anthracene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.085	0.085	Anthracene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.91	0.91	Anthracene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.035	0.035	Anthracene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.042 J	0.042	Anthracene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.056	0.056	Anthracene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.069	0.069	Anthracene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.041	0.041	Anthracene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.11	0.11	Anthracene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.11	0.11	Anthracene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.11	0.11	Anthracene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.15	0.15	Anthracene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.098	0.098	Anthracene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.048	0.048	Anthracene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.072	0.072	Anthracene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.094	0.094	Anthracene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	Anthracene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.089 J	0.089	Anthracene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.12	0.12	Anthracene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	Anthracene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.16 U	0.16	Anthracene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.061	0.061	Anthracene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.61	0.61	Anthracene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.027 J	0.027	Anthracene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.11 J	0.11	Anthracene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.046	0.046	Anthracene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.12	0.12	Anthracene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.11	0.11	Anthracene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.092	0.092	Anthracene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.13	0.13	Anthracene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.26	0.26	Anthracene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.047	0.047	Anthracene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.017	0.017	Anthracene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.11	0.11	Anthracene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.096	0.096	Anthracene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.19	0.19	Anthracene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.064	0.064	Anthracene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.16	0.16	Anthracene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.027	0.027	Anthracene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.24	0.24	Anthracene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.61	0.61	Anthracene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	2	2	Anthracene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	1.4 U	1.4	Anthracene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	1.9	1.9	Anthracene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.11	0.11	Anthracene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.5	0.5	Anthracene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.24	0.24	Anthracene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.084	0.084	Anthracene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.063	0.063	Anthracene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.1	0.1	Anthracene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.1	0.1	Anthracene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.076	0.076	Anthracene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.052	0.052	Anthracene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.014	0.014	Anthracene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.047	0.047	Anthracene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.059 J	0.059	Anthracene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.018	0.018	Anthracene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.052	0.052	Anthracene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.049	0.049	Anthracene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.014	0.014	Anthracene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.03	0.03	Anthracene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.12	0.12	Anthracene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.049	0.049	Anthracene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.20 J	0.2	Anthracene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.035	0.035	Anthracene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.019	0.019	Anthracene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.074	0.074	Anthracene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.43	0.43	Anthracene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.023	0.023	Anthracene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.037	0.037	Anthracene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.023	0.023	Anthracene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.14	0.14	Anthracene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.017	0.017	Anthracene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Anthracene	OC-5	12	36	48.0053004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Anthracene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	2	2	Anthracene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.017	0.017	Anthracene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.02	0.02	Anthracene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.07	0.07	Anthracene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Anthracene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.07	0.07	Anthracene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0099	0.0099	Anthracene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.21	0.21	Anthracene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.11	0.11	Anthracene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.18	0.18	Anthracene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.048	0.048	Anthracene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.21	0.21	Anthracene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Anthracene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Anthracene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Anthracene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Anthracene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Anthracene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Anthracene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Anthracene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Anthracene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Anthracene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.36	0.36	Anthracene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.13	0.13	Anthracene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Anthracene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Anthracene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Anthracene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Anthracene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Anthracene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Anthracene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.21 U	0.21	Anthracene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.039	0.039	Anthracene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Anthracene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Anthracene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Anthracene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Anthracene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Anthracene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Anthracene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Anthracene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Anthracene		24	30					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Anthracene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Anthracene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Anthracene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.13	0.13	Anthracene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.16	0.16	Anthracene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.26	0.26	Anthracene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.1	0.1	Anthracene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Anthracene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.19	0.19	Anthracene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Anthracene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.15	0.15	Anthracene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Anthracene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Anthracene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Anthracene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Anthracene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.058	0.058	Anthracene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Anthracene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Anthracene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Anthracene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Anthracene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.014	0.014	Anthracene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.022	0.022	Anthracene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Anthracene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Anthracene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Anthracene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Anthracene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Anthracene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.1	0.1	Anthracene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.024	0.024	Anthracene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Anthracene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Anthracene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Anthracene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Anthracene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Anthracene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Anthracene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Anthracene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Anthracene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.016 U	0.016	Anthracene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Anthracene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Anthracene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.022	0.022	Anthracene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Anthracene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Anthracene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.019	0.019	Anthracene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Anthracene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Anthracene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.027	0.027	Anthracene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Anthracene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Anthracene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Anthracene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Anthracene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Anthracene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Anthracene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Anthracene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Anthracene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Anthracene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Anthracene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Anthracene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.7	0.7	Anthracene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Anthracene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.032	0.032	Anthracene	OC-11	0	18	57			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Anthracene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Anthracene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.014	0.014	Anthracene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Anthracene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.015	0.015	Anthracene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.022	0.022	Anthracene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.025	0.025	Anthracene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Anthracene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Anthracene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Anthracene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Anthracene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Anthracene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Anthracene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Anthracene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.032	0.032	Anthracene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Anthracene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Anthracene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Anthracene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.055	0.055	Anthracene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Anthracene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Anthracene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Anthracene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Anthracene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Anthracene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Anthracene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Anthracene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Anthracene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Anthracene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Anthracene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Anthracene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Anthracene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Anthracene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Anthracene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Anthracene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Anthracene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Anthracene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Anthracene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Anthracene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	2.1	2.1	Anthracene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.062	0.062	Anthracene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.38	0.38	Anthracene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.085	0.085	Anthracene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Anthracene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.4	0.4	Anthracene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.15	0.15	Anthracene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.66	0.66	Anthracene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.25	0.25	Anthracene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.31	0.31	Anthracene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Anthracene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	7	7	Anthracene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Anthracene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.21	0.21	Anthracene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.59	0.59	Anthracene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	1.7	1.7	Anthracene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.96	0.96	Anthracene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	1	1	Anthracene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	1.6	1.6	Anthracene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Anthracene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Anthracene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.86	0.86	Anthracene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Anthracene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Anthracene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	2.1	2.1	Anthracene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Anthracene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.31	0.31	Anthracene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.46	0.46	Anthracene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.67	0.67	Anthracene	FS-2	24	30	30			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Anthracene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Anthracene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Anthracene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Anthracene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Anthracene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Anthracene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Anthracene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Anthracene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Anthracene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Anthracene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Anthracene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Anthracene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Anthracene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Anthracene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Anthracene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Anthracene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Anthracene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Anthracene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Anthracene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Anthracene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Anthracene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Anthracene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Anthracene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Anthracene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Anthracene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Anthracene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Anthracene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Anthracene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Anthracene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Anthracene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Anthracene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Anthracene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Anthracene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Anthracene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Anthracene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.061	0.061	Anthracene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.083	0.083	Anthracene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.15	0.15	Anthracene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.25	0.25	Anthracene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.21	0.21	Anthracene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Anthracene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Anthracene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Anthracene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Anthracene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Anthracene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Anthracene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Anthracene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Anthracene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Anthracene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.2	0.2	Anthracene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	2.5	2.5	Anthracene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.14	0.14	Anthracene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.15	0.15	Anthracene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.15	0.15	Anthracene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.37	0.37	Anthracene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Anthracene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	12	24	67.9950564			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Anthracene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	1.6	1.6	Anthracene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	3.3	3.3	Anthracene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	1.8	1.8	Anthracene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	1.9	1.9	Anthracene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	2.9	2.9	Anthracene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	1.5	1.5	Anthracene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	1.3	1.3	Anthracene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Anthracene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Anthracene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Anthracene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Anthracene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Anthracene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Anthracene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Anthracene	OC-3	24	28	33.864			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Anthracene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Anthracene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Anthracene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.092	0.092	Anthracene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Anthracene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Anthracene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Anthracene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Anthracene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Anthracene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Anthracene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Anthracene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Anthracene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Anthracene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Anthracene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Anthracene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Anthracene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Anthracene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Anthracene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Anthracene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Anthracene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Anthracene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Anthracene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Anthracene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Anthracene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Anthracene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Anthracene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Anthracene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Anthracene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Anthracene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Anthracene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Anthracene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Anthracene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Anthracene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Anthracene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Anthracene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Anthracene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Anthracene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Anthracene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Anthracene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Anthracene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Anthracene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Anthracene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.21	0.21	Benzo(a)anthracene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.46 J-	0.46	Benzo(a)anthracene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.09	0.09	Benzo(a)anthracene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.68	0.68	Benzo(a)anthracene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.55	0.55	Benzo(a)anthracene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.22	0.22	Benzo(a)anthracene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.32 J-BL	0.32	Benzo(a)anthracene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.25 BL	0.25	Benzo(a)anthracene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.085 JBL	0.085	Benzo(a)anthracene		0	5					Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 UJL-M	0.008	Benzo(a)anthracene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 UJL-M	0.0083	Benzo(a)anthracene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJLMS	0.0061	Benzo(a)anthracene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.34	0.34	Benzo(a)anthracene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.26	0.26	Benzo(a)anthracene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.092	0.092	Benzo(a)anthracene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.26	0.26	Benzo(a)anthracene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.15	0.15	Benzo(a)anthracene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.19	0.19	Benzo(a)anthracene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.073 J-M-	0.073	Benzo(a)anthracene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.011 J-M-	0.011	Benzo(a)anthracene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.15 J-M-	0.15	Benzo(a)anthracene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.12 J-M-	0.12	Benzo(a)anthracene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.035 J-M-	0.035	Benzo(a)anthracene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.14 BL	0.14	Benzo(a)anthracene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.24 BL	0.24	Benzo(a)anthracene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.061	0.061	Benzo(a)anthracene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.11	0.11	Benzo(a)anthracene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Benzo(a)anthracene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Benzo(a)anthracene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.11	0.11	Benzo(a)anthracene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.1	0.1	Benzo(a)anthracene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.21	0.21	Benzo(a)anthracene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.097	0.097	Benzo(a)anthracene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.093	0.093	Benzo(a)anthracene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.2	0.2	Benzo(a)anthracene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.21	0.21	Benzo(a)anthracene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.14	0.14	Benzo(a)anthracene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.24	0.24	Benzo(a)anthracene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.13	0.13	Benzo(a)anthracene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.15	0.15	Benzo(a)anthracene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.33	0.33	Benzo(a)anthracene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	2.8	2.8	Benzo(a)anthracene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.27	0.27	Benzo(a)anthracene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.27	0.27	Benzo(a)anthracene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.004	0.004	Benzo(a)anthracene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.16	0.16	Benzo(a)anthracene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.21	0.21	Benzo(a)anthracene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.29	0.29	Benzo(a)anthracene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.97	0.97	Benzo(a)anthracene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.12 J	0.12	Benzo(a)anthracene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.16	0.16	Benzo(a)anthracene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.19	0.19	Benzo(a)anthracene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.23	0.23	Benzo(a)anthracene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.097	0.097	Benzo(a)anthracene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.23	0.23	Benzo(a)anthracene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.43	0.43	Benzo(a)anthracene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.28	0.28	Benzo(a)anthracene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.36	0.36	Benzo(a)anthracene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.3	0.3	Benzo(a)anthracene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.2	0.2	Benzo(a)anthracene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.26	0.26	Benzo(a)anthracene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.28	0.28	Benzo(a)anthracene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.01	0.01	Benzo(a)anthracene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.26	0.26	Benzo(a)anthracene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.33	0.33	Benzo(a)anthracene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.62	0.62	Benzo(a)anthracene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.34	0.34	Benzo(a)anthracene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.14	0.14	Benzo(a)anthracene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	1.4	1.4	Benzo(a)anthracene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.054	0.054	Benzo(a)anthracene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.18	0.18	Benzo(a)anthracene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.17	0.17	Benzo(a)anthracene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.26	0.26	Benzo(a)anthracene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.3	0.3	Benzo(a)anthracene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.16	0.16	Benzo(a)anthracene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.42	0.42	Benzo(a)anthracene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.55	0.55	Benzo(a)anthracene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.14	0.14	Benzo(a)anthracene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.081	0.081	Benzo(a)anthracene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.46	0.46	Benzo(a)anthracene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.38	0.38	Benzo(a)anthracene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.6	0.6	Benzo(a)anthracene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.25 J	0.25	Benzo(a)anthracene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.44	0.44	Benzo(a)anthracene	HS-1	60	84	84.0057			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.083 J	0.083	Benzo(a)anthracene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.45	0.45	Benzo(a)anthracene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	1	1	Benzo(a)anthracene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	5	5	Benzo(a)anthracene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	2.4	2.4	Benzo(a)anthracene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	3	3	Benzo(a)anthracene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.38	0.38	Benzo(a)anthracene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	1.4	1.4	Benzo(a)anthracene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.68	0.68	Benzo(a)anthracene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.31	0.31	Benzo(a)anthracene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.25	0.25	Benzo(a)anthracene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.39	0.39	Benzo(a)anthracene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.47	0.47	Benzo(a)anthracene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.29	0.29	Benzo(a)anthracene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.31	0.31	Benzo(a)anthracene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.061 J	0.061	Benzo(a)anthracene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.13	0.13	Benzo(a)anthracene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.21	0.21	Benzo(a)anthracene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.045 J	0.045	Benzo(a)anthracene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.29	0.29	Benzo(a)anthracene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.18	0.18	Benzo(a)anthracene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.032 J	0.032	Benzo(a)anthracene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.17	0.17	Benzo(a)anthracene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.27	0.27	Benzo(a)anthracene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.29	0.29	Benzo(a)anthracene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.25	0.25	Benzo(a)anthracene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.12	0.12	Benzo(a)anthracene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.076 U	0.076	Benzo(a)anthracene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.25	0.25	Benzo(a)anthracene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	1.1	1.1	Benzo(a)anthracene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.046 J	0.046	Benzo(a)anthracene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.37	0.37	Benzo(a)anthracene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.19	0.19	Benzo(a)anthracene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.22	0.22	Benzo(a)anthracene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.08	0.08	Benzo(a)anthracene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Benzo(a)anthracene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Benzo(a)anthracene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	1.5	1.5	Benzo(a)anthracene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.076	0.076	Benzo(a)anthracene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.075 J	0.075	Benzo(a)anthracene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.24	0.24	Benzo(a)anthracene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.24	0.24	Benzo(a)anthracene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.031	0.031	Benzo(a)anthracene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.49	0.49	Benzo(a)anthracene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.44	0.44	Benzo(a)anthracene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.53	0.53	Benzo(a)anthracene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.15	0.15	Benzo(a)anthracene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.43	0.43	Benzo(a)anthracene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Benzo(a)anthracene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	1	1	Benzo(a)anthracene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	18	24	46.0040004			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.35	0.35	Benzo(a)anthracene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.51	0.51	Benzo(a)anthracene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.11	0.11	Benzo(a)anthracene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.38	0.38	Benzo(a)anthracene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.44	0.44	Benzo(a)anthracene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.63	0.63	Benzo(a)anthracene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.3	0.3	Benzo(a)anthracene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.4	0.4	Benzo(a)anthracene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.46	0.46	Benzo(a)anthracene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.15	0.15	Benzo(a)anthracene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	0	6	45.9999996			Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.042	0.042	Benzo(a)anthracene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.054	0.054	Benzo(a)anthracene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.36	0.36	Benzo(a)anthracene		0	6	9.9999996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-18	6 - 10	9/12/2013	Area 2	0.083	0.083	Benzo(a)anthracene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Benzo(a)anthracene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.053	0.053	Benzo(a)anthracene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.072	0.072	Benzo(a)anthracene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.054	0.054	Benzo(a)anthracene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.083	0.083	Benzo(a)anthracene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	1.2	1.2	Benzo(a)anthracene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.082	0.082	Benzo(a)anthracene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.037	0.037	Benzo(a)anthracene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.049	0.049	Benzo(a)anthracene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.072	0.072	Benzo(a)anthracene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.068	0.068	Benzo(a)anthracene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.011	0.011	Benzo(a)anthracene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.069	0.069	Benzo(a)anthracene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.18	0.18	Benzo(a)anthracene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	4.1	4.1	Benzo(a)anthracene	HS-3	2	6	6			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.18	0.18	Benzo(a)anthracene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.8	0.8	Benzo(a)anthracene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.11	0.11	Benzo(a)anthracene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Benzo(a)anthracene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	1.2	1.2	Benzo(a)anthracene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.38	0.38	Benzo(a)anthracene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	1.6	1.6	Benzo(a)anthracene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.54	0.54	Benzo(a)anthracene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.26	0.26	Benzo(a)anthracene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.02	0.02	Benzo(a)anthracene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	14	14	Benzo(a)anthracene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.41	0.41	Benzo(a)anthracene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	1.8	1.8	Benzo(a)anthracene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	3.4	3.4	Benzo(a)anthracene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	3	3	Benzo(a)anthracene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	3.2	3.2	Benzo(a)anthracene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	3.9	3.9	Benzo(a)anthracene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	2.3	2.3	Benzo(a)anthracene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	4.1	4.1	Benzo(a)anthracene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	1.1	1.1	Benzo(a)anthracene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	1.3	1.3	Benzo(a)anthracene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	1.7	1.7	Benzo(a)anthracene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Benzo(a)anthracene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.18	0.18	Benzo(a)anthracene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.18	0.18	Benzo(a)anthracene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.4	0.4	Benzo(a)anthracene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.48	0.48	Benzo(a)anthracene		30	42	54.005544			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB14-10	42 - 54	8/20/2014	Area 1	0.39	0.39	Benzo(a)anthracene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Benzo(a)anthracene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Benzo(a)anthracene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Benzo(a)anthracene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.33	0.33	Benzo(a)anthracene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	3.2	3.2	Benzo(a)anthracene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.43	0.43	Benzo(a)anthracene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.55	0.55	Benzo(a)anthracene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.39	0.39	Benzo(a)anthracene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.87	0.87	Benzo(a)anthracene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	3.8	3.8	Benzo(a)anthracene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	6.3	6.3	Benzo(a)anthracene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	4.2	4.2	Benzo(a)anthracene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	4.6	4.6	Benzo(a)anthracene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	5.5	5.5	Benzo(a)anthracene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	3.5	3.5	Benzo(a)anthracene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	3.1	3.1	Benzo(a)anthracene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-3	12	17	45.396			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.19	0.19	Benzo(a)anthracene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene		12	24	26.292			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Benzo(a)anthracene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.21 J-LS-	0.21	Benzo(a)pyrene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.42 J-LS-	0.42	Benzo(a)pyrene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.084 J-LS-	0.084	Benzo(a)pyrene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.71	0.71	Benzo(a)pyrene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.47	0.47	Benzo(a)pyrene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.24	0.24	Benzo(a)pyrene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.40 J-	0.4	Benzo(a)pyrene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.29	0.29	Benzo(a)pyrene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.11 J-	0.11	Benzo(a)pyrene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0036 JM-H	0.0036	Benzo(a)pyrene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 UJM-H	0.0083	Benzo(a)pyrene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJM-H	0.0061	Benzo(a)pyrene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.44	0.44	Benzo(a)pyrene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.25 J-LS-	0.25	Benzo(a)pyrene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.077 J-LS-	0.077	Benzo(a)pyrene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.25 J-M-	0.25	Benzo(a)pyrene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.12 J-	0.12	Benzo(a)pyrene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.16 J-M-	0.16	Benzo(a)pyrene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.071 J-M-	0.071	Benzo(a)pyrene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.011 J-M-	0.011	Benzo(a)pyrene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.13 J-M-	0.13	Benzo(a)pyrene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.11 J-M-	0.11	Benzo(a)pyrene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.033 J-M-	0.033	Benzo(a)pyrene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.15	0.15	Benzo(a)pyrene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.24	0.24	Benzo(a)pyrene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.063	0.063	Benzo(a)pyrene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.097	0.097	Benzo(a)pyrene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Benzo(a)pyrene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Benzo(a)pyrene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.059	0.059	Benzo(a)pyrene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.056	0.056	Benzo(a)pyrene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.2	0.2	Benzo(a)pyrene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.088	0.088	Benzo(a)pyrene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.085	0.085	Benzo(a)pyrene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.19	0.19	Benzo(a)pyrene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.21	0.21	Benzo(a)pyrene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.15	0.15	Benzo(a)pyrene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.22	0.22	Benzo(a)pyrene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.13	0.13	Benzo(a)pyrene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.13	0.13	Benzo(a)pyrene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.37	0.37	Benzo(a)pyrene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	2.3	2.3	Benzo(a)pyrene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.26	0.26	Benzo(a)pyrene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.24	0.24	Benzo(a)pyrene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Benzo(a)pyrene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.19	0.19	Benzo(a)pyrene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.2	0.2	Benzo(a)pyrene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.29	0.29	Benzo(a)pyrene		12	36	36.0057			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-10	0 - 6	10/18/2010	Area 1	0.93	0.93	Benzo(a)pyrene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.13 J	0.13	Benzo(a)pyrene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.15	0.15	Benzo(a)pyrene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.22	0.22	Benzo(a)pyrene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.26	0.26	Benzo(a)pyrene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.098	0.098	Benzo(a)pyrene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.3	0.3	Benzo(a)pyrene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.53	0.53	Benzo(a)pyrene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.34	0.34	Benzo(a)pyrene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.51	0.51	Benzo(a)pyrene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.31	0.31	Benzo(a)pyrene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.19	0.19	Benzo(a)pyrene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.31	0.31	Benzo(a)pyrene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.27	0.27	Benzo(a)pyrene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.01	0.01	Benzo(a)pyrene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.3	0.3	Benzo(a)pyrene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.4	0.4	Benzo(a)pyrene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.68	0.68	Benzo(a)pyrene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.34	0.34	Benzo(a)pyrene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.16	0.16	Benzo(a)pyrene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	1.4	1.4	Benzo(a)pyrene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.062	0.062	Benzo(a)pyrene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.21	0.21	Benzo(a)pyrene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.16	0.16	Benzo(a)pyrene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.24	0.24	Benzo(a)pyrene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.31	0.31	Benzo(a)pyrene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.2	0.2	Benzo(a)pyrene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.52	0.52	Benzo(a)pyrene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.66	0.66	Benzo(a)pyrene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.13	0.13	Benzo(a)pyrene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.098	0.098	Benzo(a)pyrene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.51	0.51	Benzo(a)pyrene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.44	0.44	Benzo(a)pyrene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.6	0.6	Benzo(a)pyrene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.28 J	0.28	Benzo(a)pyrene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.5	0.5	Benzo(a)pyrene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.096 J	0.096	Benzo(a)pyrene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.46	0.46	Benzo(a)pyrene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	1.3	1.3	Benzo(a)pyrene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	5	5	Benzo(a)pyrene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	2.5	2.5	Benzo(a)pyrene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	2.7	2.7	Benzo(a)pyrene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.56	0.56	Benzo(a)pyrene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	1.7	1.7	Benzo(a)pyrene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.84	0.84	Benzo(a)pyrene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.37	0.37	Benzo(a)pyrene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.34	0.34	Benzo(a)pyrene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.53	0.53	Benzo(a)pyrene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.65	0.65	Benzo(a)pyrene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.35	0.35	Benzo(a)pyrene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.39	0.39	Benzo(a)pyrene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.071 J	0.071	Benzo(a)pyrene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.12	0.12	Benzo(a)pyrene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.22	0.22	Benzo(a)pyrene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.054 J	0.054	Benzo(a)pyrene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.42	0.42	Benzo(a)pyrene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.23	0.23	Benzo(a)pyrene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.039 J	0.039	Benzo(a)pyrene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.21	0.21	Benzo(a)pyrene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.26	0.26	Benzo(a)pyrene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.39	0.39	Benzo(a)pyrene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 J	0.21	Benzo(a)pyrene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.14	0.14	Benzo(a)pyrene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.091	0.091	Benzo(a)pyrene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.3	0.3	Benzo(a)pyrene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	1.1	1.1	Benzo(a)pyrene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.055 J	0.055	Benzo(a)pyrene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.44	0.44	Benzo(a)pyrene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.24	0.24	Benzo(a)pyrene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.16	0.16	Benzo(a)pyrene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.11	0.11	Benzo(a)pyrene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Benzo(a)pyrene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Benzo(a)pyrene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	1.3	1.3	Benzo(a)pyrene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.076	0.076	Benzo(a)pyrene	FP-2	0	12	31.0012992			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
 Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-2-41	12 - 31	10/18/2010	Area 2	0.086	0.086	Benzo(a)pyrene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.3	0.3	Benzo(a)pyrene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Benzo(a)pyrene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.29	0.29	Benzo(a)pyrene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	R	R	Benzo(a)pyrene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.52	0.52	Benzo(a)pyrene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.65	0.65	Benzo(a)pyrene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.71	0.71	Benzo(a)pyrene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.17	0.17	Benzo(a)pyrene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.47	0.47	Benzo(a)pyrene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Benzo(a)pyrene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	1	1	Benzo(a)pyrene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.36	0.36	Benzo(a)pyrene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.48	0.48	Benzo(a)pyrene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.11	0.11	Benzo(a)pyrene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		42	48					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-08	0 - 18	9/11/2013	Area 2	0.36	0.36	Benzo(a)pyrene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.46	0.46	Benzo(a)pyrene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.58	0.58	Benzo(a)pyrene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.27	0.27	Benzo(a)pyrene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.41	0.41	Benzo(a)pyrene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.41	0.41	Benzo(a)pyrene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.14	0.14	Benzo(a)pyrene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)pyrene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.036	0.036	Benzo(a)pyrene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.046	0.046	Benzo(a)pyrene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.39	0.39	Benzo(a)pyrene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.086	0.086	Benzo(a)pyrene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Benzo(a)pyrene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.056	0.056	Benzo(a)pyrene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.076	0.076	Benzo(a)pyrene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.053	0.053	Benzo(a)pyrene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.093	0.093	Benzo(a)pyrene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Benzo(a)pyrene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.98	0.98	Benzo(a)pyrene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.075	0.075	Benzo(a)pyrene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.033	0.033	Benzo(a)pyrene	OC-11	18	57	57			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
 Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.042	0.042	Benzo(a)pyrene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.082	0.082	Benzo(a)pyrene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.063	0.063	Benzo(a)pyrene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Benzo(a)pyrene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.071	0.071	Benzo(a)pyrene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.14	0.14	Benzo(a)pyrene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Benzo(a)pyrene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Benzo(a)pyrene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Benzo(a)pyrene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Benzo(a)pyrene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Benzo(a)pyrene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	3.3	3.3	Benzo(a)pyrene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.16	0.16	Benzo(a)pyrene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.73	0.73	Benzo(a)pyrene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.083	0.083	Benzo(a)pyrene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Benzo(a)pyrene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.99	0.99	Benzo(a)pyrene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.38	0.38	Benzo(a)pyrene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	1.6	1.6	Benzo(a)pyrene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.5	0.5	Benzo(a)pyrene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.2	0.2	Benzo(a)pyrene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.015	0.015	Benzo(a)pyrene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	10	10	Benzo(a)pyrene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.39	0.39	Benzo(a)pyrene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	1.7	1.7	Benzo(a)pyrene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	3.5	3.5	Benzo(a)pyrene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	2.5	2.5	Benzo(a)pyrene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	2.7	2.7	Benzo(a)pyrene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	3.4	3.4	Benzo(a)pyrene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	2.2	2.2	Benzo(a)pyrene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	3.3	3.3	Benzo(a)pyrene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	1.1	1.1	Benzo(a)pyrene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	1.3	1.3	Benzo(a)pyrene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	1.5	1.5	Benzo(a)pyrene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-12	24	36	47.0000004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Benzo(a)pyrene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Benzo(a)pyrene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Benzo(a)pyrene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Benzo(a)pyrene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.17	0.17	Benzo(a)pyrene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.16	0.16	Benzo(a)pyrene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.35	0.35	Benzo(a)pyrene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.4	0.4	Benzo(a)pyrene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.34	0.34	Benzo(a)pyrene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Benzo(a)pyrene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Benzo(a)pyrene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Benzo(a)pyrene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Benzo(a)pyrene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.22	0.22	Benzo(a)pyrene	OC-4	0	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	1.2	1.2	Benzo(a)pyrene	OC-4	6	18	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.48	0.48	Benzo(a)pyrene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.33	0.33	Benzo(a)pyrene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.69	0.69	Benzo(a)pyrene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Benzo(a)pyrene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	48	60	67.9950564			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	3.2	3.2	Benzo(a)pyrene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	5.3	5.3	Benzo(a)pyrene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	3.4	3.4	Benzo(a)pyrene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	3.8	3.8	Benzo(a)pyrene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	4.4	4.4	Benzo(a)pyrene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	3	3	Benzo(a)pyrene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	2.8	2.8	Benzo(a)pyrene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)pyrene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Benzo(a)pyrene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Benzo(a)pyrene		15	21					Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.18	0.18	Benzo(a)pyrene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)pyrene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Benzo(a)pyrene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Benzo(a)pyrene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Benzo(a)pyrene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Benzo(a)pyrene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.22	0.22	Benzo(b)fluoranthene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.45 J-	0.45	Benzo(b)fluoranthene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.081	0.081	Benzo(b)fluoranthene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.47	0.47	Benzo(b)fluoranthene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.46	0.46	Benzo(b)fluoranthene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.21	0.21	Benzo(b)fluoranthene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.32 J-	0.32	Benzo(b)fluoranthene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.27 BL	0.27	Benzo(b)fluoranthene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.092 J-BL	0.092	Benzo(b)fluoranthene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Benzo(b)fluoranthene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Benzo(b)fluoranthene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Benzo(b)fluoranthene		24	48					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.34	0.34	Benzo(b)fluoranthene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.24	0.24	Benzo(b)fluoranthene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.063	0.063	Benzo(b)fluoranthene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.24	0.24	Benzo(b)fluoranthene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.11	0.11	Benzo(b)fluoranthene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.13	0.13	Benzo(b)fluoranthene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.059 J-M-	0.059	Benzo(b)fluoranthene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0096 J-M-	0.0096	Benzo(b)fluoranthene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.11 J-M-	0.11	Benzo(b)fluoranthene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.088 J-M-	0.088	Benzo(b)fluoranthene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.028 J-M-	0.028	Benzo(b)fluoranthene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.14 BL	0.14	Benzo(b)fluoranthene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.22 BL	0.22	Benzo(b)fluoranthene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.058	0.058	Benzo(b)fluoranthene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.12 J	0.12	Benzo(b)fluoranthene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Benzo(b)fluoranthene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Benzo(b)fluoranthene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.13 J	0.13	Benzo(b)fluoranthene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.14 J	0.14	Benzo(b)fluoranthene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.29 J	0.29	Benzo(b)fluoranthene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.10 J	0.1	Benzo(b)fluoranthene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.11 J	0.11	Benzo(b)fluoranthene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.24 J	0.24	Benzo(b)fluoranthene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.26 J	0.26	Benzo(b)fluoranthene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.18	0.18	Benzo(b)fluoranthene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.22	0.22	Benzo(b)fluoranthene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.15	0.15	Benzo(b)fluoranthene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.15	0.15	Benzo(b)fluoranthene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.43	0.43	Benzo(b)fluoranthene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	2.3	2.3	Benzo(b)fluoranthene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.27	0.27	Benzo(b)fluoranthene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.27	0.27	Benzo(b)fluoranthene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Benzo(b)fluoranthene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.24	0.24	Benzo(b)fluoranthene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.24	0.24	Benzo(b)fluoranthene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.33	0.33	Benzo(b)fluoranthene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	1	1	Benzo(b)fluoranthene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.16 J	0.16	Benzo(b)fluoranthene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.20 J	0.2	Benzo(b)fluoranthene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.28	0.28	Benzo(b)fluoranthene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.29	0.29	Benzo(b)fluoranthene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.17	0.17	Benzo(b)fluoranthene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.32	0.32	Benzo(b)fluoranthene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.71	0.71	Benzo(b)fluoranthene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.38	0.38	Benzo(b)fluoranthene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.61	0.61	Benzo(b)fluoranthene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.37	0.37	Benzo(b)fluoranthene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.23	0.23	Benzo(b)fluoranthene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.38	0.38	Benzo(b)fluoranthene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.32	0.32	Benzo(b)fluoranthene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.013	0.013	Benzo(b)fluoranthene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.34	0.34	Benzo(b)fluoranthene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.48	0.48	Benzo(b)fluoranthene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.68	0.68	Benzo(b)fluoranthene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.39	0.39	Benzo(b)fluoranthene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.2	0.2	Benzo(b)fluoranthene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	1.2	1.2	Benzo(b)fluoranthene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.079	0.079	Benzo(b)fluoranthene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.24	0.24	Benzo(b)fluoranthene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.17	0.17	Benzo(b)fluoranthene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.27	0.27	Benzo(b)fluoranthene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.35	0.35	Benzo(b)fluoranthene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.2	0.2	Benzo(b)fluoranthene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.55	0.55	Benzo(b)fluoranthene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.67	0.67	Benzo(b)fluoranthene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.16	0.16	Benzo(b)fluoranthene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.1	0.1	Benzo(b)fluoranthene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.74	0.74	Benzo(b)fluoranthene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.62	0.62	Benzo(b)fluoranthene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.85	0.85	Benzo(b)fluoranthene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.33 J	0.33	Benzo(b)fluoranthene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.53	0.53	Benzo(b)fluoranthene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.11 J	0.11	Benzo(b)fluoranthene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.56	0.56	Benzo(b)fluoranthene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	1.4	1.4	Benzo(b)fluoranthene	CS-1	0	12	83.9937			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	5.4	5.4	Benzo(b)fluoranthene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	2.6	2.6	Benzo(b)fluoranthene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	3.2	3.2	Benzo(b)fluoranthene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.63	0.63	Benzo(b)fluoranthene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	2.2	2.2	Benzo(b)fluoranthene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.85	0.85	Benzo(b)fluoranthene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.42	0.42	Benzo(b)fluoranthene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.39	0.39	Benzo(b)fluoranthene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.69	0.69	Benzo(b)fluoranthene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.86	0.86	Benzo(b)fluoranthene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.41	0.41	Benzo(b)fluoranthene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.45	0.45	Benzo(b)fluoranthene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.097 J	0.097	Benzo(b)fluoranthene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.16 J	0.16	Benzo(b)fluoranthene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.31	0.31	Benzo(b)fluoranthene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.059 J	0.059	Benzo(b)fluoranthene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.5	0.5	Benzo(b)fluoranthene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.27	0.27	Benzo(b)fluoranthene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.050 J	0.05	Benzo(b)fluoranthene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.22	0.22	Benzo(b)fluoranthene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.26	0.26	Benzo(b)fluoranthene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.49	0.49	Benzo(b)fluoranthene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 U	0.21	Benzo(b)fluoranthene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.13	0.13	Benzo(b)fluoranthene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.092	0.092	Benzo(b)fluoranthene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.34	0.34	Benzo(b)fluoranthene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	1.2	1.2	Benzo(b)fluoranthene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.066 J	0.066	Benzo(b)fluoranthene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.54	0.54	Benzo(b)fluoranthene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.3	0.3	Benzo(b)fluoranthene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.19	0.19	Benzo(b)fluoranthene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.12	0.12	Benzo(b)fluoranthene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Benzo(b)fluoranthene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Benzo(b)fluoranthene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	1.3	1.3	Benzo(b)fluoranthene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.08	0.08	Benzo(b)fluoranthene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.10 J	0.1	Benzo(b)fluoranthene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.37	0.37	Benzo(b)fluoranthene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.34	0.34	Benzo(b)fluoranthene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	R	R	Benzo(b)fluoranthene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.74	0.74	Benzo(b)fluoranthene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.81	0.81	Benzo(b)fluoranthene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.82	0.82	Benzo(b)fluoranthene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.19	0.19	Benzo(b)fluoranthene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.62	0.62	Benzo(b)fluoranthene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Benzo(b)fluoranthene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	1.7	1.7	Benzo(b)fluoranthene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.52	0.52	Benzo(b)fluoranthene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	30	36	46.0040004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.76	0.76	Benzo(b)fluoranthene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.15	0.15	Benzo(b)fluoranthene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	66 - 74 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-1	66	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.55	0.55	Benzo(b)fluoranthene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.73	0.73	Benzo(b)fluoranthene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.81	0.81	Benzo(b)fluoranthene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.38	0.38	Benzo(b)fluoranthene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.61	0.61	Benzo(b)fluoranthene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.6	0.6	Benzo(b)fluoranthene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.2	0.2	Benzo(b)fluoranthene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(b)fluoranthene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.041	0.041	Benzo(b)fluoranthene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.063	0.063	Benzo(b)fluoranthene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.61	0.61	Benzo(b)fluoranthene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.12	0.12	Benzo(b)fluoranthene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Benzo(b)fluoranthene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene		0	6					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.073	0.073	Benzo(b)fluoranthene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.1	0.1	Benzo(b)fluoranthene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.062	0.062	Benzo(b)fluoranthene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.11	0.11	Benzo(b)fluoranthene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Benzo(b)fluoranthene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	1.3	1.3	Benzo(b)fluoranthene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.11	0.11	Benzo(b)fluoranthene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.039	0.039	Benzo(b)fluoranthene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.052	0.052	Benzo(b)fluoranthene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.11	0.11	Benzo(b)fluoranthene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.084	0.084	Benzo(b)fluoranthene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Benzo(b)fluoranthene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.097	0.097	Benzo(b)fluoranthene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.19	0.19	Benzo(b)fluoranthene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Benzo(b)fluoranthene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Benzo(b)fluoranthene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Benzo(b)fluoranthene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Benzo(b)fluoranthene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Benzo(b)fluoranthene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	4.3	4.3	Benzo(b)fluoranthene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	10	28	27.9999996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.21	0.21	Benzo(b)fluoranthene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	1.1	1.1	Benzo(b)fluoranthene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.14	0.14	Benzo(b)fluoranthene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Benzo(b)fluoranthene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	1.4	1.4	Benzo(b)fluoranthene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.45	0.45	Benzo(b)fluoranthene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	2.2	2.2	Benzo(b)fluoranthene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.47	0.47	Benzo(b)fluoranthene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.15	0.15	Benzo(b)fluoranthene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.023	0.023	Benzo(b)fluoranthene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	9.5	9.5	Benzo(b)fluoranthene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.38	0.38	Benzo(b)fluoranthene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	2.5	2.5	Benzo(b)fluoranthene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	3.4	3.4	Benzo(b)fluoranthene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	4	4	Benzo(b)fluoranthene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	4.4	4.4	Benzo(b)fluoranthene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	4.6	4.6	Benzo(b)fluoranthene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	3.3	3.3	Benzo(b)fluoranthene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	4.3	4.3	Benzo(b)fluoranthene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	1.7	1.7	Benzo(b)fluoranthene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.8	0.8	Benzo(b)fluoranthene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	2.1	2.1	Benzo(b)fluoranthene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Benzo(b)fluoranthene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Benzo(b)fluoranthene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Benzo(b)fluoranthene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.26	0.26	Benzo(b)fluoranthene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.23	0.23	Benzo(b)fluoranthene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.52	0.52	Benzo(b)fluoranthene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.55	0.55	Benzo(b)fluoranthene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.51	0.51	Benzo(b)fluoranthene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Benzo(b)fluoranthene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-2	0	6					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Benzo(b)fluoranthene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Benzo(b)fluoranthene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Benzo(b)fluoranthene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.27	0.27	Benzo(b)fluoranthene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	1.2	1.2	Benzo(b)fluoranthene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.65	0.65	Benzo(b)fluoranthene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.83	0.83	Benzo(b)fluoranthene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.45	0.45	Benzo(b)fluoranthene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.86	0.86	Benzo(b)fluoranthene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Benzo(b)fluoranthene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	4.4	4.4	Benzo(b)fluoranthene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	7.8	7.8	Benzo(b)fluoranthene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	5.2	5.2	Benzo(b)fluoranthene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	5.9	5.9	Benzo(b)fluoranthene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	6	6	Benzo(b)fluoranthene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	4.3	4.3	Benzo(b)fluoranthene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	4.2	4.2	Benzo(b)fluoranthene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-5	12	24	27.9944796			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(b)fluoranthene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Benzo(b)fluoranthene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.24	0.24	Benzo(b)fluoranthene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(b)fluoranthene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-11	12	24		35.52	exclude		Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Benzo(b)fluoranthene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Benzo(b)fluoranthene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Benzo(b)fluoranthene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Benzo(b)fluoranthene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.15	0.15	Benzo(g,h,i)perylene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.28 J-	0.28	Benzo(g,h,i)perylene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.048	0.048	Benzo(g,h,i)perylene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.42	0.42	Benzo(g,h,i)perylene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.25	0.25	Benzo(g,h,i)perylene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.16	0.16	Benzo(g,h,i)perylene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.31 J-	0.31	Benzo(g,h,i)perylene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.15	0.15	Benzo(g,h,i)perylene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.086 J-	0.086	Benzo(g,h,i)perylene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Benzo(g,h,i)perylene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Benzo(g,h,i)perylene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Benzo(g,h,i)perylene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.28	0.28	Benzo(g,h,i)perylene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.17	0.17	Benzo(g,h,i)perylene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.041	0.041	Benzo(g,h,i)perylene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.16	0.16	Benzo(g,h,i)perylene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.085	0.085	Benzo(g,h,i)perylene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.1	0.1	Benzo(g,h,i)perylene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.052	0.052	Benzo(g,h,i)perylene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0067	0.0067	Benzo(g,h,i)perylene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.093	0.093	Benzo(g,h,i)perylene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.073	0.073	Benzo(g,h,i)perylene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.02	0.02	Benzo(g,h,i)perylene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.12	0.12	Benzo(g,h,i)perylene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.16	0.16	Benzo(g,h,i)perylene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.032	0.032	Benzo(g,h,i)perylene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.074	0.074	Benzo(g,h,i)perylene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Benzo(g,h,i)perylene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Benzo(g,h,i)perylene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.013	0.013	Benzo(g,h,i)perylene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.043	0.043	Benzo(g,h,i)perylene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.17	0.17	Benzo(g,h,i)perylene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.051	0.051	Benzo(g,h,i)perylene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.044	0.044	Benzo(g,h,i)perylene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.15	0.15	Benzo(g,h,i)perylene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.16	0.16	Benzo(g,h,i)perylene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.083	0.083	Benzo(g,h,i)perylene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.14	0.14	Benzo(g,h,i)perylene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.095	0.095	Benzo(g,h,i)perylene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.09	0.09	Benzo(g,h,i)perylene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.22	0.22	Benzo(g,h,i)perylene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.93	0.93	Benzo(g,h,i)perylene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.18	0.18	Benzo(g,h,i)perylene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.17	0.17	Benzo(g,h,i)perylene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Benzo(g,h,i)perylene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.12	0.12	Benzo(g,h,i)perylene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.14	0.14	Benzo(g,h,i)perylene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.21	0.21	Benzo(g,h,i)perylene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.42	0.42	Benzo(g,h,i)perylene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.081 J	0.081	Benzo(g,h,i)perylene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.044	0.044	Benzo(g,h,i)perylene		12	21	20.9987496			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB10-1-12	0 - 6	10/17/2010	Area 1	0.13	0.13	Benzo(g,h,i)perylene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.18	0.18	Benzo(g,h,i)perylene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.2	0.2	Benzo(g,h,i)perylene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.2	0.2	Benzo(g,h,i)perylene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.4	0.4	Benzo(g,h,i)perylene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.24	0.24	Benzo(g,h,i)perylene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.36	0.36	Benzo(g,h,i)perylene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.16	0.16	Benzo(g,h,i)perylene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.13	0.13	Benzo(g,h,i)perylene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.23	0.23	Benzo(g,h,i)perylene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.18	0.18	Benzo(g,h,i)perylene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0066	0.0066	Benzo(g,h,i)perylene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.32	0.32	Benzo(g,h,i)perylene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.23	0.23	Benzo(g,h,i)perylene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.36	0.36	Benzo(g,h,i)perylene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.2	0.2	Benzo(g,h,i)perylene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.1	0.1	Benzo(g,h,i)perylene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.7	0.7	Benzo(g,h,i)perylene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.044	0.044	Benzo(g,h,i)perylene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.16 J	0.16	Benzo(g,h,i)perylene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.1	0.1	Benzo(g,h,i)perylene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.16	0.16	Benzo(g,h,i)perylene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.23	0.23	Benzo(g,h,i)perylene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.12	0.12	Benzo(g,h,i)perylene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.33	0.33	Benzo(g,h,i)perylene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.37	0.37	Benzo(g,h,i)perylene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.071	0.071	Benzo(g,h,i)perylene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.082	0.082	Benzo(g,h,i)perylene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.4	0.4	Benzo(g,h,i)perylene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.34	0.34	Benzo(g,h,i)perylene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.44	0.44	Benzo(g,h,i)perylene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.20 J	0.2	Benzo(g,h,i)perylene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.39	0.39	Benzo(g,h,i)perylene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.053	0.053	Benzo(g,h,i)perylene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.25	0.25	Benzo(g,h,i)perylene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.67	0.67	Benzo(g,h,i)perylene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	2.7	2.7	Benzo(g,h,i)perylene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	1.4 U	1.4	Benzo(g,h,i)perylene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	1.6 U	1.6	Benzo(g,h,i)perylene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.41	0.41	Benzo(g,h,i)perylene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	1.1	1.1	Benzo(g,h,i)perylene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.66	0.66	Benzo(g,h,i)perylene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.29	0.29	Benzo(g,h,i)perylene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.31	0.31	Benzo(g,h,i)perylene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.33	0.33	Benzo(g,h,i)perylene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.5	0.5	Benzo(g,h,i)perylene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.29	0.29	Benzo(g,h,i)perylene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.32	0.32	Benzo(g,h,i)perylene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.039	0.039	Benzo(g,h,i)perylene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.04	0.04	Benzo(g,h,i)perylene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.16	0.16	Benzo(g,h,i)perylene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.035 J	0.035	Benzo(g,h,i)perylene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.3	0.3	Benzo(g,h,i)perylene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.2	0.2	Benzo(g,h,i)perylene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.030 J	0.03	Benzo(g,h,i)perylene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.17	0.17	Benzo(g,h,i)perylene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.21	0.21	Benzo(g,h,i)perylene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.3	0.3	Benzo(g,h,i)perylene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 U	0.21	Benzo(g,h,i)perylene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.12	0.12	Benzo(g,h,i)perylene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.073	0.073	Benzo(g,h,i)perylene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.25	0.25	Benzo(g,h,i)perylene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.79	0.79	Benzo(g,h,i)perylene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.036 J	0.036	Benzo(g,h,i)perylene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.27	0.27	Benzo(g,h,i)perylene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.19	0.19	Benzo(g,h,i)perylene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.15 U	0.15	Benzo(g,h,i)perylene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.092	0.092	Benzo(g,h,i)perylene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Benzo(g,h,i)perylene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Benzo(g,h,i)perylene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.72	0.72	Benzo(g,h,i)perylene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.051	0.051	Benzo(g,h,i)perylene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.056	0.056	Benzo(g,h,i)perylene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.2	0.2	Benzo(g,h,i)perylene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	0	12	12.0012996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-2-42	12 - 30	10/18/2010	Area 2	0.24	0.24	Benzo(g,h,i)perylene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.039	0.039	Benzo(g,h,i)perylene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.42	0.42	Benzo(g,h,i)perylene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.5	0.5	Benzo(g,h,i)perylene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.48	0.48	Benzo(g,h,i)perylene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.16	0.16	Benzo(g,h,i)perylene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.31	0.31	Benzo(g,h,i)perylene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Benzo(g,h,i)perylene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.39	0.39	Benzo(g,h,i)perylene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.18	0.18	Benzo(g,h,i)perylene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.21 U	0.21	Benzo(g,h,i)perylene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.071	0.071	Benzo(g,h,i)perylene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.17	0.17	Benzo(g,h,i)perylene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.23	0.23	Benzo(g,h,i)perylene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.25	0.25	Benzo(g,h,i)perylene	FC-2	36	60	38.28	21.756	include	Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-08	60 - 92	9/11/2013	Area 2	0.13	0.13	Benzo(g,h,i)perylene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.19	0.19	Benzo(g,h,i)perylene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.2	0.2	Benzo(g,h,i)perylene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.061	0.061	Benzo(g,h,i)perylene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.024	0.024	Benzo(g,h,i)perylene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.026	0.026	Benzo(g,h,i)perylene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.21	0.21	Benzo(g,h,i)perylene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.051	0.051	Benzo(g,h,i)perylene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Benzo(g,h,i)perylene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.036	0.036	Benzo(g,h,i)perylene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.047	0.047	Benzo(g,h,i)perylene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.037	0.037	Benzo(g,h,i)perylene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.06	0.06	Benzo(g,h,i)perylene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.4	0.4	Benzo(g,h,i)perylene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.047	0.047	Benzo(g,h,i)perylene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.02	0.02	Benzo(g,h,i)perylene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.021	0.021	Benzo(g,h,i)perylene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.047	0.047	Benzo(g,h,i)perylene	FC-10	12	18	33	17.04	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-26	18 - 33	9/13/2013	Area 1	0.039	0.039	Benzo(g,h,i)perylene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Benzo(g,h,i)perylene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.046	0.046	Benzo(g,h,i)perylene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.057	0.057	Benzo(g,h,i)perylene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	1.7	1.7	Benzo(g,h,i)perylene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.11	0.11	Benzo(g,h,i)perylene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.21	0.21	Benzo(g,h,i)perylene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.014 U	0.014	Benzo(g,h,i)perylene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Benzo(g,h,i)perylene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.67	0.67	Benzo(g,h,i)perylene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.28	0.28	Benzo(g,h,i)perylene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	1	1	Benzo(g,h,i)perylene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.25	0.25	Benzo(g,h,i)perylene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.091	0.091	Benzo(g,h,i)perylene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Benzo(g,h,i)perylene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	4	4	Benzo(g,h,i)perylene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.22	0.22	Benzo(g,h,i)perylene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	1.2	1.2	Benzo(g,h,i)perylene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	1.6	1.6	Benzo(g,h,i)perylene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.77	0.77	Benzo(g,h,i)perylene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	0.96	0.96	Benzo(g,h,i)perylene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	2.1	2.1	Benzo(g,h,i)perylene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	1.5	1.5	Benzo(g,h,i)perylene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	1.7	1.7	Benzo(g,h,i)perylene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.54	0.54	Benzo(g,h,i)perylene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.48	0.48	Benzo(g,h,i)perylene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.63	0.63	Benzo(g,h,i)perylene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene		6	15					Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.13	0.13	Benzo(g,h,i)perylene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.12	0.12	Benzo(g,h,i)perylene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.16	0.16	Benzo(g,h,i)perylene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.17	0.17	Benzo(g,h,i)perylene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.16	0.16	Benzo(g,h,i)perylene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Benzo(g,h,i)perylene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.099	0.099	Benzo(g,h,i)perylene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	0.42	0.42	Benzo(g,h,i)perylene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.0350 U	0.035	Benzo(g,h,i)perylene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.17	0.17	Benzo(g,h,i)perylene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.2	0.2	Benzo(g,h,i)perylene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.36	0.36	Benzo(g,h,i)perylene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	12	24	67.9950564			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	1.4	1.4	Benzo(g,h,i)perylene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	1.9	1.9	Benzo(g,h,i)perylene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	1.5	1.5	Benzo(g,h,i)perylene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	1.3	1.3	Benzo(g,h,i)perylene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	1.8	1.8	Benzo(g,h,i)perylene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	1.1	1.1	Benzo(g,h,i)perylene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	0.98	0.98	Benzo(g,h,i)perylene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(g,h,i)perylene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.12	0.12	Benzo(g,h,i)perylene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-1	12	24	55.02			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(g,h,i)perylene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Benzo(g,h,i)perylene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Benzo(g,h,i)perylene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Benzo(g,h,i)perylene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Benzo(g,h,i)perylene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.21	0.21	Benzo(k)fluoranthene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.43 J-	0.43	Benzo(k)fluoranthene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.08	0.08	Benzo(k)fluoranthene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.69	0.69	Benzo(k)fluoranthene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.45	0.45	Benzo(k)fluoranthene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.21	0.21	Benzo(k)fluoranthene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.36 J-	0.36	Benzo(k)fluoranthene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.26 BL	0.26	Benzo(k)fluoranthene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.094 J-BL	0.094	Benzo(k)fluoranthene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Benzo(k)fluoranthene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Benzo(k)fluoranthene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Benzo(k)fluoranthene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.34	0.34	Benzo(k)fluoranthene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.21	0.21	Benzo(k)fluoranthene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.064	0.064	Benzo(k)fluoranthene	FS-2	6	24	24.005676			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB2B_18	0 - 6	5/7/2007	Area 2	0.22	0.22	Benzo(k)fluoranthene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.13	0.13	Benzo(k)fluoranthene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.16	0.16	Benzo(k)fluoranthene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.068 J-M-	0.068	Benzo(k)fluoranthene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.010 J-M-	0.01	Benzo(k)fluoranthene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.13 J-M-	0.13	Benzo(k)fluoranthene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.094 J-M-	0.094	Benzo(k)fluoranthene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.027 J-M-	0.027	Benzo(k)fluoranthene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.15 BL	0.15	Benzo(k)fluoranthene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.22 BL	0.22	Benzo(k)fluoranthene	OC-5	0	5	5.0028204			Yes	Include
HB3A GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.058	0.058	Benzo(k)fluoranthene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.049 J	0.049	Benzo(k)fluoranthene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Benzo(k)fluoranthene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Benzo(k)fluoranthene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.036	0.036	Benzo(k)fluoranthene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.034	0.034	Benzo(k)fluoranthene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.11 J	0.11	Benzo(k)fluoranthene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.037	0.037	Benzo(k)fluoranthene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.042	0.042	Benzo(k)fluoranthene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.097 J	0.097	Benzo(k)fluoranthene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.11 J	0.11	Benzo(k)fluoranthene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.042	0.042	Benzo(k)fluoranthene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.15 J	0.15	Benzo(k)fluoranthene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.064 J	0.064	Benzo(k)fluoranthene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.045	0.045	Benzo(k)fluoranthene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.2	0.2	Benzo(k)fluoranthene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	1.1	1.1	Benzo(k)fluoranthene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.17	0.17	Benzo(k)fluoranthene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.18	0.18	Benzo(k)fluoranthene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 UJ	0.004	Benzo(k)fluoranthene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.095	0.095	Benzo(k)fluoranthene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.065	0.065	Benzo(k)fluoranthene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.18	0.18	Benzo(k)fluoranthene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.48	0.48	Benzo(k)fluoranthene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.061	0.061	Benzo(k)fluoranthene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.075 J	0.075	Benzo(k)fluoranthene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.12	0.12	Benzo(k)fluoranthene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.15	0.15	Benzo(k)fluoranthene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.045 J	0.045	Benzo(k)fluoranthene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.16	0.16	Benzo(k)fluoranthene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.33	0.33	Benzo(k)fluoranthene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.31	0.31	Benzo(k)fluoranthene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.43	0.43	Benzo(k)fluoranthene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.17	0.17	Benzo(k)fluoranthene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.052	0.052	Benzo(k)fluoranthene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.16	0.16	Benzo(k)fluoranthene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.13	0.13	Benzo(k)fluoranthene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0056	0.0056	Benzo(k)fluoranthene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.24	0.24	Benzo(k)fluoranthene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.2	0.2	Benzo(k)fluoranthene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 J	0.34	Benzo(k)fluoranthene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.19	0.19	Benzo(k)fluoranthene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.091	0.091	Benzo(k)fluoranthene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.64	0.64	Benzo(k)fluoranthene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.042 U	0.042	Benzo(k)fluoranthene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.13 J	0.13	Benzo(k)fluoranthene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.054 J	0.054	Benzo(k)fluoranthene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.14	0.14	Benzo(k)fluoranthene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.23	0.23	Benzo(k)fluoranthene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.12	0.12	Benzo(k)fluoranthene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.26	0.26	Benzo(k)fluoranthene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.33	0.33	Benzo(k)fluoranthene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.05	0.05	Benzo(k)fluoranthene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.057	0.057	Benzo(k)fluoranthene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.31	0.31	Benzo(k)fluoranthene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.25	0.25	Benzo(k)fluoranthene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.35	0.35	Benzo(k)fluoranthene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.23 J	0.23	Benzo(k)fluoranthene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.41	0.41	Benzo(k)fluoranthene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.053 J	0.053	Benzo(k)fluoranthene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.25	0.25	Benzo(k)fluoranthene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.61	0.61	Benzo(k)fluoranthene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	2.7	2.7	Benzo(k)fluoranthene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	1.4 U	1.4	Benzo(k)fluoranthene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	1.5 J	1.5	Benzo(k)fluoranthene	CS-1	60	93	83.9937			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.46	0.46	Benzo(k)fluoranthene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	1	1	Benzo(k)fluoranthene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.72	0.72	Benzo(k)fluoranthene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.31	0.31	Benzo(k)fluoranthene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.3	0.3	Benzo(k)fluoranthene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.37	0.37	Benzo(k)fluoranthene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.45	0.45	Benzo(k)fluoranthene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.29	0.29	Benzo(k)fluoranthene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.34 J	0.34	Benzo(k)fluoranthene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.027	0.027	Benzo(k)fluoranthene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.063 J	0.063	Benzo(k)fluoranthene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.13	0.13	Benzo(k)fluoranthene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.034	0.034	Benzo(k)fluoranthene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.3	0.3	Benzo(k)fluoranthene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.21	0.21	Benzo(k)fluoranthene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.027	0.027	Benzo(k)fluoranthene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.16	0.16	Benzo(k)fluoranthene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.18	0.18	Benzo(k)fluoranthene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.26 J	0.26	Benzo(k)fluoranthene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 U	0.21	Benzo(k)fluoranthene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.096	0.096	Benzo(k)fluoranthene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.052	0.052	Benzo(k)fluoranthene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.23	0.23	Benzo(k)fluoranthene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.94	0.94	Benzo(k)fluoranthene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.037 J	0.037	Benzo(k)fluoranthene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.25	0.25	Benzo(k)fluoranthene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.13	0.13	Benzo(k)fluoranthene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.13	0.13	Benzo(k)fluoranthene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.049	0.049	Benzo(k)fluoranthene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Benzo(k)fluoranthene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Benzo(k)fluoranthene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.61	0.61	Benzo(k)fluoranthene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.044 J	0.044	Benzo(k)fluoranthene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.045	0.045	Benzo(k)fluoranthene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.17	0.17	Benzo(k)fluoranthene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.26	0.26	Benzo(k)fluoranthene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.019	0.019	Benzo(k)fluoranthene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.32	0.32	Benzo(k)fluoranthene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.49	0.49	Benzo(k)fluoranthene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.58	0.58	Benzo(k)fluoranthene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.14	0.14	Benzo(k)fluoranthene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.29	0.29	Benzo(k)fluoranthene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Benzo(k)fluoranthene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.47	0.47	Benzo(k)fluoranthene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.21	0.21	Benzo(k)fluoranthene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	46	51	46.0040004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.42	0.42	Benzo(k)fluoranthene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.071	0.071	Benzo(k)fluoranthene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	66 - 74 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-1	66	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.17	0.17	Benzo(k)fluoranthene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.2	0.2	Benzo(k)fluoranthene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.19	0.19	Benzo(k)fluoranthene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.11	0.11	Benzo(k)fluoranthene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.21	0.21	Benzo(k)fluoranthene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.2	0.2	Benzo(k)fluoranthene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.049	0.049	Benzo(k)fluoranthene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(k)fluoranthene		0	6	5.9999996			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.024	0.024	Benzo(k)fluoranthene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.018	0.018	Benzo(k)fluoranthene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.18	0.18	Benzo(k)fluoranthene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.022	0.022	Benzo(k)fluoranthene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Benzo(k)fluoranthene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene		24	42					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.03	0.03	Benzo(k)fluoranthene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.032	0.032	Benzo(k)fluoranthene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.02	0.02	Benzo(k)fluoranthene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.026	0.026	Benzo(k)fluoranthene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Benzo(k)fluoranthene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.42	0.42	Benzo(k)fluoranthene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.038	0.038	Benzo(k)fluoranthene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.014 U	0.014	Benzo(k)fluoranthene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.026	0.026	Benzo(k)fluoranthene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.045	0.045	Benzo(k)fluoranthene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.03	0.03	Benzo(k)fluoranthene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Benzo(k)fluoranthene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.033	0.033	Benzo(k)fluoranthene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.072	0.072	Benzo(k)fluoranthene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Benzo(k)fluoranthene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Benzo(k)fluoranthene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Benzo(k)fluoranthene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Benzo(k)fluoranthene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Benzo(k)fluoranthene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	1.5	1.5	Benzo(k)fluoranthene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.069	0.069	Benzo(k)fluoranthene	HS-2	0	24	86.0000004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.53	0.53	Benzo(k)fluoranthene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.042	0.042	Benzo(k)fluoranthene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Benzo(k)fluoranthene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.55	0.55	Benzo(k)fluoranthene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.23	0.23	Benzo(k)fluoranthene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	1.3	1.3	Benzo(k)fluoranthene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.43	0.43	Benzo(k)fluoranthene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.17	0.17	Benzo(k)fluoranthene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Benzo(k)fluoranthene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	7.2	7.2	Benzo(k)fluoranthene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.33	0.33	Benzo(k)fluoranthene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	1.1	1.1	Benzo(k)fluoranthene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	2.6	2.6	Benzo(k)fluoranthene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	1.5	1.5	Benzo(k)fluoranthene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	1.3	1.3	Benzo(k)fluoranthene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	1.5	1.5	Benzo(k)fluoranthene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	1.1	1.1	Benzo(k)fluoranthene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	1.5	1.5	Benzo(k)fluoranthene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.55	0.55	Benzo(k)fluoranthene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.44	0.44	Benzo(k)fluoranthene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.57	0.57	Benzo(k)fluoranthene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Benzo(k)fluoranthene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Benzo(k)fluoranthene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene				#VALUE!				Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Benzo(k)fluoranthene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.087	0.087	Benzo(k)fluoranthene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.08	0.08	Benzo(k)fluoranthene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.17	0.17	Benzo(k)fluoranthene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.26	0.26	Benzo(k)fluoranthene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.17	0.17	Benzo(k)fluoranthene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Benzo(k)fluoranthene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-4	0	6	26.34			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Benzo(k)fluoranthene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Benzo(k)fluoranthene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Benzo(k)fluoranthene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.092	0.092	Benzo(k)fluoranthene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	0.32	0.32	Benzo(k)fluoranthene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.2	0.2	Benzo(k)fluoranthene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.29	0.29	Benzo(k)fluoranthene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.17	0.17	Benzo(k)fluoranthene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.34	0.34	Benzo(k)fluoranthene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Benzo(k)fluoranthene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	1.8	1.8	Benzo(k)fluoranthene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	2.7	2.7	Benzo(k)fluoranthene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	2.4	2.4	Benzo(k)fluoranthene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	1.5	1.5	Benzo(k)fluoranthene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	2.8	2.8	Benzo(k)fluoranthene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	1.9	1.9	Benzo(k)fluoranthene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	1.5	1.5	Benzo(k)fluoranthene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-5	0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(k)fluoranthene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	12	24	29.994876			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Benzo(k)fluoranthene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.1	0.1	Benzo(k)fluoranthene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(k)fluoranthene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	12	24	74.28	-6.48	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Benzo(k)fluoranthene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Benzo(k)fluoranthene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Benzo(k)fluoranthene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Benzo(k)fluoranthene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.28	0.28	Chrysene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.59 J-	0.59	Chrysene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.11	0.11	Chrysene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.63	0.63	Chrysene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.61	0.61	Chrysene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.25	0.25	Chrysene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.35 J-BL	0.35	Chrysene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.29 BL	0.29	Chrysene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.10 JBL	0.1	Chrysene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Chrysene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Chrysene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Chrysene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.38 J	0.38	Chrysene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.3	0.3	Chrysene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.095	0.095	Chrysene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.29	0.29	Chrysene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.17	0.17	Chrysene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.19	0.19	Chrysene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.083 J-M-	0.083	Chrysene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.012 J-M-	0.012	Chrysene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.16 J-M-	0.16	Chrysene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.12 J-M-	0.12	Chrysene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.039 J-M-	0.039	Chrysene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.16 BL	0.16	Chrysene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.28 BL	0.28	Chrysene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.066	0.066	Chrysene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.13	0.13	Chrysene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Chrysene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Chrysene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.12	0.12	Chrysene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.11	0.11	Chrysene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.24	0.24	Chrysene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.11	0.11	Chrysene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.1	0.1	Chrysene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.23	0.23	Chrysene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.24	0.24	Chrysene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.14	0.14	Chrysene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.26	0.26	Chrysene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.14	0.14	Chrysene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.16	0.16	Chrysene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.34	0.34	Chrysene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	2.6	2.6	Chrysene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.3	0.3	Chrysene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.26	0.26	Chrysene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.004	0.004	Chrysene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.17	0.17	Chrysene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.23	0.23	Chrysene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.34	0.34	Chrysene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	1.2	1.2	Chrysene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.12 J	0.12	Chrysene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.17	0.17	Chrysene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.22	0.22	Chrysene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.26	0.26	Chrysene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.13	0.13	Chrysene		12	34					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-13	0 - 6	10/18/2010	Area 1	0.3	0.3	Chrysene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.43	0.43	Chrysene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.27	0.27	Chrysene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.44	0.44	Chrysene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.28	0.28	Chrysene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.19	0.19	Chrysene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.26	0.26	Chrysene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.28	0.28	Chrysene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0099	0.0099	Chrysene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.26	0.26	Chrysene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.4	0.4	Chrysene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.7	0.7	Chrysene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.32	0.32	Chrysene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.15	0.15	Chrysene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	1.4	1.4	Chrysene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.063	0.063	Chrysene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.18	0.18	Chrysene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.17	0.17	Chrysene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.27	0.27	Chrysene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.33	0.33	Chrysene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.2	0.2	Chrysene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.49	0.49	Chrysene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.68	0.68	Chrysene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.14	0.14	Chrysene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.079	0.079	Chrysene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.54	0.54	Chrysene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.43	0.43	Chrysene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.65	0.65	Chrysene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.27 J	0.27	Chrysene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.49	0.49	Chrysene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.090 J	0.09	Chrysene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.48	0.48	Chrysene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	1.4	1.4	Chrysene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	4.8	4.8	Chrysene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	2.6	2.6	Chrysene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	3.3	3.3	Chrysene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.45	0.45	Chrysene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	1.3	1.3	Chrysene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.72	0.72	Chrysene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.31	0.31	Chrysene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.3	0.3	Chrysene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.44	0.44	Chrysene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.52	0.52	Chrysene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.32	0.32	Chrysene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.33	0.33	Chrysene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.069 J	0.069	Chrysene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.15	0.15	Chrysene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.17	0.17	Chrysene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.055 J	0.055	Chrysene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.33	0.33	Chrysene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.22	0.22	Chrysene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.036 J	0.036	Chrysene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.17	0.17	Chrysene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.33	0.33	Chrysene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.35	0.35	Chrysene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.24	0.24	Chrysene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.13	0.13	Chrysene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.076	0.076	Chrysene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.28	0.28	Chrysene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	1.2	1.2	Chrysene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.057 J	0.057	Chrysene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.33	0.33	Chrysene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.2	0.2	Chrysene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.35	0.35	Chrysene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.09	0.09	Chrysene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Chrysene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Chrysene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	1.4	1.4	Chrysene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.074	0.074	Chrysene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.078 J	0.078	Chrysene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.3	0.3	Chrysene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Chrysene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.27	0.27	Chrysene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.037	0.037	Chrysene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.62	0.62	Chrysene		12	22	22.0056996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-2-44	0 - 6	10/18/2010	Area 2	0.53	0.53	Chrysene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.63	0.63	Chrysene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.16	0.16	Chrysene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.46	0.46	Chrysene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Chrysene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Chrysene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Chrysene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Chrysene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Chrysene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Chrysene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Chrysene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Chrysene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Chrysene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	1.2	1.2	Chrysene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.42	0.42	Chrysene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Chrysene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Chrysene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Chrysene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Chrysene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Chrysene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Chrysene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.52	0.52	Chrysene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.13	0.13	Chrysene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Chrysene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Chrysene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Chrysene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Chrysene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Chrysene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Chrysene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Chrysene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Chrysene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Chrysene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Chrysene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Chrysene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.39	0.39	Chrysene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.6	0.6	Chrysene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.77	0.77	Chrysene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.36	0.36	Chrysene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Chrysene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.48	0.48	Chrysene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Chrysene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.55	0.55	Chrysene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Chrysene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Chrysene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Chrysene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Chrysene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.16	0.16	Chrysene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Chrysene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Chrysene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Chrysene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Chrysene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.044	0.044	Chrysene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.066	0.066	Chrysene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Chrysene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Chrysene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Chrysene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Chrysene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Chrysene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.5	0.5	Chrysene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.097	0.097	Chrysene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Chrysene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Chrysene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Chrysene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Chrysene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Chrysene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Chrysene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Chrysene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Chrysene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.069	0.069	Chrysene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Chrysene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Chrysene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.095	0.095	Chrysene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Chrysene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Chrysene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.064	0.064	Chrysene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Chrysene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Chrysene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.096	0.096	Chrysene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Chrysene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Chrysene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Chrysene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Chrysene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Chrysene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Chrysene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Chrysene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Chrysene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Chrysene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Chrysene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Chrysene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	1.2	1.2	Chrysene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Chrysene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.1	0.1	Chrysene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Chrysene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Chrysene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.04	0.04	Chrysene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Chrysene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.047	0.047	Chrysene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.095	0.095	Chrysene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.079	0.079	Chrysene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Chrysene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.011	0.011	Chrysene		0	32					Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Chrysene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Chrysene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Chrysene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Chrysene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Chrysene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.085	0.085	Chrysene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Chrysene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Chrysene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Chrysene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.2	0.2	Chrysene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Chrysene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Chrysene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Chrysene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Chrysene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Chrysene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Chrysene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Chrysene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Chrysene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Chrysene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Chrysene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Chrysene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Chrysene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Chrysene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Chrysene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Chrysene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Chrysene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Chrysene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Chrysene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Chrysene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	4	4	Chrysene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.22	0.22	Chrysene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.8	0.8	Chrysene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.11	0.11	Chrysene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Chrysene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	1.3	1.3	Chrysene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.39	0.39	Chrysene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	1.9	1.9	Chrysene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.59	0.59	Chrysene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.25	0.25	Chrysene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.019	0.019	Chrysene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	13	13	Chrysene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Chrysene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.49	0.49	Chrysene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	2.2	2.2	Chrysene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	3.5	3.5	Chrysene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	3.3	3.3	Chrysene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	3.6	3.6	Chrysene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	4.4	4.4	Chrysene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Chrysene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Chrysene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	2.9	2.9	Chrysene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Chrysene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Chrysene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	4	4	Chrysene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Chrysene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	1.5	1.5	Chrysene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	1.5	1.5	Chrysene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	2	2	Chrysene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Chrysene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Chrysene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Chrysene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Chrysene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Chrysene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Chrysene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Chrysene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Chrysene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Chrysene	OC-10	12	17	12			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Chrysene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Chrysene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Chrysene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Chrysene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Chrysene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Chrysene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Chrysene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Chrysene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Chrysene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Chrysene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Chrysene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Chrysene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Chrysene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Chrysene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Chrysene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Chrysene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Chrysene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Chrysene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Chrysene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Chrysene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Chrysene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Chrysene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Chrysene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Chrysene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Chrysene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Chrysene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.21	0.21	Chrysene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.22	0.22	Chrysene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.45	0.45	Chrysene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.63	0.63	Chrysene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.43	0.43	Chrysene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Chrysene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Chrysene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Chrysene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Chrysene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Chrysene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Chrysene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Chrysene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Chrysene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Chrysene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.49	0.49	Chrysene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	5.2	5.2	Chrysene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.48	0.48	Chrysene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.58	0.58	Chrysene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.46	0.46	Chrysene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.94	0.94	Chrysene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Chrysene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	48	60	67.9950564			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Chrysene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	4.2	4.2	Chrysene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	6.7	6.7	Chrysene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	4.7	4.7	Chrysene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	5	5	Chrysene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	5.6	5.6	Chrysene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	3.9	3.9	Chrysene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	3.6	3.6	Chrysene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Chrysene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Chrysene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Chrysene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Chrysene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Chrysene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Chrysene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Chrysene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Chrysene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Chrysene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Chrysene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.24	0.24	Chrysene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Chrysene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Chrysene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Chrysene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Chrysene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Chrysene	FS-1	48	56	55.02			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Chrysene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Chrysene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Chrysene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Chrysene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Chrysene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Chrysene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Chrysene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Chrysene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Chrysene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Chrysene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Chrysene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Chrysene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Chrysene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Chrysene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Chrysene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Chrysene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Chrysene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Chrysene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Chrysene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Chrysene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Chrysene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Chrysene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Chrysene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Chrysene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Chrysene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Chrysene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Chrysene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Chrysene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Chrysene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Chrysene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Chrysene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Chrysene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Chrysene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.053	0.053	Benzo(a)anthracene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.10 J-	0.1	Benzo(a)anthracene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.019	0.019	Benzo(a)anthracene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.14	0.14	Benzo(a)anthracene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.076	0.076	Benzo(a)anthracene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.044	0.044	Benzo(a)anthracene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.082 J-	0.082	Benzo(a)anthracene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.051	0.051	Benzo(a)anthracene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.022 J-	0.022	Benzo(a)anthracene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Benzo(a)anthracene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Benzo(a)anthracene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Benzo(a)anthracene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.084	0.084	Benzo(a)anthracene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.062	0.062	Benzo(a)anthracene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.016	0.016	Benzo(a)anthracene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.065	0.065	Benzo(a)anthracene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.034	0.034	Benzo(a)anthracene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.038	0.038	Benzo(a)anthracene	FP-1	24	48	47.997552			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB2B_19	0 - 6	5/2/2007	Area 2	0.02	0.02	Benzo(a)anthracene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0052 U	0.0052	Benzo(a)anthracene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.033	0.033	Benzo(a)anthracene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.026	0.026	Benzo(a)anthracene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.0074	0.0074	Benzo(a)anthracene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.03	0.03	Benzo(a)anthracene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.045	0.045	Benzo(a)anthracene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.011	0.011	Benzo(a)anthracene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.018	0.018	Benzo(a)anthracene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Benzo(a)anthracene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Benzo(a)anthracene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.011	0.011	Benzo(a)anthracene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.01	0.01	Benzo(a)anthracene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.026	0.026	Benzo(a)anthracene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.012	0.012	Benzo(a)anthracene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.011	0.011	Benzo(a)anthracene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.025	0.025	Benzo(a)anthracene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.023	0.023	Benzo(a)anthracene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.016	0.016	Benzo(a)anthracene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.026	0.026	Benzo(a)anthracene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.016	0.016	Benzo(a)anthracene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.014	0.014	Benzo(a)anthracene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.038	0.038	Benzo(a)anthracene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.3	0.3	Benzo(a)anthracene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.033	0.033	Benzo(a)anthracene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.028	0.028	Benzo(a)anthracene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Benzo(a)anthracene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.043	0.043	Benzo(a)anthracene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.025	0.025	Benzo(a)anthracene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.033	0.033	Benzo(a)anthracene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.1	0.1	Benzo(a)anthracene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.02	0.02	Benzo(a)anthracene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.024	0.024	Benzo(a)anthracene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.038	0.038	Benzo(a)anthracene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.027	0.027	Benzo(a)anthracene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.035	0.035	Benzo(a)anthracene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.049	0.049	Benzo(a)anthracene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.11	0.11	Benzo(a)anthracene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.069	0.069	Benzo(a)anthracene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.1	0.1	Benzo(a)anthracene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.034	0.034	Benzo(a)anthracene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.018	0.018	Benzo(a)anthracene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.033	0.033	Benzo(a)anthracene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.027 J	0.027	Benzo(a)anthracene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	Benzo(a)anthracene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.037	0.037	Benzo(a)anthracene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.12 U	0.12	Benzo(a)anthracene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	Benzo(a)anthracene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.16 U	0.16	Benzo(a)anthracene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.039	0.039	Benzo(a)anthracene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.16	0.16	Benzo(a)anthracene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.014 J	0.014	Benzo(a)anthracene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.040 J	0.04	Benzo(a)anthracene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.019	0.019	Benzo(a)anthracene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.029	0.029	Benzo(a)anthracene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.033	0.033	Benzo(a)anthracene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.038 J	0.038	Benzo(a)anthracene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.084	0.084	Benzo(a)anthracene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.12	0.12	Benzo(a)anthracene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.017	0.017	Benzo(a)anthracene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.023	0.023	Benzo(a)anthracene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.061	0.061	Benzo(a)anthracene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.089 J	0.089	Benzo(a)anthracene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.12 J	0.12	Benzo(a)anthracene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.058 J	0.058	Benzo(a)anthracene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.10 J	0.1	Benzo(a)anthracene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.013	0.013	Benzo(a)anthracene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.072 U	0.072	Benzo(a)anthracene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.17	0.17	Benzo(a)anthracene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	0.63	0.63	Benzo(a)anthracene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.35	0.35	Benzo(a)anthracene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.37	0.37	Benzo(a)anthracene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.12	0.12	Benzo(a)anthracene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.32	0.32	Benzo(a)anthracene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.17	0.17	Benzo(a)anthracene		12	36	60.0053004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.085 U	0.085	Benzo(a)anthracene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.08	0.08	Benzo(a)anthracene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.11	0.11	Benzo(a)anthracene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.15	0.15	Benzo(a)anthracene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.079	0.079	Benzo(a)anthracene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.063	0.063	Benzo(a)anthracene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.01	0.01	Benzo(a)anthracene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.018	0.018	Benzo(a)anthracene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.058	0.058	Benzo(a)anthracene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.013	0.013	Benzo(a)anthracene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.08	0.08	Benzo(a)anthracene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.03	0.03	Benzo(a)anthracene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0097	0.0097	Benzo(a)anthracene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.029	0.029	Benzo(a)anthracene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.059 J	0.059	Benzo(a)anthracene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.1	0.1	Benzo(a)anthracene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.036 J	0.036	Benzo(a)anthracene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.028	0.028	Benzo(a)anthracene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.023	0.023	Benzo(a)anthracene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.065	0.065	Benzo(a)anthracene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.23	0.23	Benzo(a)anthracene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.012 J	0.012	Benzo(a)anthracene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.079	0.079	Benzo(a)anthracene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.045	0.045	Benzo(a)anthracene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.039	0.039	Benzo(a)anthracene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.016	0.016	Benzo(a)anthracene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Benzo(a)anthracene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Benzo(a)anthracene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.17	0.17	Benzo(a)anthracene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.012	0.012	Benzo(a)anthracene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.014	0.014	Benzo(a)anthracene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.046	0.046	Benzo(a)anthracene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.062	0.062	Benzo(a)anthracene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0086	0.0086	Benzo(a)anthracene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.1	0.1	Benzo(a)anthracene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.14	0.14	Benzo(a)anthracene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.14	0.14	Benzo(a)anthracene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.021	0.021	Benzo(a)anthracene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.082	0.082	Benzo(a)anthracene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Benzo(a)anthracene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.12 U	0.12	Benzo(a)anthracene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.047 U	0.047	Benzo(a)anthracene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	12	18	41.9960004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.21 U	0.21	Benzo(a)anthracene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.011 U	0.011	Benzo(a)anthracene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.049 U	0.049	Benzo(a)anthracene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.046 U	0.046	Benzo(a)anthracene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.046 U	0.046	Benzo(a)anthracene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.0091 U	0.0091	Benzo(a)anthracene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.049 U	0.049	Benzo(a)anthracene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.044 U	0.044	Benzo(a)anthracene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.0088 U	0.0088	Benzo(a)anthracene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	5.9999996			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.0094 U	0.0094	Benzo(a)anthracene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.0091 U	0.0091	Benzo(a)anthracene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.052 U	0.052	Benzo(a)anthracene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.013 U	0.013	Benzo(a)anthracene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Benzo(a)anthracene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6	24			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-20	0 - 12	9/12/2013	Area 2	0.016 U	0.016	Benzo(a)anthracene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.013 U	0.013	Benzo(a)anthracene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.012 U	0.012	Benzo(a)anthracene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.011 U	0.011	Benzo(a)anthracene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Benzo(a)anthracene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.026 U	0.026	Benzo(a)anthracene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.012 U	0.012	Benzo(a)anthracene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.014 U	0.014	Benzo(a)anthracene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.013 U	0.013	Benzo(a)anthracene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.013 U	0.013	Benzo(a)anthracene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.012 U	0.012	Benzo(a)anthracene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Benzo(a)anthracene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.012 U	0.012	Benzo(a)anthracene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.011 U	0.011	Benzo(a)anthracene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Benzo(a)anthracene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.58	0.58	Benzo(a)anthracene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.011 U	0.011	Benzo(a)anthracene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.047 U	0.047	Benzo(a)anthracene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.014 U	0.014	Benzo(a)anthracene	HS-2	48	72	86.0000004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Benzo(a)anthracene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.17	0.17	Benzo(a)anthracene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.066	0.066	Benzo(a)anthracene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.27	0.27	Benzo(a)anthracene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.065	0.065	Benzo(a)anthracene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.026	0.026	Benzo(a)anthracene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Benzo(a)anthracene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	1.2	1.2	Benzo(a)anthracene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.056	0.056	Benzo(a)anthracene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.33	0.33	Benzo(a)anthracene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	0.41	0.41	Benzo(a)anthracene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.12 U	0.12	Benzo(a)anthracene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	0.39	0.39	Benzo(a)anthracene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	0.6	0.6	Benzo(a)anthracene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.38	0.38	Benzo(a)anthracene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	0.58	0.58	Benzo(a)anthracene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.076 U	0.076	Benzo(a)anthracene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.052 U	0.052	Benzo(a)anthracene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.12 U	0.12	Benzo(a)anthracene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Benzo(a)anthracene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Benzo(a)anthracene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Benzo(a)anthracene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Benzo(a)anthracene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.035	0.035	Benzo(a)anthracene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.034	0.034	Benzo(a)anthracene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.0285 U	0.0285	Benzo(a)anthracene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.0295 U	0.0295	Benzo(a)anthracene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.0265 U	0.0265	Benzo(a)anthracene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Benzo(a)anthracene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Benzo(a)anthracene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Benzo(a)anthracene	SND-5	0	6	-0.648			No	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Benzo(a)anthracene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.0220 U	0.022	Benzo(a)anthracene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	0.130 U	0.13	Benzo(a)anthracene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.0350 U	0.035	Benzo(a)anthracene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.0355 U	0.0355	Benzo(a)anthracene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.0195 U	0.0195	Benzo(a)anthracene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.1	0.1	Benzo(a)anthracene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Benzo(a)anthracene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	0.0460 U	0.046	Benzo(a)anthracene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	0.64	0.64	Benzo(a)anthracene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	0.0500 U	0.05	Benzo(a)anthracene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	0.48	0.48	Benzo(a)anthracene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	0.0550 U	0.055	Benzo(a)anthracene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	0.53	0.53	Benzo(a)anthracene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	0.37	0.37	Benzo(a)anthracene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-3	0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Benzo(a)anthracene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	24	64.0033716			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Benzo(a)anthracene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.043	0.043	Benzo(a)anthracene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Benzo(a)anthracene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	48	60	74.28	-6.48	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Benzo(a)anthracene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Benzo(a)anthracene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Benzo(a)anthracene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Benzo(a)anthracene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.54 J-M-	0.54	Fluoranthene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	1.3 J-M-	1.3	Fluoranthene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.21 J-M-	0.21	Fluoranthene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	1.2 J-	1.2	Fluoranthene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.84 BL	0.84	Fluoranthene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.41 BL	0.41	Fluoranthene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.62 J-BL	0.62	Fluoranthene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.54 J-M-B	0.54	Fluoranthene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.14 J-M-B	0.14	Fluoranthene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Fluoranthene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Fluoranthene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Fluoranthene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.76 BL	0.76	Fluoranthene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.59 J-M-	0.59	Fluoranthene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.22 J-M-	0.22	Fluoranthene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.49	0.49	Fluoranthene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.3	0.3	Fluoranthene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.47	0.47	Fluoranthene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.16 J-M-	0.16	Fluoranthene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.027 J-M-	0.027	Fluoranthene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.31 J-M-	0.31	Fluoranthene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.25 J-M-	0.25	Fluoranthene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.083 J-M-	0.083	Fluoranthene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.24 J-M-B	0.24	Fluoranthene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.39 J-M-B	0.39	Fluoranthene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.15 BL	0.15	Fluoranthene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.35	0.35	Fluoranthene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Fluoranthene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Fluoranthene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.22	0.22	Fluoranthene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.22	0.22	Fluoranthene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.42	0.42	Fluoranthene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.23	0.23	Fluoranthene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.19	0.19	Fluoranthene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.46	0.46	Fluoranthene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.46	0.46	Fluoranthene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.33	0.33	Fluoranthene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.5	0.5	Fluoranthene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.29	0.29	Fluoranthene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.42	0.42	Fluoranthene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.97	0.97	Fluoranthene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	7.3	7.3	Fluoranthene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.55	0.55	Fluoranthene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.54	0.54	Fluoranthene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.012	0.012	Fluoranthene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.46	0.46	Fluoranthene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.41	0.41	Fluoranthene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.56	0.56	Fluoranthene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	3.9	3.9	Fluoranthene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.25 J	0.25	Fluoranthene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.34	0.34	Fluoranthene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.52	0.52	Fluoranthene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.44	0.44	Fluoranthene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.27	0.27	Fluoranthene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.75	0.75	Fluoranthene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.68	0.68	Fluoranthene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.45	0.45	Fluoranthene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-13	60 - 67	10/18/2010	Area 1	0.76	0.76	Fluoranthene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.66	0.66	Fluoranthene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.37	0.37	Fluoranthene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.56	0.56	Fluoranthene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.61	0.61	Fluoranthene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.027	0.027	Fluoranthene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.63	0.63	Fluoranthene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	1	1	Fluoranthene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	1.7	1.7	Fluoranthene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.87	0.87	Fluoranthene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.35	0.35	Fluoranthene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	3.3	3.3	Fluoranthene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.15	0.15	Fluoranthene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.47	0.47	Fluoranthene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.29	0.29	Fluoranthene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.53	0.53	Fluoranthene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.68	0.68	Fluoranthene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.55	0.55	Fluoranthene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	1.2	1.2	Fluoranthene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	1.6	1.6	Fluoranthene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.26	0.26	Fluoranthene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.15	0.15	Fluoranthene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.92	0.92	Fluoranthene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.72	0.72	Fluoranthene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	1.3	1.3	Fluoranthene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.48 J	0.48	Fluoranthene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.92	0.92	Fluoranthene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.18 J	0.18	Fluoranthene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	1.5	1.5	Fluoranthene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	3.8	3.8	Fluoranthene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	14	14	Fluoranthene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	6.5	6.5	Fluoranthene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	8.7	8.7	Fluoranthene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.65	0.65	Fluoranthene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	2.3	2.3	Fluoranthene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	1.5	1.5	Fluoranthene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.6	0.6	Fluoranthene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.45	0.45	Fluoranthene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.59	0.59	Fluoranthene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.74	0.74	Fluoranthene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.54	0.54	Fluoranthene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.45	0.45	Fluoranthene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.17 J	0.17	Fluoranthene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.28	0.28	Fluoranthene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.35	0.35	Fluoranthene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.11 J	0.11	Fluoranthene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.5	0.5	Fluoranthene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.33	0.33	Fluoranthene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.089 J	0.089	Fluoranthene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.24	0.24	Fluoranthene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.4	0.4	Fluoranthene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.5	0.5	Fluoranthene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.66	0.66	Fluoranthene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.26	0.26	Fluoranthene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.15	0.15	Fluoranthene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.47	0.47	Fluoranthene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	2.2	2.2	Fluoranthene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.13 J	0.13	Fluoranthene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.52	0.52	Fluoranthene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.33	0.33	Fluoranthene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.57	0.57	Fluoranthene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.13	0.13	Fluoranthene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Fluoranthene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Fluoranthene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	4.4	4.4	Fluoranthene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.14	0.14	Fluoranthene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.21 J	0.21	Fluoranthene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.62	0.62	Fluoranthene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Fluoranthene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.46	0.46	Fluoranthene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	R	R	Fluoranthene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	1.4	1.4	Fluoranthene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.72	0.72	Fluoranthene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.96	0.96	Fluoranthene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.29	0.29	Fluoranthene	FP-2	0	6	19.0012992			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-2-45	12 - 19	10/18/2010	Area 2	1	1	Fluoranthene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Fluoranthene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluoranthene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluoranthene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluoranthene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluoranthene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluoranthene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluoranthene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Fluoranthene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	2.3	2.3	Fluoranthene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.67	0.67	Fluoranthene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.87	0.87	Fluoranthene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.23	0.23	Fluoranthene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Fluoranthene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Fluoranthene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Fluoranthene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Fluoranthene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Fluoranthene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Fluoranthene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Fluoranthene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Fluoranthene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Fluoranthene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Fluoranthene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.71	0.71	Fluoranthene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.93	0.93	Fluoranthene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	1.3	1.3	Fluoranthene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.57	0.57	Fluoranthene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Fluoranthene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.88	0.88	Fluoranthene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.84	0.84	Fluoranthene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FC-4	24	30	25.2	23.964	include	Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.31	0.31	Fluoranthene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Fluoranthene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Fluoranthene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Fluoranthene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.071	0.071	Fluoranthene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.11	0.11	Fluoranthene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluoranthene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Fluoranthene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluoranthene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluoranthene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Fluoranthene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.75	0.75	Fluoranthene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.17	0.17	Fluoranthene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.014	0.014	Fluoranthene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Fluoranthene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Fluoranthene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Fluoranthene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Fluoranthene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Fluoranthene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Fluoranthene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluoranthene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.11	0.11	Fluoranthene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Fluoranthene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluoranthene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.15	0.15	Fluoranthene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluoranthene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Fluoranthene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.1	0.1	Fluoranthene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Fluoranthene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Fluoranthene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.2	0.2	Fluoranthene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Fluoranthene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Fluoranthene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Fluoranthene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Fluoranthene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Fluoranthene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Fluoranthene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Fluoranthene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Fluoranthene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluoranthene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluoranthene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Fluoranthene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	2.8	2.8	Fluoranthene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Fluoranthene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.17	0.17	Fluoranthene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Fluoranthene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Fluoranthene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.076	0.076	Fluoranthene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Fluoranthene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.096	0.096	Fluoranthene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.15	0.15	Fluoranthene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.14	0.14	Fluoranthene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Fluoranthene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.021	0.021	Fluoranthene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-11	14	26	14.0000004	13.68	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.17	0.17	Fluoranthene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.33	0.33	Fluoranthene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Fluoranthene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Fluoranthene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Fluoranthene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Fluoranthene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Fluoranthene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Fluoranthene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Fluoranthene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Fluoranthene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Fluoranthene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Fluoranthene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Fluoranthene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	7.2	7.2	Fluoranthene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.41	0.41	Fluoranthene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	1.8	1.8	Fluoranthene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.28	0.28	Fluoranthene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.026	0.026	Fluoranthene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	2.4	2.4	Fluoranthene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.89	0.89	Fluoranthene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	3.8	3.8	Fluoranthene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	1.2	1.2	Fluoranthene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.76	0.76	Fluoranthene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.042	0.042	Fluoranthene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	36	36	Fluoranthene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Fluoranthene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.94	0.94	Fluoranthene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	3.7	3.7	Fluoranthene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	6.9	6.9	Fluoranthene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	8	8	Fluoranthene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	6.9	6.9	Fluoranthene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	8.7	8.7	Fluoranthene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluoranthene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluoranthene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	5.3	5.3	Fluoranthene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluoranthene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluoranthene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	7.2	7.2	Fluoranthene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluoranthene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	2.3	2.3	Fluoranthene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	3.2	3.2	Fluoranthene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	3.7	3.7	Fluoranthene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Fluoranthene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Fluoranthene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Fluoranthene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Fluoranthene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Fluoranthene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Fluoranthene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Fluoranthene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Fluoranthene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Fluoranthene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Fluoranthene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Fluoranthene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Fluoranthene	FC-15	0	6	17.004	-12.996	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Fluoranthene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Fluoranthene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Fluoranthene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Fluoranthene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Fluoranthene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Fluoranthene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Fluoranthene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Fluoranthene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Fluoranthene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Fluoranthene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Fluoranthene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Fluoranthene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Fluoranthene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Fluoranthene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Fluoranthene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Fluoranthene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Fluoranthene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Fluoranthene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Fluoranthene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Fluoranthene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Fluoranthene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Fluoranthene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Fluoranthene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.39	0.39	Fluoranthene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.39	0.39	Fluoranthene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.81	0.81	Fluoranthene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	1.2	1.2	Fluoranthene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.99	0.99	Fluoranthene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Fluoranthene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Fluoranthene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Fluoranthene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Fluoranthene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Fluoranthene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Fluoranthene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Fluoranthene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Fluoranthene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Fluoranthene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.46	0.46	Fluoranthene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	2.4	2.4	Fluoranthene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.85	0.85	Fluoranthene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	1.1	1.1	Fluoranthene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.88	0.88	Fluoranthene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	1.6	1.6	Fluoranthene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Fluoranthene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	12	24	63.84			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Fluoranthene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	9.1	9.1	Fluoranthene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	17	17	Fluoranthene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	10	10	Fluoranthene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	11	11	Fluoranthene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	14	14	Fluoranthene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	8.8	8.8	Fluoranthene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	8	8	Fluoranthene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Fluoranthene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Fluoranthene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Fluoranthene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Fluoranthene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Fluoranthene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Fluoranthene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.46	0.46	Fluoranthene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Fluoranthene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Fluoranthene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Fluoranthene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Fluoranthene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Fluoranthene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-1	24	36	77.4			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Fluoranthene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Fluoranthene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Fluoranthene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Fluoranthene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Fluoranthene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Fluoranthene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Fluoranthene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Fluoranthene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Fluoranthene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Fluoranthene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Fluoranthene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Fluoranthene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Fluoranthene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Fluoranthene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.026	0.026	Fluorene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.13 J-	0.13	Fluorene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.024	0.024	Fluorene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.055	0.055	Fluorene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.056	0.056	Fluorene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.037	0.037	Fluorene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.068 J-	0.068	Fluorene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.050 BL	0.05	Fluorene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.017 J-BL	0.017	Fluorene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Fluorene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Fluorene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Fluorene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.11	0.11	Fluorene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.052	0.052	Fluorene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.018	0.018	Fluorene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.051	0.051	Fluorene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.042	0.042	Fluorene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.067	0.067	Fluorene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.024	0.024	Fluorene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0052 U	0.0052	Fluorene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.032	0.032	Fluorene	OC-9	0	6	23.997336			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB2B_20	6 - 24	5/2/2007	Area 2	0.026	0.026	Fluorene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.0088	0.0088	Fluorene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.024 BL	0.024	Fluorene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.039 BL	0.039	Fluorene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.0096 BL	0.0096	Fluorene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.022	0.022	Fluorene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Fluorene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Fluorene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.01	0.01	Fluorene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.01	0.01	Fluorene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.023	0.023	Fluorene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.013	0.013	Fluorene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.012	0.012	Fluorene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.032	0.032	Fluorene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.026	0.026	Fluorene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.015	0.015	Fluorene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.031	0.031	Fluorene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.023	0.023	Fluorene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.022	0.022	Fluorene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.031	0.031	Fluorene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	1.4	1.4	Fluorene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.026	0.026	Fluorene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.022	0.022	Fluorene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Fluorene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.035 J	0.035	Fluorene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.02	0.02	Fluorene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.042	0.042	Fluorene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.2	0.2	Fluorene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.016	0.016	Fluorene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.018 J	0.018	Fluorene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.024	0.024	Fluorene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.032	0.032	Fluorene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.014	0.014	Fluorene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.057	0.057	Fluorene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.045	0.045	Fluorene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.048	0.048	Fluorene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.099	0.099	Fluorene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.027	0.027	Fluorene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.018	0.018	Fluorene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.028	0.028	Fluorene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.034	0.034	Fluorene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	Fluorene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.041	0.041	Fluorene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.047	0.047	Fluorene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	Fluorene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.16 U	0.16	Fluorene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.028 J	0.028	Fluorene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.16	0.16	Fluorene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.011 J	0.011	Fluorene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.032 J	0.032	Fluorene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.013	0.013	Fluorene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.026	0.026	Fluorene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.044	0.044	Fluorene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.046 J	0.046	Fluorene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.054	0.054	Fluorene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.082	0.082	Fluorene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.016	0.016	Fluorene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.0089 U	0.0089	Fluorene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.055	0.055	Fluorene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.059	0.059	Fluorene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.089	0.089	Fluorene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.047	0.047	Fluorene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.12	0.12	Fluorene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.016	0.016	Fluorene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.096	0.096	Fluorene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.24	0.24	Fluorene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	1.8 U	1.8	Fluorene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.5	0.5	Fluorene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.74	0.74	Fluorene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.042	0.042	Fluorene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.2	0.2	Fluorene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.11	0.11	Fluorene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.035	0.035	Fluorene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.035	0.035	Fluorene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.039	0.039	Fluorene	OC-11	0	6	35.9973			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.06	0.06	Fluorene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.033	0.033	Fluorene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.031	0.031	Fluorene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.011	0.011	Fluorene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.024	0.024	Fluorene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.037 J	0.037	Fluorene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.0082	0.0082	Fluorene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.027	0.027	Fluorene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.035	0.035	Fluorene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0099	0.0099	Fluorene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.016	0.016	Fluorene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.099	0.099	Fluorene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.046	0.046	Fluorene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 U	0.21	Fluorene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.01	0.01	Fluorene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.0076 U	0.0076	Fluorene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.033 J	0.033	Fluorene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.19	0.19	Fluorene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.010 J	0.01	Fluorene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.015	0.015	Fluorene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.0088 U	0.0088	Fluorene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.033	0.033	Fluorene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.0099	0.0099	Fluorene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Fluorene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Fluorene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.55	0.55	Fluorene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.007	0.007	Fluorene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.012	0.012	Fluorene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.042	0.042	Fluorene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Fluorene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.06	0.06	Fluorene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0082	0.0082	Fluorene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.12	0.12	Fluorene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.046	0.046	Fluorene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.11	0.11	Fluorene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.024	0.024	Fluorene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.094	0.094	Fluorene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Fluorene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Fluorene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluorene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluorene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluorene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluorene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluorene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluorene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Fluorene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.23	0.23	Fluorene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.089	0.089	Fluorene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Fluorene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	30	36	41.9960004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Fluorene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Fluorene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Fluorene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Fluorene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Fluorene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.62	0.62	Fluorene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.032	0.032	Fluorene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Fluorene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Fluorene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Fluorene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Fluorene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Fluorene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Fluorene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Fluorene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Fluorene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Fluorene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Fluorene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Fluorene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.12	0.12	Fluorene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.14	0.14	Fluorene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.19	0.19	Fluorene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.07	0.07	Fluorene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Fluorene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.094	0.094	Fluorene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Fluorene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.093	0.093	Fluorene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Fluorene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Fluorene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Fluorene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Fluorene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.037	0.037	Fluorene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Fluorene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Fluorene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Fluorene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Fluorene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.0095	0.0095	Fluorene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.013	0.013	Fluorene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluorene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Fluorene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluorene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluorene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Fluorene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.082	0.082	Fluorene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.02	0.02	Fluorene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Fluorene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Fluorene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Fluorene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Fluorene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Fluorene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Fluorene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Fluorene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Fluorene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.016 U	0.016	Fluorene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Fluorene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluorene		12	18	24			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-20	12 - 24	9/12/2013	Area 2	0.013 U	0.013	Fluorene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluorene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Fluorene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.013	0.013	Fluorene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Fluorene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Fluorene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.012	0.012	Fluorene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Fluorene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Fluorene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Fluorene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Fluorene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Fluorene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Fluorene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Fluorene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Fluorene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Fluorene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Fluorene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Fluorene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.39	0.39	Fluorene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Fluorene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.02	0.02	Fluorene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Fluorene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Fluorene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.014 U	0.014	Fluorene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Fluorene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.013 U	0.013	Fluorene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.014	0.014	Fluorene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.015	0.015	Fluorene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Fluorene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Fluorene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Fluorene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Fluorene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Fluorene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Fluorene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Fluorene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.023	0.023	Fluorene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Fluorene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Fluorene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Fluorene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.018	0.018	Fluorene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Fluorene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Fluorene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Fluorene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Fluorene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Fluorene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Fluorene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Fluorene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Fluorene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Fluorene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Fluorene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Fluorene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Fluorene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Fluorene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Fluorene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Fluorene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Fluorene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Fluorene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Fluorene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Fluorene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.52	0.52	Fluorene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.033	0.033	Fluorene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.25	0.25	Fluorene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.054	0.054	Fluorene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Fluorene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.26	0.26	Fluorene	HS-2	0	24	29.0000004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.11	0.11	Fluorene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.32	0.32	Fluorene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.076	0.076	Fluorene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.075	0.075	Fluorene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Fluorene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	1.9	1.9	Fluorene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Fluorene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.079	0.079	Fluorene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.33	0.33	Fluorene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	0.56	0.56	Fluorene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.57	0.57	Fluorene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	0.61	0.61	Fluorene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	0.98	0.98	Fluorene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluorene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	FRASER AVE SLIP	NA	NA	Fluorene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.6	0.6	Fluorene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluorene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluorene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	0.52	0.52	Fluorene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Fluorene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.19	0.19	Fluorene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.34	0.34	Fluorene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.41	0.41	Fluorene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Fluorene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Fluorene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Fluorene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Fluorene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Fluorene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Fluorene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Fluorene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Fluorene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Fluorene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Fluorene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Fluorene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Fluorene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Fluorene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Fluorene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Fluorene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Fluorene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Fluorene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Fluorene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Fluorene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Fluorene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Fluorene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Fluorene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Fluorene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Fluorene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Fluorene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Fluorene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Fluorene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Fluorene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Fluorene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Fluorene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Fluorene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Fluorene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Fluorene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Fluorene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Fluorene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.034	0.034	Fluorene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.052	0.052	Fluorene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.12	0.12	Fluorene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.24	0.24	Fluorene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.16	0.16	Fluorene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Fluorene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Fluorene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Fluorene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Fluorene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Fluorene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Fluorene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Fluorene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Fluorene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Fluorene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.12	0.12	Fluorene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	1.4	1.4	Fluorene	OC-4	4	6	101.997672			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.17	0.17	Fluorene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.18	0.18	Fluorene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.1	0.1	Fluorene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.18	0.18	Fluorene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Fluorene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Fluorene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	0.89	0.89	Fluorene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	2	2	Fluorene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	0.99	0.99	Fluorene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	1.1	1.1	Fluorene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	1.5	1.5	Fluorene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	0.93	0.93	Fluorene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	0.76	0.76	Fluorene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Fluorene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	48	60	64.0033716			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Fluorene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Fluorene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Fluorene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Fluorene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Fluorene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Fluorene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Fluorene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Fluorene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Fluorene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.063	0.063	Fluorene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Fluorene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Fluorene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Fluorene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Fluorene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Fluorene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Fluorene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Fluorene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Fluorene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Fluorene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Fluorene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Fluorene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Fluorene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Fluorene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Fluorene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Fluorene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Fluorene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Fluorene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Fluorene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Fluorene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Fluorene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Fluorene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Fluorene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Fluorene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Fluorene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Fluorene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Fluorene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Fluorene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Fluorene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Fluorene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Fluorene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Fluorene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Fluorene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Fluorene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Fluorene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Fluorene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	0	12	51.048			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Fluorene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Fluorene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Fluorene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.14	0.14	Indeno(1,2,3-cd)pyrene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.27 J-	0.27	Indeno(1,2,3-cd)pyrene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.045	0.045	Indeno(1,2,3-cd)pyrene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.46	0.46	Indeno(1,2,3-cd)pyrene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.27	0.27	Indeno(1,2,3-cd)pyrene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.16	0.16	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.32 J-	0.32	Indeno(1,2,3-cd)pyrene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.19	0.19	Indeno(1,2,3-cd)pyrene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.087 J-	0.087	Indeno(1,2,3-cd)pyrene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Indeno(1,2,3-cd)pyrene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Indeno(1,2,3-cd)pyrene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.31	0.31	Indeno(1,2,3-cd)pyrene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.16	0.16	Indeno(1,2,3-cd)pyrene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.038	0.038	Indeno(1,2,3-cd)pyrene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.15	0.15	Indeno(1,2,3-cd)pyrene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.078	0.078	Indeno(1,2,3-cd)pyrene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.093	0.093	Indeno(1,2,3-cd)pyrene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.047	0.047	Indeno(1,2,3-cd)pyrene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0064	0.0064	Indeno(1,2,3-cd)pyrene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.084	0.084	Indeno(1,2,3-cd)pyrene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.07	0.07	Indeno(1,2,3-cd)pyrene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.018	0.018	Indeno(1,2,3-cd)pyrene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.12	0.12	Indeno(1,2,3-cd)pyrene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.17	0.17	Indeno(1,2,3-cd)pyrene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.041	0.041	Indeno(1,2,3-cd)pyrene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.063	0.063	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Indeno(1,2,3-cd)pyrene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Indeno(1,2,3-cd)pyrene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.039	0.039	Indeno(1,2,3-cd)pyrene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.037	0.037	Indeno(1,2,3-cd)pyrene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.15	0.15	Indeno(1,2,3-cd)pyrene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.043	0.043	Indeno(1,2,3-cd)pyrene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.037	0.037	Indeno(1,2,3-cd)pyrene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.13	0.13	Indeno(1,2,3-cd)pyrene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.13	0.13	Indeno(1,2,3-cd)pyrene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.077	0.077	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.12	0.12	Indeno(1,2,3-cd)pyrene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.053	0.053	Indeno(1,2,3-cd)pyrene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.051	0.051	Indeno(1,2,3-cd)pyrene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.19	0.19	Indeno(1,2,3-cd)pyrene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.92	0.92	Indeno(1,2,3-cd)pyrene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.16	0.16	Indeno(1,2,3-cd)pyrene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.16	0.16	Indeno(1,2,3-cd)pyrene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Indeno(1,2,3-cd)pyrene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.12	0.12	Indeno(1,2,3-cd)pyrene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.12	0.12	Indeno(1,2,3-cd)pyrene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.17	0.17	Indeno(1,2,3-cd)pyrene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.42	0.42	Indeno(1,2,3-cd)pyrene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.080 J	0.08	Indeno(1,2,3-cd)pyrene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.093	0.093	Indeno(1,2,3-cd)pyrene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.12	0.12	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.15	0.15	Indeno(1,2,3-cd)pyrene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.069	0.069	Indeno(1,2,3-cd)pyrene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.2	0.2	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.33	0.33	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.2	0.2	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.3	0.3	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.16	0.16	Indeno(1,2,3-cd)pyrene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.12	0.12	Indeno(1,2,3-cd)pyrene		0	12	66.0057			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-14	12 - 36	10/17/2010	Area 1	0.2	0.2	Indeno(1,2,3-cd)pyrene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.16	0.16	Indeno(1,2,3-cd)pyrene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0061	0.0061	Indeno(1,2,3-cd)pyrene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.17	0.17	Indeno(1,2,3-cd)pyrene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.22	0.22	Indeno(1,2,3-cd)pyrene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.35	0.35	Indeno(1,2,3-cd)pyrene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.19	0.19	Indeno(1,2,3-cd)pyrene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.1	0.1	Indeno(1,2,3-cd)pyrene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.74	0.74	Indeno(1,2,3-cd)pyrene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.042 U	0.042	Indeno(1,2,3-cd)pyrene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.15 J	0.15	Indeno(1,2,3-cd)pyrene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.065	0.065	Indeno(1,2,3-cd)pyrene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.14	0.14	Indeno(1,2,3-cd)pyrene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.21	0.21	Indeno(1,2,3-cd)pyrene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.11	0.11	Indeno(1,2,3-cd)pyrene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.34	0.34	Indeno(1,2,3-cd)pyrene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.41	0.41	Indeno(1,2,3-cd)pyrene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.06	0.06	Indeno(1,2,3-cd)pyrene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.062	0.062	Indeno(1,2,3-cd)pyrene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.33 J	0.33	Indeno(1,2,3-cd)pyrene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.28 J	0.28	Indeno(1,2,3-cd)pyrene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.37 J	0.37	Indeno(1,2,3-cd)pyrene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.16 J	0.16	Indeno(1,2,3-cd)pyrene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.31 J	0.31	Indeno(1,2,3-cd)pyrene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.041	0.041	Indeno(1,2,3-cd)pyrene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.24	0.24	Indeno(1,2,3-cd)pyrene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.64	0.64	Indeno(1,2,3-cd)pyrene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	2.5	2.5	Indeno(1,2,3-cd)pyrene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	1.4 J	1.4	Indeno(1,2,3-cd)pyrene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	1.5 J	1.5	Indeno(1,2,3-cd)pyrene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.35	0.35	Indeno(1,2,3-cd)pyrene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.99	0.99	Indeno(1,2,3-cd)pyrene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.52	0.52	Indeno(1,2,3-cd)pyrene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.25	0.25	Indeno(1,2,3-cd)pyrene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.25	0.25	Indeno(1,2,3-cd)pyrene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.34	0.34	Indeno(1,2,3-cd)pyrene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.43	0.43	Indeno(1,2,3-cd)pyrene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.24	0.24	Indeno(1,2,3-cd)pyrene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.28	0.28	Indeno(1,2,3-cd)pyrene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.038	0.038	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.075	0.075	Indeno(1,2,3-cd)pyrene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.14	0.14	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.038 J	0.038	Indeno(1,2,3-cd)pyrene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.26	0.26	Indeno(1,2,3-cd)pyrene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.16 J	0.16	Indeno(1,2,3-cd)pyrene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.041	0.041	Indeno(1,2,3-cd)pyrene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.14 J	0.14	Indeno(1,2,3-cd)pyrene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.15 J	0.15	Indeno(1,2,3-cd)pyrene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.25	0.25	Indeno(1,2,3-cd)pyrene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.21 U	0.21	Indeno(1,2,3-cd)pyrene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.088 J	0.088	Indeno(1,2,3-cd)pyrene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.072	0.072	Indeno(1,2,3-cd)pyrene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.2	0.2	Indeno(1,2,3-cd)pyrene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.68	0.68	Indeno(1,2,3-cd)pyrene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.039 J	0.039	Indeno(1,2,3-cd)pyrene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.25	0.25	Indeno(1,2,3-cd)pyrene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.15	0.15	Indeno(1,2,3-cd)pyrene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.15 U	0.15	Indeno(1,2,3-cd)pyrene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.049	0.049	Indeno(1,2,3-cd)pyrene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Indeno(1,2,3-cd)pyrene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Indeno(1,2,3-cd)pyrene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.67	0.67	Indeno(1,2,3-cd)pyrene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.043	0.043	Indeno(1,2,3-cd)pyrene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.049	0.049	Indeno(1,2,3-cd)pyrene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.22	0.22	Indeno(1,2,3-cd)pyrene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.19	0.19	Indeno(1,2,3-cd)pyrene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.028	0.028	Indeno(1,2,3-cd)pyrene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.37	0.37	Indeno(1,2,3-cd)pyrene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.42	0.42	Indeno(1,2,3-cd)pyrene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.41	0.41	Indeno(1,2,3-cd)pyrene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.13 J	0.13	Indeno(1,2,3-cd)pyrene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.25	0.25	Indeno(1,2,3-cd)pyrene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	6	12	48			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Indeno(1,2,3-cd)pyrene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.48	0.48	Indeno(1,2,3-cd)pyrene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.19	0.19	Indeno(1,2,3-cd)pyrene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.21 U	0.21	Indeno(1,2,3-cd)pyrene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.055	0.055	Indeno(1,2,3-cd)pyrene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.17	0.17	Indeno(1,2,3-cd)pyrene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.23	0.23	Indeno(1,2,3-cd)pyrene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.24	0.24	Indeno(1,2,3-cd)pyrene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.11	0.11	Indeno(1,2,3-cd)pyrene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.21	0.21	Indeno(1,2,3-cd)pyrene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.19	0.19	Indeno(1,2,3-cd)pyrene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-4	42	48	25.2	23.964	include	No	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-11	42 - 60	9/11/2013	Area 2	0.061	0.061	Indeno(1,2,3-cd)pyrene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.021	0.021	Indeno(1,2,3-cd)pyrene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.022	0.022	Indeno(1,2,3-cd)pyrene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.21	0.21	Indeno(1,2,3-cd)pyrene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.047	0.047	Indeno(1,2,3-cd)pyrene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Indeno(1,2,3-cd)pyrene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.029	0.029	Indeno(1,2,3-cd)pyrene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.041	0.041	Indeno(1,2,3-cd)pyrene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.026	0.026	Indeno(1,2,3-cd)pyrene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.043	0.043	Indeno(1,2,3-cd)pyrene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.37	0.37	Indeno(1,2,3-cd)pyrene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.041	0.041	Indeno(1,2,3-cd)pyrene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.014	0.014	Indeno(1,2,3-cd)pyrene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.019	0.019	Indeno(1,2,3-cd)pyrene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.037	0.037	Indeno(1,2,3-cd)pyrene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.034	0.034	Indeno(1,2,3-cd)pyrene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Indeno(1,2,3-cd)pyrene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.034	0.034	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.056	0.056	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	1.6	1.6	Indeno(1,2,3-cd)pyrene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.079	0.079	Indeno(1,2,3-cd)pyrene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.22	0.22	Indeno(1,2,3-cd)pyrene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.033	0.033	Indeno(1,2,3-cd)pyrene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.013 U	0.013	Indeno(1,2,3-cd)pyrene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.57	0.57	Indeno(1,2,3-cd)pyrene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.24	0.24	Indeno(1,2,3-cd)pyrene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	1	1	Indeno(1,2,3-cd)pyrene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.26	0.26	Indeno(1,2,3-cd)pyrene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.1	0.1	Indeno(1,2,3-cd)pyrene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Indeno(1,2,3-cd)pyrene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	4.9	4.9	Indeno(1,2,3-cd)pyrene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.21	0.21	Indeno(1,2,3-cd)pyrene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.97	0.97	Indeno(1,2,3-cd)pyrene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	1.8	1.8	Indeno(1,2,3-cd)pyrene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.83	0.83	Indeno(1,2,3-cd)pyrene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	1	1	Indeno(1,2,3-cd)pyrene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	1.8	1.8	Indeno(1,2,3-cd)pyrene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	1.3	1.3	Indeno(1,2,3-cd)pyrene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	1.6	1.6	Indeno(1,2,3-cd)pyrene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.51	0.51	Indeno(1,2,3-cd)pyrene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.49	0.49	Indeno(1,2,3-cd)pyrene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.61	0.61	Indeno(1,2,3-cd)pyrene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-15	6	18	29.997288	-2.472	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.12	0.12	Indeno(1,2,3-cd)pyrene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.1	0.1	Indeno(1,2,3-cd)pyrene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.15	0.15	Indeno(1,2,3-cd)pyrene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.15	0.15	Indeno(1,2,3-cd)pyrene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.14	0.14	Indeno(1,2,3-cd)pyrene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.074	0.074	Indeno(1,2,3-cd)pyrene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	0.27	0.27	Indeno(1,2,3-cd)pyrene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.0350 U	0.035	Indeno(1,2,3-cd)pyrene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.19	0.19	Indeno(1,2,3-cd)pyrene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.16	0.16	Indeno(1,2,3-cd)pyrene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.32	0.32	Indeno(1,2,3-cd)pyrene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	48	59	63.84			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	1.3	1.3	Indeno(1,2,3-cd)pyrene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	1.9	1.9	Indeno(1,2,3-cd)pyrene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	1.5	1.5	Indeno(1,2,3-cd)pyrene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	1.3	1.3	Indeno(1,2,3-cd)pyrene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	1.8	1.8	Indeno(1,2,3-cd)pyrene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	1.1	1.1	Indeno(1,2,3-cd)pyrene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	0.91	0.91	Indeno(1,2,3-cd)pyrene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.1	0.1	Indeno(1,2,3-cd)pyrene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	60	72	77.4			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Indeno(1,2,3-cd)pyrene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Indeno(1,2,3-cd)pyrene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Indeno(1,2,3-cd)pyrene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.024	0.024	Naphthalene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.048 J-	0.048	Naphthalene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.051	0.051	Naphthalene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.084	0.084	Naphthalene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.068 J+BLM	0.068	Naphthalene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.075 J+BLM	0.075	Naphthalene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.21 J-M-B	0.21	Naphthalene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.068 BL	0.068	Naphthalene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.035 J-BL	0.035	Naphthalene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.022	0.022	Naphthalene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0045 J	0.0045	Naphthalene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Naphthalene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.14 BL	0.14	Naphthalene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.074	0.074	Naphthalene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.027	0.027	Naphthalene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.12	0.12	Naphthalene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.072	0.072	Naphthalene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.053	0.053	Naphthalene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.039 J-M-	0.039	Naphthalene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.0062 J-M-	0.0062	Naphthalene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.058 J-M-	0.058	Naphthalene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.049 J-M-	0.049	Naphthalene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.016 J-M-	0.016	Naphthalene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.046 BL	0.046	Naphthalene		0	5					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB2B_22	0 - 5	5/2/2007	Area 2	0.079 BL	0.079	Naphthalene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.015 BL	0.015	Naphthalene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.029	0.029	Naphthalene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Naphthalene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Naphthalene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.016 J	0.016	Naphthalene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.012 J	0.012	Naphthalene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.049	0.049	Naphthalene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.012	0.012	Naphthalene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.016	0.016	Naphthalene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.043	0.043	Naphthalene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.036	0.036	Naphthalene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.0096	0.0096	Naphthalene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.085	0.085	Naphthalene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.029	0.029	Naphthalene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.15	0.15	Naphthalene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.021	0.021	Naphthalene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.57	0.57	Naphthalene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.045	0.045	Naphthalene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.028	0.028	Naphthalene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0040 U	0.004	Naphthalene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.025	0.025	Naphthalene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.037	0.037	Naphthalene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.11	0.11	Naphthalene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.063 U	0.063	Naphthalene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.02	0.02	Naphthalene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.028 J	0.028	Naphthalene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.023	0.023	Naphthalene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.096	0.096	Naphthalene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.02	0.02	Naphthalene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.053	0.053	Naphthalene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.04	0.04	Naphthalene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.024	0.024	Naphthalene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.042	0.042	Naphthalene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.018	0.018	Naphthalene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.035	0.035	Naphthalene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.036	0.036	Naphthalene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.05	0.05	Naphthalene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0043 U	0.0043	Naphthalene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.033	0.033	Naphthalene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.015	0.015	Naphthalene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.34 U	0.34	Naphthalene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.056	0.056	Naphthalene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.026	0.026	Naphthalene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.068	0.068	Naphthalene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.0066 J	0.0066	Naphthalene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	R	R	Naphthalene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.018	0.018	Naphthalene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.041	0.041	Naphthalene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.14	0.14	Naphthalene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.028	0.028	Naphthalene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.092	0.092	Naphthalene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.082	0.082	Naphthalene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.031	0.031	Naphthalene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.0089 U	0.0089	Naphthalene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.042	0.042	Naphthalene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.036	0.036	Naphthalene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.036	0.036	Naphthalene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.053	0.053	Naphthalene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.11	0.11	Naphthalene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.024	0.024	Naphthalene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.098	0.098	Naphthalene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.074	0.074	Naphthalene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	0.57	0.57	Naphthalene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.26	0.26	Naphthalene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.35	0.35	Naphthalene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.043	0.043	Naphthalene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.11	0.11	Naphthalene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.074	0.074	Naphthalene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.037	0.037	Naphthalene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.04	0.04	Naphthalene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.044	0.044	Naphthalene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.06	0.06	Naphthalene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.031	0.031	Naphthalene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.041	0.041	Naphthalene	OC-2	0	6	6.0053004			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-2-26	0 - 6	10/16/2010	Area 2	0.01	0.01	Naphthalene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.023 J	0.023	Naphthalene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	4.3	4.3	Naphthalene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.0094	0.0094	Naphthalene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.028	0.028	Naphthalene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.032	0.032	Naphthalene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0093	0.0093	Naphthalene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.013	0.013	Naphthalene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.045	0.045	Naphthalene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.037	0.037	Naphthalene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.021	0.021	Naphthalene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.013	0.013	Naphthalene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.0076 U	0.0076	Naphthalene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.029	0.029	Naphthalene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.14	0.14	Naphthalene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.0063 J	0.0063	Naphthalene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.012	0.012	Naphthalene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.012	0.012	Naphthalene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.03	0.03	Naphthalene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.0099	0.0099	Naphthalene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Naphthalene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Naphthalene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.21	0.21	Naphthalene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.008	0.008	Naphthalene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.0080 U	0.008	Naphthalene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.024	0.024	Naphthalene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Naphthalene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.045	0.045	Naphthalene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0071	0.0071	Naphthalene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.11	0.11	Naphthalene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.046	0.046	Naphthalene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.062	0.062	Naphthalene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.018	0.018	Naphthalene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.059	0.059	Naphthalene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Naphthalene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Naphthalene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Naphthalene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Naphthalene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Naphthalene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Naphthalene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Naphthalene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Naphthalene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Naphthalene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.45	0.45	Naphthalene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.21	0.21	Naphthalene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Naphthalene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Naphthalene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Naphthalene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Naphthalene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Naphthalene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Naphthalene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	0.68	0.68	Naphthalene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.11	0.11	Naphthalene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Naphthalene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Naphthalene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Naphthalene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Naphthalene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Naphthalene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Naphthalene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Naphthalene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Naphthalene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Naphthalene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Naphthalene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Naphthalene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.13	0.13	Naphthalene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.23	0.23	Naphthalene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.28	0.28	Naphthalene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.17	0.17	Naphthalene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Naphthalene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.15	0.15	Naphthalene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Naphthalene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.18	0.18	Naphthalene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Naphthalene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Naphthalene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Naphthalene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Naphthalene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.085	0.085	Naphthalene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Naphthalene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Naphthalene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Naphthalene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Naphthalene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.028	0.028	Naphthalene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.033	0.033	Naphthalene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Naphthalene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Naphthalene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Naphthalene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Naphthalene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Naphthalene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.16	0.16	Naphthalene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.038	0.038	Naphthalene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.0097 U	0.0097	Naphthalene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Naphthalene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Naphthalene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Naphthalene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Naphthalene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Naphthalene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Naphthalene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Naphthalene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.028	0.028	Naphthalene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Naphthalene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Naphthalene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.037	0.037	Naphthalene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Naphthalene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Naphthalene		24	30	24			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-20	24 - 36	9/12/2013	Area 2	0.033	0.033	Naphthalene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Naphthalene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Naphthalene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.018	0.018	Naphthalene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Naphthalene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Naphthalene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Naphthalene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Naphthalene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Naphthalene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Naphthalene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Naphthalene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Naphthalene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Naphthalene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Naphthalene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Naphthalene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	0.22	0.22	Naphthalene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Naphthalene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.058	0.058	Naphthalene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Naphthalene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Naphthalene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.031	0.031	Naphthalene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Naphthalene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.014	0.014	Naphthalene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.045	0.045	Naphthalene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.039	0.039	Naphthalene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Naphthalene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.0097 U	0.0097	Naphthalene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Naphthalene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Naphthalene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Naphthalene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Naphthalene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Naphthalene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.049	0.049	Naphthalene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Naphthalene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Naphthalene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Naphthalene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.035	0.035	Naphthalene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Naphthalene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Naphthalene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Naphthalene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Naphthalene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Naphthalene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Naphthalene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Naphthalene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Naphthalene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Naphthalene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Naphthalene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Naphthalene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Naphthalene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Naphthalene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Naphthalene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Naphthalene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Naphthalene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Naphthalene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Naphthalene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Naphthalene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.51	0.51	Naphthalene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.037	0.037	Naphthalene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.31	0.31	Naphthalene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.095	0.095	Naphthalene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.014	0.014	Naphthalene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	0.33	0.33	Naphthalene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.24	0.24	Naphthalene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	0.57	0.57	Naphthalene	CS-3	0	6	33			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.1	0.1	Naphthalene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.098	0.098	Naphthalene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.010 U	0.01	Naphthalene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	0.5	0.5	Naphthalene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Naphthalene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.24	0.24	Naphthalene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	0.53	0.53	Naphthalene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	0.73	0.73	Naphthalene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	0.66	0.66	Naphthalene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	0.5	0.5	Naphthalene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	0.91	0.91	Naphthalene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Naphthalene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Naphthalene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.72	0.72	Naphthalene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Naphthalene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Naphthalene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	0.51	0.51	Naphthalene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Naphthalene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	0.37	0.37	Naphthalene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	0.36	0.36	Naphthalene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	0.71	0.71	Naphthalene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Naphthalene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Naphthalene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Naphthalene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Naphthalene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Naphthalene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Naphthalene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Naphthalene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Naphthalene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Naphthalene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Naphthalene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Naphthalene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Naphthalene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Naphthalene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Naphthalene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Naphthalene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Naphthalene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Naphthalene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Naphthalene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Naphthalene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Naphthalene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Naphthalene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Naphthalene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Naphthalene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Naphthalene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Naphthalene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Naphthalene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Naphthalene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Naphthalene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Naphthalene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Naphthalene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Naphthalene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Naphthalene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Naphthalene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Naphthalene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Naphthalene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.098	0.098	Naphthalene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.14	0.14	Naphthalene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.33	0.33	Naphthalene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.59	0.59	Naphthalene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.41	0.41	Naphthalene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Naphthalene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Naphthalene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Naphthalene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Naphthalene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Naphthalene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Naphthalene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Naphthalene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Naphthalene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Naphthalene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.12	0.12	Naphthalene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	0.43	0.43	Naphthalene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.5	0.5	Naphthalene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	18	30	101.997672			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
 Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.49	0.49	Naphthalene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.26	0.26	Naphthalene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.37	0.37	Naphthalene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Naphthalene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Naphthalene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	1.2	1.2	Naphthalene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	2.2	2.2	Naphthalene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	1.2	1.2	Naphthalene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	1.4	1.4	Naphthalene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	1.4	1.4	Naphthalene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	1.1	1.1	Naphthalene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	1.1	1.1	Naphthalene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Naphthalene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	12	24	23.996196			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Naphthalene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Naphthalene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Naphthalene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Naphthalene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Naphthalene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Naphthalene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Naphthalene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Naphthalene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.15	0.15	Naphthalene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Naphthalene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Naphthalene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Naphthalene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Naphthalene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Naphthalene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Naphthalene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Naphthalene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Naphthalene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Naphthalene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Naphthalene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Naphthalene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Naphthalene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Naphthalene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Naphthalene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Naphthalene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Naphthalene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Naphthalene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Naphthalene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Naphthalene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Naphthalene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Naphthalene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Naphthalene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Naphthalene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Naphthalene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Naphthalene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Naphthalene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Naphthalene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Naphthalene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Naphthalene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Naphthalene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Naphthalene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Naphthalene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Naphthalene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Naphthalene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Naphthalene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	36	48	51.048			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Naphthalene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Naphthalene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Naphthalene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.3	0.3	Phenanthrene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	1.1 J-	1.1	Phenanthrene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.14	0.14	Phenanthrene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.37	0.37	Phenanthrene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.41 BL	0.41	Phenanthrene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.23 BL	0.23	Phenanthrene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.42 J-BL	0.42	Phenanthrene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.30 BL	0.3	Phenanthrene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.086 J-BL	0.086	Phenanthrene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.01	0.01	Phenanthrene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0056 J	0.0056	Phenanthrene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0069 J-S-	0.0069	Phenanthrene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.65 BL	0.65	Phenanthrene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.4	0.4	Phenanthrene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.15	0.15	Phenanthrene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.28 BL	0.28	Phenanthrene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.21 BL	0.21	Phenanthrene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.47 BL	0.47	Phenanthrene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.15 J-M-	0.15	Phenanthrene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.015 J-M-	0.015	Phenanthrene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.18 J-M-	0.18	Phenanthrene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.15 J-M-	0.15	Phenanthrene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.054 J-M-	0.054	Phenanthrene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.15 BL	0.15	Phenanthrene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.23 BL	0.23	Phenanthrene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.076 BL	0.076	Phenanthrene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.27	0.27	Phenanthrene		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Phenanthrene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Phenanthrene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.086	0.086	Phenanthrene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.092	0.092	Phenanthrene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.17	0.17	Phenanthrene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.11	0.11	Phenanthrene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.088	0.088	Phenanthrene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.25	0.25	Phenanthrene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.21	0.21	Phenanthrene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.18	0.18	Phenanthrene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.28	0.28	Phenanthrene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.18	0.18	Phenanthrene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.25	0.25	Phenanthrene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.48	0.48	Phenanthrene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	8.3	8.3	Phenanthrene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.28	0.28	Phenanthrene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.22	0.22	Phenanthrene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.006	0.006	Phenanthrene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.19	0.19	Phenanthrene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.19	0.19	Phenanthrene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.29	0.29	Phenanthrene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	2.3	2.3	Phenanthrene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.10 J	0.1	Phenanthrene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.15	0.15	Phenanthrene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.21	0.21	Phenanthrene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.18	0.18	Phenanthrene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.15	0.15	Phenanthrene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.36	0.36	Phenanthrene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.41	0.41	Phenanthrene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.35	0.35	Phenanthrene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.61	0.61	Phenanthrene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.28	0.28	Phenanthrene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.16	0.16	Phenanthrene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.24	0.24	Phenanthrene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.32	0.32	Phenanthrene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.011	0.011	Phenanthrene	OC-13	0	6	16.0056996			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-15	12 - 16	10/18/2010	Area 1	0.34 J	0.34	Phenanthrene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.43	0.43	Phenanthrene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	1.2	1.2	Phenanthrene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.37	0.37	Phenanthrene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.13	0.13	Phenanthrene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	1.8	1.8	Phenanthrene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.061	0.061	Phenanthrene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.21	0.21	Phenanthrene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.16	0.16	Phenanthrene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.22	0.22	Phenanthrene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.37	0.37	Phenanthrene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.31	0.31	Phenanthrene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.47	0.47	Phenanthrene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.72	0.72	Phenanthrene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.13	0.13	Phenanthrene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.056	0.056	Phenanthrene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.48	0.48	Phenanthrene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.43	0.43	Phenanthrene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.86	0.86	Phenanthrene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.29 J	0.29	Phenanthrene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.81	0.81	Phenanthrene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.14 J	0.14	Phenanthrene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.94	0.94	Phenanthrene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	2.2	2.2	Phenanthrene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	9.8	9.8	Phenanthrene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	4.2	4.2	Phenanthrene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	6.5	6.5	Phenanthrene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.34	0.34	Phenanthrene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	1.4	1.4	Phenanthrene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	1.1	1.1	Phenanthrene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.34	0.34	Phenanthrene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.22	0.22	Phenanthrene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.3	0.3	Phenanthrene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.41	0.41	Phenanthrene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.3	0.3	Phenanthrene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.26	0.26	Phenanthrene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.090 J	0.09	Phenanthrene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.14	0.14	Phenanthrene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.15	0.15	Phenanthrene		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.044 J	0.044	Phenanthrene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.21	0.21	Phenanthrene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.18	0.18	Phenanthrene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.045 J	0.045	Phenanthrene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.093	0.093	Phenanthrene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.86	0.86	Phenanthrene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.32	0.32	Phenanthrene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.64	0.64	Phenanthrene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.12	0.12	Phenanthrene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.077	0.077	Phenanthrene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.26	0.26	Phenanthrene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	2	2	Phenanthrene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.053 J	0.053	Phenanthrene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.18	0.18	Phenanthrene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.14	0.14	Phenanthrene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.19	0.19	Phenanthrene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.052	0.052	Phenanthrene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Phenanthrene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Phenanthrene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	4	4	Phenanthrene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.046	0.046	Phenanthrene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.058	0.058	Phenanthrene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.27	0.27	Phenanthrene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Phenanthrene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.27	0.27	Phenanthrene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	R	R	Phenanthrene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.85	0.85	Phenanthrene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.41	0.41	Phenanthrene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.72	0.72	Phenanthrene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.17	0.17	Phenanthrene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.71	0.71	Phenanthrene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	24	30	48			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Phenanthrene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Phenanthrene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Phenanthrene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Phenanthrene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Phenanthrene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Phenanthrene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Phenanthrene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Phenanthrene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	1.6	1.6	Phenanthrene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.59	0.59	Phenanthrene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	2.1	2.1	Phenanthrene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.22	0.22	Phenanthrene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Phenanthrene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Phenanthrene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Phenanthrene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Phenanthrene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Phenanthrene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Phenanthrene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Phenanthrene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Phenanthrene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Phenanthrene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Phenanthrene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.58	0.58	Phenanthrene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.69	0.69	Phenanthrene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	1	1	Phenanthrene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.47	0.47	Phenanthrene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Phenanthrene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.65	0.65	Phenanthrene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.58	0.58	Phenanthrene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.27	0.27	Phenanthrene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Phenanthrene	FC-4	54	60	25.2	23.964	include	No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Phenanthrene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Phenanthrene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.057	0.057	Phenanthrene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.088	0.088	Phenanthrene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Phenanthrene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Phenanthrene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Phenanthrene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Phenanthrene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Phenanthrene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.42	0.42	Phenanthrene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.12	0.12	Phenanthrene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.012	0.012	Phenanthrene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Phenanthrene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Phenanthrene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Phenanthrene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Phenanthrene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Phenanthrene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Phenanthrene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Phenanthrene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.058	0.058	Phenanthrene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Phenanthrene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Phenanthrene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.095	0.095	Phenanthrene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Phenanthrene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Phenanthrene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.073	0.073	Phenanthrene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Phenanthrene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Phenanthrene		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.15	0.15	Phenanthrene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Phenanthrene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Phenanthrene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Phenanthrene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Phenanthrene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Phenanthrene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Phenanthrene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Phenanthrene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Phenanthrene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Phenanthrene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Phenanthrene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Phenanthrene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	2.7	2.7	Phenanthrene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Phenanthrene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.12	0.12	Phenanthrene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Phenanthrene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Phenanthrene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.06	0.06	Phenanthrene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Phenanthrene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.066	0.066	Phenanthrene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.092	0.092	Phenanthrene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.095	0.095	Phenanthrene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Phenanthrene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.019	0.019	Phenanthrene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.14	0.14	Phenanthrene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-29	12 - 44 *	9/13/2013	Area 1	0.2	0.2	Phenanthrene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Phenanthrene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Phenanthrene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Phenanthrene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Phenanthrene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Phenanthrene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Phenanthrene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Phenanthrene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Phenanthrene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Phenanthrene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Phenanthrene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Phenanthrene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	4.6	4.6	Phenanthrene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.3	0.3	Phenanthrene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	1.6	1.6	Phenanthrene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.32	0.32	Phenanthrene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.029	0.029	Phenanthrene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	1.7	1.7	Phenanthrene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.67	0.67	Phenanthrene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	2.2	2.2	Phenanthrene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.85	0.85	Phenanthrene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	1.1	1.1	Phenanthrene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.035	0.035	Phenanthrene	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	22	22	Phenanthrene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Phenanthrene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.56	0.56	Phenanthrene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	2.3	2.3	Phenanthrene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	4.6	4.6	Phenanthrene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	5.3	5.3	Phenanthrene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	4.4	4.4	Phenanthrene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	7.5	7.5	Phenanthrene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Phenanthrene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Phenanthrene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	4	4	Phenanthrene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Phenanthrene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Phenanthrene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	4.6	4.6	Phenanthrene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Phenanthrene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	1.3	1.3	Phenanthrene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	2.5	2.5	Phenanthrene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	2.9	2.9	Phenanthrene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Phenanthrene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Phenanthrene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Phenanthrene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Phenanthrene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Phenanthrene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Phenanthrene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Phenanthrene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Phenanthrene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Phenanthrene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Phenanthrene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Phenanthrene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Phenanthrene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Phenanthrene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Phenanthrene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Phenanthrene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Phenanthrene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Phenanthrene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Phenanthrene	FC-15	42	54	29.997288	-2.472	include	No	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Phenanthrene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Phenanthrene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Phenanthrene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Phenanthrene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Phenanthrene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Phenanthrene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Phenanthrene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Phenanthrene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Phenanthrene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Phenanthrene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Phenanthrene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Phenanthrene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Phenanthrene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Phenanthrene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Phenanthrene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Phenanthrene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Phenanthrene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.21	0.21	Phenanthrene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.27	0.27	Phenanthrene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.56	0.56	Phenanthrene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	1.2	1.2	Phenanthrene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.88	0.88	Phenanthrene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Phenanthrene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Phenanthrene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Phenanthrene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Phenanthrene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Phenanthrene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Phenanthrene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Phenanthrene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Phenanthrene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Phenanthrene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.64	0.64	Phenanthrene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	15	15	Phenanthrene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.82	0.82	Phenanthrene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	0.79	0.79	Phenanthrene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.55	0.55	Phenanthrene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	0.63	0.63	Phenanthrene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Phenanthrene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	24	36	71.994852			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Phenanthrene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	6.4	6.4	Phenanthrene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	16	16	Phenanthrene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	7.2	7.2	Phenanthrene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	7.8	7.8	Phenanthrene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	13	13	Phenanthrene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	6.4	6.4	Phenanthrene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	5.7	5.7	Phenanthrene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Phenanthrene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Phenanthrene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Phenanthrene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Phenanthrene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Phenanthrene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Phenanthrene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.4	0.4	Phenanthrene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Phenanthrene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Phenanthrene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Phenanthrene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Phenanthrene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Phenanthrene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-2	12	24	38.28	6.36	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Phenanthrene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Phenanthrene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Phenanthrene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Phenanthrene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Phenanthrene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Phenanthrene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Phenanthrene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Phenanthrene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Phenanthrene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Phenanthrene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Phenanthrene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Phenanthrene	OC-9	84	96	83.184			No	Exclude
HB15-G28A	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Phenanthrene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Phenanthrene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.46 J-M-	0.46	Pyrene	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	1.1 J-M-	1.1	Pyrene	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.17 J-M-	0.17	Pyrene	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	1	1	Pyrene		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.82 BL	0.82	Pyrene	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.40 BL	0.4	Pyrene	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.66 J-BL	0.66	Pyrene		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.57 BL	0.57	Pyrene		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.14 J-BL	0.14	Pyrene		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.0080 U	0.008	Pyrene		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.0083 U	0.0083	Pyrene		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.0061 UJS-	0.0061	Pyrene		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.69 BL	0.69	Pyrene		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.51 J-M-	0.51	Pyrene	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.18 J-M-	0.18	Pyrene	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.44	0.44	Pyrene	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.27	0.27	Pyrene	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.38	0.38	Pyrene	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.14 J-M-	0.14	Pyrene	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.023 J-M-	0.023	Pyrene	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.27 J-M-	0.27	Pyrene	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.21 J-M-	0.21	Pyrene	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.069 J-M-	0.069	Pyrene	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.25 BL	0.25	Pyrene		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.42 BL	0.42	Pyrene	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.15 BL	0.15	Pyrene		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.24	0.24	Pyrene		0	6					Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0071 U	0.0071	Pyrene		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0051 U	0.0051	Pyrene		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.17	0.17	Pyrene		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.2	0.2	Pyrene		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.37	0.37	Pyrene	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.18	0.18	Pyrene	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.16	0.16	Pyrene	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.33	0.33	Pyrene	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.38	0.38	Pyrene	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.3	0.3	Pyrene		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.43	0.43	Pyrene		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.28	0.28	Pyrene		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.41	0.41	Pyrene		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.66	0.66	Pyrene	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	5	5	Pyrene	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.59	0.59	Pyrene	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.54	0.54	Pyrene	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.01	0.01	Pyrene	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.36	0.36	Pyrene		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.4	0.4	Pyrene		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.67	0.67	Pyrene		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	2.6	2.6	Pyrene	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.24 J	0.24	Pyrene		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.3	0.3	Pyrene		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.41	0.41	Pyrene		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.5	0.5	Pyrene		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.24	0.24	Pyrene		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.54	0.54	Pyrene	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.75	0.75	Pyrene	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.47	0.47	Pyrene	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.84	0.84	Pyrene	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.63	0.63	Pyrene		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.35	0.35	Pyrene		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.46	0.46	Pyrene		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.52	0.52	Pyrene		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.021	0.021	Pyrene	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.62	0.62	Pyrene	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.67	0.67	Pyrene	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	1.5	1.5	Pyrene	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.69	0.69	Pyrene	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.28	0.28	Pyrene	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	2.8	2.8	Pyrene		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.12	0.12	Pyrene		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.37	0.37	Pyrene		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.31	0.31	Pyrene		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.55	0.55	Pyrene		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.66	0.66	Pyrene		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.38	0.38	Pyrene	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.9	0.9	Pyrene	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	1.2	1.2	Pyrene	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.28	0.28	Pyrene		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.14	0.14	Pyrene		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.82	0.82	Pyrene	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.69	0.69	Pyrene	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	1.1	1.1	Pyrene	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.50 J	0.5	Pyrene	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.97	0.97	Pyrene	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.20 J	0.2	Pyrene	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.98	0.98	Pyrene	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	2.6	2.6	Pyrene	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	11	11	Pyrene	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	5.2	5.2	Pyrene	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	7.2	7.2	Pyrene	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.74	0.74	Pyrene		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	2.5	2.5	Pyrene		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	1.3	1.3	Pyrene		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.57	0.57	Pyrene		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.47	0.47	Pyrene		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.66	0.66	Pyrene	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.86	0.86	Pyrene	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.52	0.52	Pyrene	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.46	0.46	Pyrene	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.13 J	0.13	Pyrene		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.25	0.25	Pyrene		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.34	0.34	Pyrene		0	6					Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-2-33	0 - 6	10/18/2010	Area 2	0.089 J	0.089	Pyrene		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2		0.64	Pyrene		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.34	0.34	Pyrene	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.070 J	0.07	Pyrene		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2		0.24	Pyrene		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.55	0.55	Pyrene		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.54	0.54	Pyrene	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.43	0.43	Pyrene		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.28	0.28	Pyrene		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.14	0.14	Pyrene	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.49	0.49	Pyrene	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	2.1	2.1	Pyrene	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.10 J	0.1	Pyrene		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2		0.55	Pyrene		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.39	0.39	Pyrene		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.39	0.39	Pyrene	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.14	0.14	Pyrene	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0044 U	0.0044	Pyrene	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0043 U	0.0043	Pyrene	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	3.3	3.3	Pyrene	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.14	0.14	Pyrene	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.17 J	0.17	Pyrene	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.48	0.48	Pyrene	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	NA	NA	Pyrene	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.43	0.43	Pyrene	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	R	R	Pyrene		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	1.1	1.1	Pyrene		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.9	0.9	Pyrene	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	1.1	1.1	Pyrene	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.25	0.25	Pyrene	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.93	0.93	Pyrene	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Pyrene	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	0.016 U	0.016	Pyrene		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Pyrene		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Pyrene		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Pyrene		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Pyrene		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Pyrene		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Pyrene		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Pyrene		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	2.1	2.1	Pyrene	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.74	0.74	Pyrene	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Pyrene	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Pyrene	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Pyrene	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Pyrene	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Pyrene	FC-1	44	50	43.8	33.156	include	No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Pyrene	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	1	1	Pyrene	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	0.24	0.24	Pyrene	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Pyrene	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Pyrene	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Pyrene	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Pyrene		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Pyrene		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Pyrene		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Pyrene		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Pyrene		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Pyrene		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Pyrene		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Pyrene		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.7	0.7	Pyrene	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.93	0.93	Pyrene	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	1.2	1.2	Pyrene	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.55	0.55	Pyrene	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Pyrene		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.8	0.8	Pyrene	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Pyrene	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.86	0.86	Pyrene	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Pyrene	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Pyrene	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Pyrene	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Pyrene	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.32	0.32	Pyrene	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Pyrene	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Pyrene	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Pyrene		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Pyrene	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	0.076	0.076	Pyrene	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.12	0.12	Pyrene	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Pyrene		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Pyrene		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Pyrene		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Pyrene		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Pyrene		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	0.73	0.73	Pyrene		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	0.17	0.17	Pyrene		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	0.013	0.013	Pyrene		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Pyrene		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Pyrene		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Pyrene		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Pyrene		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Pyrene		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Pyrene		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Pyrene		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.1	0.1	Pyrene		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Pyrene		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Pyrene		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.15	0.15	Pyrene		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Pyrene		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Pyrene		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.11	0.11	Pyrene		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Pyrene		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Pyrene		36	42	24			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-20	36 - 48	9/12/2013	Area 2	0.25	0.25	Pyrene		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Pyrene		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Pyrene	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Pyrene	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Pyrene	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Pyrene	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Pyrene	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Pyrene	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Pyrene	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Pyrene	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Pyrene	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Pyrene	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	2.6	2.6	Pyrene	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Pyrene	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.18	0.18	Pyrene	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Pyrene	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Pyrene	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.078	0.078	Pyrene	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Pyrene	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	0.091	0.091	Pyrene	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	0.14	0.14	Pyrene	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	0.14	0.14	Pyrene	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Pyrene		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	0.022	0.022	Pyrene		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Pyrene	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Pyrene	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Pyrene	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Pyrene	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	NA	NA	Pyrene	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	0.16	0.16	Pyrene	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Pyrene	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	NA	NA	Pyrene	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	NA	NA	Pyrene	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	0.3	0.3	Pyrene	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	NA	NA	Pyrene	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Pyrene	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Pyrene	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Pyrene	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Pyrene	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Pyrene	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	NA	NA	Pyrene	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	NA	NA	Pyrene	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	NA	NA	Pyrene	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Pyrene	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	NA	NA	Pyrene	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	NA	NA	Pyrene	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	NA	NA	Pyrene	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Pyrene	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	NA	NA	Pyrene		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	NA	NA	Pyrene		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	NA	NA	Pyrene		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Pyrene		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Pyrene		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	6.8	6.8	Pyrene	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	0.36	0.36	Pyrene	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	1.7	1.7	Pyrene	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.27	0.27	Pyrene	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.026	0.026	Pyrene	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	2.3	2.3	Pyrene	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.79	0.79	Pyrene	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	3.6	3.6	Pyrene	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	1.1	1.1	Pyrene	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.6	0.6	Pyrene	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.036	0.036	Pyrene	CS-3	33	36	33			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	29	29	Pyrene	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Pyrene	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.93	0.93	Pyrene	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	3.9	3.9	Pyrene	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	6.3	6.3	Pyrene	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	7	7	Pyrene	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	6.2	6.2	Pyrene	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	8.3	8.3	Pyrene	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Pyrene	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Pyrene	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	5.2	5.2	Pyrene	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Pyrene	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Pyrene	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	6.8	6.8	Pyrene	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Pyrene	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	2.1	2.1	Pyrene	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	2.9	2.9	Pyrene	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	3.5	3.5	Pyrene	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Pyrene	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Pyrene	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Pyrene	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Pyrene	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Pyrene		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Pyrene		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Pyrene	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Pyrene	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Pyrene	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Pyrene	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Pyrene	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Pyrene	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Pyrene	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Pyrene	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Pyrene	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Pyrene	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Pyrene	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Pyrene	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Pyrene		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Pyrene		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Pyrene		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Pyrene			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Pyrene		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Pyrene		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Pyrene		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Pyrene		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Pyrene		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Pyrene		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Pyrene		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Pyrene	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Pyrene	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Pyrene	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Pyrene	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Pyrene	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Pyrene	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.35	0.35	Pyrene		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.38	0.38	Pyrene		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.78	0.78	Pyrene		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	1.1	1.1	Pyrene		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.85	0.85	Pyrene		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Pyrene		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Pyrene	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Pyrene	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Pyrene	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Pyrene	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Pyrene	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Pyrene	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Pyrene	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Pyrene	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	0.8	0.8	Pyrene	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	8.6	8.6	Pyrene	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	0.93	0.93	Pyrene	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	1	1	Pyrene	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	42	54	101.997672			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	0.79	0.79	Pyrene	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	1.5	1.5	Pyrene	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Pyrene	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Pyrene	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	7.3	7.3	Pyrene	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	13	13	Pyrene	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	8	8	Pyrene	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	9	9	Pyrene	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	11	11	Pyrene	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	7	7	Pyrene	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	6.5	6.5	Pyrene	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Pyrene	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	0	12	19.0051356			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Pyrene	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Pyrene	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Pyrene		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Pyrene		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Pyrene		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Pyrene	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Pyrene	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Pyrene	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Pyrene		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	0.41	0.41	Pyrene	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Pyrene	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Pyrene	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Pyrene	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Pyrene	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Pyrene	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Pyrene	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Pyrene	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Pyrene	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Pyrene	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Pyrene	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Pyrene	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Pyrene	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Pyrene	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Pyrene	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Pyrene	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Pyrene	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Pyrene	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Pyrene		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Pyrene		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Pyrene		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Pyrene	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Pyrene	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Pyrene		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Pyrene		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Pyrene		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Pyrene	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Pyrene	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Pyrene	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Pyrene	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Pyrene	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Pyrene	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Pyrene	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Pyrene	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Pyrene	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Pyrene		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	0	12	83.184			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Pyrene	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Pyrene		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Pyrene	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	NA	NA	Tributyltin	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	NA	NA	Tributyltin	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	NA	NA	Tributyltin	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	NA	NA	Tributyltin		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	NA	NA	Tributyltin	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	NA	NA	Tributyltin	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	NA	NA	Tributyltin		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	NA	NA	Tributyltin		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	NA	NA	Tributyltin		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	NA	NA	Tributyltin		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	NA	NA	Tributyltin		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	NA	NA	Tributyltin		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	NA	NA	Tributyltin		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	NA	NA	Tributyltin	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	NA	NA	Tributyltin	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	NA	NA	Tributyltin	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	NA	NA	Tributyltin	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	NA	NA	Tributyltin	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	NA	NA	Tributyltin	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	NA	NA	Tributyltin	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	NA	NA	Tributyltin	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	NA	NA	Tributyltin		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	NA	NA	Tributyltin	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	NA	NA	Tributyltin		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.0029 U	0.0029	Tributyltin		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.0030 U	0.003	Tributyltin		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.0025 U	0.0025	Tributyltin		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.004	0.004	Tributyltin		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.0082	0.0082	Tributyltin		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.0037	0.0037	Tributyltin	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.0051	0.0051	Tributyltin	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.0044	0.0044	Tributyltin	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.0073	0.0073	Tributyltin	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.0022 U	0.0022	Tributyltin	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.0022	0.0022	Tributyltin		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.0015 J	0.0015	Tributyltin		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.0026 U	0.0026	Tributyltin		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.0022 U	0.0022	Tributyltin		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.0041	0.0041	Tributyltin	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.0019 J	0.0019	Tributyltin	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.0026 U	0.0026	Tributyltin	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.0025 U	0.0025	Tributyltin	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.0018 U	0.0018	Tributyltin	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.0028 J	0.0028	Tributyltin		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.0037	0.0037	Tributyltin		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.0015 J	0.0015	Tributyltin		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.0034 U	0.0034	Tributyltin	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.0030 U	0.003	Tributyltin		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.0027 U	0.0027	Tributyltin		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.0027 U	0.0027	Tributyltin		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.0026 U	0.0026	Tributyltin		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.0038 UJ	0.0038	Tributyltin		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.0030 J	0.003	Tributyltin	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.0029 U	0.0029	Tributyltin	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.0038	0.0038	Tributyltin	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.0026 U	0.0026	Tributyltin	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.0027 J	0.0027	Tributyltin		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.0046	0.0046	Tributyltin		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.0064	0.0064	Tributyltin		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.0026 U	0.0026	Tributyltin		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.0023 U	0.0023	Tributyltin	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.0038 U	0.0038	Tributyltin	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.0092	0.0092	Tributyltin	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.006	0.006	Tributyltin	HS-3	0	12	31.0056996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	0.0029 U	0.0029	Tributyltin	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.0022 J	0.0022	Tributyltin	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.0057	0.0057	Tributyltin		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.0019 U	0.0019	Tributyltin		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.0019 U	0.0019	Tributyltin		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.0033 U	0.0033	Tributyltin		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.0028 U	0.0028	Tributyltin		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.0036 U	0.0036	Tributyltin		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.0020 J	0.002	Tributyltin	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.0020 J	0.002	Tributyltin	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	0.0031 U	0.0031	Tributyltin	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.0031 J	0.0031	Tributyltin		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.0041 U	0.0041	Tributyltin		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.27	0.27	Tributyltin	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.024	0.024	Tributyltin	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.0038	0.0038	Tributyltin	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.0031 U	0.0031	Tributyltin	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	0.0029 U	0.0029	Tributyltin	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.0027 U	0.0027	Tributyltin	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.0031 J	0.0031	Tributyltin	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.0036 U	0.0036	Tributyltin	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	0.0041 U	0.0041	Tributyltin	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.0036 UJ	0.0036	Tributyltin	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.0037 U	0.0037	Tributyltin	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.0030 U	0.003	Tributyltin		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	0.0033 U	0.0033	Tributyltin		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.0029 U	0.0029	Tributyltin		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.0049 U	0.0049	Tributyltin		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.0099 U	0.0099	Tributyltin		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.0033 J	0.0033	Tributyltin	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.0030 U	0.003	Tributyltin	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.0029 U	0.0029	Tributyltin	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.0042 J	0.0042	Tributyltin	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.0024 U	0.0024	Tributyltin		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.0020 U	0.002	Tributyltin		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.0037 U	0.0037	Tributyltin		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.0022 U	0.0022	Tributyltin		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.0024 U	0.0024	Tributyltin		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.0029 J	0.0029	Tributyltin	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.0021 U	0.0021	Tributyltin		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.0022 U	0.0022	Tributyltin		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.0023 U	0.0023	Tributyltin		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.0031 U	0.0031	Tributyltin	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.0019 U	0.0019	Tributyltin		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.0021 U	0.0021	Tributyltin		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.0042	0.0042	Tributyltin	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.0026 U	0.0026	Tributyltin	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.0022 U	0.0022	Tributyltin	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.0020 U	0.002	Tributyltin		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.0021 U	0.0021	Tributyltin		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.0034 U	0.0034	Tributyltin		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.0038	0.0038	Tributyltin	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.0019 J	0.0019	Tributyltin	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.0021 U	0.0021	Tributyltin	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0024 U	0.0024	Tributyltin	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.0042 U	0.0042	Tributyltin	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.0021 U	0.0021	Tributyltin	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.0020 U	0.002	Tributyltin	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.0022 U	0.0022	Tributyltin	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	0.0023 U	0.0023	Tributyltin	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.0022 U	0.0022	Tributyltin	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.0021 U	0.0021	Tributyltin		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.0024 U	0.0024	Tributyltin		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.0091	0.0091	Tributyltin	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.0024 U	0.0024	Tributyltin	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.0025 U	0.0025	Tributyltin	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.0022 U	0.0022	Tributyltin	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	42	48	48			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Tributyltin	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	NA	NA	Tributyltin		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Tributyltin		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Tributyltin		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Tributyltin		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Tributyltin		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Tributyltin		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Tributyltin		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Tributyltin		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	0.0039	0.0039	Tributyltin	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	0.0027 U	0.0027	Tributyltin	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	NA	NA	Tributyltin	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Tributyltin	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Tributyltin	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Tributyltin		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Tributyltin		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Tributyltin		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Tributyltin		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Tributyltin		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Tributyltin		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Tributyltin		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Tributyltin		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.024	0.024	Tributyltin	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.0094	0.0094	Tributyltin	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.0025 U	0.0025	Tributyltin	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.0021 U	0.0021	Tributyltin	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Tributyltin		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.0027 U	0.0027	Tributyltin	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	NA	NA	Tributyltin	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	0.0024 U	0.0024	Tributyltin	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	NA	NA	Tributyltin	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	NA	NA	Tributyltin	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	NA	NA	Tributyltin	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	NA	NA	Tributyltin	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	0.0019 U	0.0019	Tributyltin	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	NA	NA	Tributyltin	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	NA	NA	Tributyltin	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Tributyltin		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Tributyltin	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-6	0	6	45.9999996	-5.316	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-14	0 - 24	9/12/2013	Area 2	0.0021 U	0.0021	Tributyltin	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	0.0021 U	0.0021	Tributyltin	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Tributyltin		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Tributyltin		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Tributyltin		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Tributyltin		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Tributyltin		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	NA	NA	Tributyltin		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	NA	NA	Tributyltin		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	NA	NA	Tributyltin		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Tributyltin		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Tributyltin		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Tributyltin		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Tributyltin		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Tributyltin		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Tributyltin		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	NA	NA	Tributyltin		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	0.004	0.004	Tributyltin		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	NA	NA	Tributyltin		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	NA	NA	Tributyltin		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	0.011	0.011	Tributyltin		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	NA	NA	Tributyltin		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	NA	NA	Tributyltin		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	0.0025 U	0.0025	Tributyltin		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	NA	NA	Tributyltin		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	NA	NA	Tributyltin		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	0.0025 U	0.0025	Tributyltin		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	NA	NA	Tributyltin		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Tributyltin	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Tributyltin	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Tributyltin	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Tributyltin	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Tributyltin	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Tributyltin	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Tributyltin	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Tributyltin	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Tributyltin	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Tributyltin	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	0.0025 U	0.0025	Tributyltin	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	NA	NA	Tributyltin	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	0.0024 U	0.0024	Tributyltin	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	NA	NA	Tributyltin	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	0.0026 U	0.0026	Tributyltin	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	NA	NA	Tributyltin	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	NA	NA	Tributyltin	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	0.0031 U	0.0031	Tributyltin	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	NA	NA	Tributyltin	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	NA	NA	Tributyltin	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	NA	NA	Tributyltin	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	NA	NA	Tributyltin	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Tributyltin		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	NA	NA	Tributyltin		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Tributyltin	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Tributyltin	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Tributyltin	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Tributyltin	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	0.003	0.003	Tributyltin	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	NA	NA	Tributyltin	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Tributyltin	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	0.0029	0.0029	Tributyltin	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	0.0027 U	0.0027	Tributyltin	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	NA	NA	Tributyltin	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	0.0022 U	0.0022	Tributyltin	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	0.0028 U	0.0028	Tributyltin	SND-1	0	6	60			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-30	6 - 24	9/10/2013	Area 1	0.0072	0.0072	Tributyltin	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	0.0028 U	0.0028	Tributyltin	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	0.0028 U	0.0028	Tributyltin	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	0.0024 U	0.0024	Tributyltin	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	0.0046	0.0046	Tributyltin	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	0.0078	0.0078	Tributyltin	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	0.0044	0.0044	Tributyltin	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	0.0021 U	0.0021	Tributyltin	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	0.014	0.014	Tributyltin	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	0.0026	0.0026	Tributyltin	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	0.0085	0.0085	Tributyltin	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	0.0022 U	0.0022	Tributyltin	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	0.0027 U	0.0027	Tributyltin		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	0.0030 U	0.003	Tributyltin		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	0.0020 U	0.002	Tributyltin		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	0.0020 U	0.002	Tributyltin		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	0.0022 U	0.0022	Tributyltin		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.057	0.057	Tributyltin	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	0.09	0.09	Tributyltin	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	0.0039	0.0039	Tributyltin	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	0.0025 U	0.0025	Tributyltin	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	0.0021 U	0.0021	Tributyltin	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	0.01	0.01	Tributyltin	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	NA	NA	Tributyltin	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	0.003	0.003	Tributyltin	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.0026 U	0.0026	Tributyltin	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.0031 U	0.0031	Tributyltin	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.0029 U	0.0029	Tributyltin	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	0.0028 U	0.0028	Tributyltin	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	NA	NA	Tributyltin	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	0.0026 U	0.0026	Tributyltin	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	0.0030 U	0.003	Tributyltin	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	0.0048 U	0.0048	Tributyltin	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	0.0042	0.0042	Tributyltin	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	0.0029 U	0.0029	Tributyltin	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	NA	NA	Tributyltin	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Tributyltin	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Tributyltin	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Tributyltin	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Tributyltin	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Tributyltin		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Tributyltin		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Tributyltin	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Tributyltin	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Tributyltin	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	0.00145 U	0.00145	Tributyltin	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	0.00105 U*	0.00105	Tributyltin	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	0.0083	0.0083	Tributyltin	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	0.00115 U	0.00115	Tributyltin	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	0.0068	0.0068	Tributyltin	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	0.0057	0.0057	Tributyltin	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	0.0028	0.0028	Tributyltin	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	0.000950 U	0.00095	Tributyltin	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	0.00100 U	0.001	Tributyltin	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	0.0046	0.0046	Tributyltin		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	0.0099	0.0099	Tributyltin		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	0.0069	0.0069	Tributyltin		18	30	29.904			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB14-05 G		8/18/2014	Area 1	0.00195 U	0.00195	Tributyltin			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	0.00165 U	0.00165	Tributyltin		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	0.0048	0.0048	Tributyltin		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	0.007	0.007	Tributyltin		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	0.0042	0.0042	Tributyltin		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	0.00110 U	0.0011	Tributyltin		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	0.0088	0.0088	Tributyltin		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	0.011	0.011	Tributyltin		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	0.0044	0.0044	Tributyltin	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	0.00120 U	0.0012	Tributyltin	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	0.00140 U	0.0014	Tributyltin	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	0.00130 U	0.0013	Tributyltin	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	0.00115 U	0.00115	Tributyltin	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	0.00115 U*	0.00115	Tributyltin	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	0.00130 U	0.0013	Tributyltin		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	0.00135 U	0.00135	Tributyltin		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	0.00130 U	0.0013	Tributyltin		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	0.00130 U	0.0013	Tributyltin		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	0.00115 U	0.00115	Tributyltin		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	0.00115 U	0.00115	Tributyltin		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Tributyltin	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Tributyltin	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Tributyltin	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Tributyltin	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Tributyltin	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Tributyltin	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Tributyltin	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Tributyltin	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Tributyltin	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	0.15	0.15	Tributyltin	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	0.00105 U	0.00105	Tributyltin	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	0.000900 U	0.0009	Tributyltin	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	0.000800 U	0.0008	Tributyltin	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	0.000800 U	0.0008	Tributyltin	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	13	13	Tributyltin	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	0.22	0.22	Tributyltin	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	0.000900 U	0.0009	Tributyltin	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	0.000950 U	0.00095	Tributyltin	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	0.04	0.04	Tributyltin	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	0.046	0.046	Tributyltin	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	0.047	0.047	Tributyltin	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	0.036	0.036	Tributyltin	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	0.018	0.018	Tributyltin	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	0.000650 U	0.00065	Tributyltin	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	0.036	0.036	Tributyltin	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	0.059	0.059	Tributyltin	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	0.089	0.089	Tributyltin	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	0.000750 U	0.00075	Tributyltin	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	0.000700 U	0.0007	Tributyltin	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	0.000650 UF2	0.00065	Tributyltin	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	0.047	0.047	Tributyltin	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	0.076	0.076	Tributyltin	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	0.039	0.039	Tributyltin	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	0.056	0.056	Tributyltin	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	0.000750 U	0.00075	Tributyltin	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	0.04	0.04	Tributyltin	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	0.000800 U	0.0008	Tributyltin	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	0.000800 U	0.0008	Tributyltin	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	0.000750 U	0.00075	Tributyltin	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	0.000850 U	0.00085	Tributyltin	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	0.000800 U	0.0008	Tributyltin	HS-1	60	72	71.994852			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	0.000600 U	0.0006	Tributyltin	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	0.019	0.019	Tributyltin	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Tributyltin	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Tributyltin	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Tributyltin	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	0.000950 U	0.00095	Tributyltin	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	0.000900 U	0.0009	Tributyltin	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	0.000850 U	0.00085	Tributyltin		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	0.000650 U	0.00065	Tributyltin		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	0.000600 U	0.0006	Tributyltin		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Tributyltin	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Tributyltin	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Tributyltin		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	NA	NA	Tributyltin	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Tributyltin	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Tributyltin	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Tributyltin	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Tributyltin	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Tributyltin	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Tributyltin	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Tributyltin	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Tributyltin	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Tributyltin	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Tributyltin	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Tributyltin	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Tributyltin	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Tributyltin	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Tributyltin		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Tributyltin		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Tributyltin		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Tributyltin	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Tributyltin	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Tributyltin		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Tributyltin		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Tributyltin		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Tributyltin	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Tributyltin	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Tributyltin	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	0.011	0.011	Tributyltin	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	0.021	0.021	Tributyltin	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	0.0066	0.0066	Tributyltin	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	0.000550 UF2F1	0.00055	Tributyltin	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	0.017	0.017	Tributyltin	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	0.026	0.026	Tributyltin	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Tributyltin		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Tributyltin	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	0.000900 U	0.0009	Tributyltin		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Tributyltin	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	52 JSD	52	Lead	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	86 JSD	86	Lead	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	84 JSD	84	Lead	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	26	26	Lead		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	33	33	Lead	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	110	110	Lead	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	78 J-M-	78	Lead		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	62	62	Lead		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	22	22	Lead		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	7.2	7.2	Lead		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	8.3	8.3	Lead		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	6.9	6.9	Lead		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	100	100	Lead		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	670 JSD	670	Lead	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	710 JSD	710	Lead	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	220 JSD	220	Lead	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	200 JSD	200	Lead	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	95 JSD	95	Lead	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	110 J-M-S	110	Lead	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	42 J-M-S	42	Lead	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	150 J-M-S	150	Lead	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	110 J-M-S	110	Lead	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	66 J-M-S	66	Lead	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	56 J-M-S	56	Lead		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	110 J-M-S	110	Lead	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	20 JM+	20	Lead		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	22	22	Lead		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	8	8	Lead		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	6.2	6.2	Lead		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	28	28	Lead		0	6	23.0027508			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-02	12 - 23	10/16/2010	Area 1	32	32	Lead		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	30	30	Lead	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	31	31	Lead	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	25	25	Lead	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	60	60	Lead	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	46	46	Lead	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	24	24	Lead		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	36	36	Lead		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	35	35	Lead		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	55	55	Lead		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	32	32	Lead	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	36	36	Lead	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	50	50	Lead	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	53	53	Lead	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	2.9	2.9	Lead	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	46	46	Lead		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	51	51	Lead		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	89	89	Lead		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	39 J	39	Lead	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	59	59	Lead		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	63	63	Lead		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	48	48	Lead		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	57	57	Lead		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	35 J	35	Lead		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	83 J	83	Lead	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	81 J	81	Lead	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	160 J	160	Lead	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	64 J	64	Lead	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	50	50	Lead		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	60	60	Lead		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	75	75	Lead		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	100	100	Lead		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	24 J	24	Lead	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	130 J	130	Lead	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	33 J	33	Lead	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	68 J	68	Lead	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	80 J	80	Lead	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	120	120	Lead	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	36 J	36	Lead		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	26 J	26	Lead		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	40 J	40	Lead		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	33	33	Lead		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	82	82	Lead		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	120 J	120	Lead		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	210 J	210	Lead	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	230 J	230	Lead	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	210 J	210	Lead	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	84 J	84	Lead		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	47 J	47	Lead		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	60	60	Lead	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	72	72	Lead	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	84	84	Lead	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	85	85	Lead	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	110	110	Lead	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	36	36	Lead	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	290	290	Lead	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	380	380	Lead	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	480	480	Lead	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	190	190	Lead	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	310	310	Lead	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	94 J	94	Lead		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	170 J	170	Lead		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	130 J	130	Lead		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	130 J	130	Lead		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	6.5 J	6.5	Lead		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	98 J	98	Lead	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	250 J	250	Lead	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	88 J	88	Lead	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	91 J	91	Lead	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	55	55	Lead		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	57	57	Lead		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	57 J	57	Lead		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	31 J	31	Lead		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	79 J	79	Lead		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	150 J	150	Lead	FC-7	0	6	6.0053004	0.816	include	Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-2-35	0 - 6	10/18/2010	Area 2	17 J-	17	Lead		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	45 J-	45	Lead		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	96 J-	96	Lead		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	120 J-	120	Lead	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	14 J-	14	Lead		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	21 J-	21	Lead		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	110 J-	110	Lead	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	180 J-	180	Lead	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	51 J-	51	Lead	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	29 J-	29	Lead		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	32 J-	32	Lead		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	65 J-	65	Lead		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	150 J-	150	Lead	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	100 J-	100	Lead	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	4.6 J-	4.6	Lead	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	2.8 J-	2.8	Lead	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	150 J	150	Lead	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	37 J	37	Lead	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	41 J	41	Lead	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	47 J	47	Lead	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	250 J-	250	Lead	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	75 J-	75	Lead	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	27	27	Lead		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	110 J	110	Lead		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	300 J-	300	Lead	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	120 J-	120	Lead	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	1,100 J	1100	Lead	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	190 J	190	Lead	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	170	170	Lead	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	280	280	Lead	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	310	310	Lead	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	210	210	Lead	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	160	160	Lead	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	200	200	Lead	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	130	130	Lead	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	87	87	Lead	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	72	72	Lead	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	23	23	Lead	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	41	41	Lead	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	61	61	Lead	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	34	34	Lead	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	32	32	Lead		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	28	28	Lead		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	22	22	Lead		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	52	52	Lead		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	84	84	Lead		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	52	52	Lead		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	9.9	9.9	Lead		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	9.8	9.8	Lead		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	160	160	Lead	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	NA	NA	Lead	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	310	310	Lead	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	170	170	Lead	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	180	180	Lead	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	160	160	Lead	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	NA	NA	Lead	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	140	140	Lead	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	97	97	Lead	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	180	180	Lead	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	7.8	7.8	Lead	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	130	130	Lead	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	170	170	Lead	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	240	240	Lead	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	160	160	Lead	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	200	200	Lead	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	100	100	Lead	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	160	160	Lead	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	15	15	Lead	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	180	180	Lead	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	250	250	Lead	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	210	210	Lead	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	150	150	Lead	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	210	210	Lead	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	160	160	Lead	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	130	130	Lead	FC-1	62	66	43.8	33.156	include	No	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
 Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-05	68 - 74 *	9/9/2013	Area 2	160	160	Lead	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	140	140	Lead	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	130	130	Lead	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	210	210	Lead	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	150	150	Lead	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	110	110	Lead	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	79	79	Lead	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	93	93	Lead	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	80	80	Lead	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	35	35	Lead	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	59	59	Lead		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	26	26	Lead		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	8.2	8.2	Lead		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	5.2	5.2	Lead		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	13	13	Lead		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	5.3	5.3	Lead		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	3.1	3.1	Lead		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	2.9	2.9	Lead		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	150	150	Lead	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	230	230	Lead	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	200	200	Lead	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	54	54	Lead	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	5.7	5.7	Lead		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	91	91	Lead	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	130	130	Lead	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	NA	NA	Lead	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	140	140	Lead	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	130	130	Lead	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	110	110	Lead	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	72	72	Lead	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	NA	NA	Lead	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	660	660	Lead	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	73	73	Lead	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	5	5	Lead		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	53	53	Lead	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	65	65	Lead	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	NA	NA	Lead	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	160	160	Lead	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	78	78	Lead	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	NA	NA	Lead	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	69	69	Lead	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	140	140	Lead	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	100	100	Lead	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	130	130	Lead	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	55	55	Lead		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	13	13	Lead		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	22	22	Lead		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	42	42	Lead		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	22	22	Lead		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	94	94	Lead	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	110	110	Lead	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	110	110	Lead	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	80	80	Lead	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	67	67	Lead		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	62	62	Lead		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	9.2	9.2	Lead		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	60	60	Lead		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	44	44	Lead		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Lead		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	9.6	9.6	Lead		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	8.1	8.1	Lead		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	15	15	Lead		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	58	58	Lead		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	NA	NA	Lead		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	23	23	Lead		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	98	98	Lead		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	NA	NA	Lead		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	70	70	Lead		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	33	33	Lead		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	NA	NA	Lead		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	50	50	Lead		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	45	45	Lead		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	NA	NA	Lead		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	52	52	Lead		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	80	80	Lead	OC-10	0	6	24			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-21	6 - 24 *	9/13/2013	Area 2	85	85	Lead	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	32	32	Lead	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	6.8	6.8	Lead	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	2.3	2.3	Lead	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	90	90	Lead	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	33	33	Lead	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	66	66	Lead	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	65	65	Lead	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	57	57	Lead	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	46	46	Lead	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	91	91	Lead	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	NA	NA	Lead	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	74	74	Lead	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	93	93	Lead	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	NA	NA	Lead	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	130	130	Lead	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	410	410	Lead	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	NA	NA	Lead	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	27	27	Lead	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	83	83	Lead	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	120	120	Lead	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	95	95	Lead	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	13	13	Lead		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	NA	NA	Lead		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	92	92	Lead	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	91	91	Lead	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	63	63	Lead	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	35	35	Lead	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	46	46	Lead	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	NA	NA	Lead	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Lead	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	88	88	Lead	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	55	55	Lead	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	NA	NA	Lead	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	110	110	Lead	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	46	46	Lead	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	49	49	Lead	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	78	78	Lead	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	55	55	Lead	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	39	39	Lead	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	35	35	Lead	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	36	36	Lead	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	54	54	Lead	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Lead	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	44	44	Lead	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	40	40	Lead	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	48	48	Lead	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Lead	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	9.4	9.4	Lead		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	10	10	Lead		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	8.9	8.9	Lead		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	5.8	5.8	Lead		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Lead		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	43	43	Lead	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	33	33	Lead	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	340	340	Lead	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	550	550	Lead	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	15	15	Lead	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	48	48	Lead	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	NA	NA	Lead	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	52	52	Lead	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	130	130	Lead	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	28	28	Lead	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	9.9	9.9	Lead	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	95	95	Lead	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	NA	NA	Lead	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	310	310	Lead	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	190	190	Lead	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	270	270	Lead	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	59	59	Lead	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	28	28	Lead	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	NA	NA	Lead	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	57	57	Lead	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Lead	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	66	66	Lead	CS-2	6	24	24			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	220	220	Lead	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	280	280	Lead	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	230	230	Lead	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	300	300	Lead	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	450	450	Lead	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	37	37	Lead	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	180	180	Lead	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	NA	NA	Lead	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	340	340	Lead	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	500	500	Lead	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	NA	NA	Lead	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	550	550	Lead	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	140	140	Lead	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	360	360	Lead	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	300	300	Lead	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	77	77	Lead	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	70	70	Lead	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	220	220	Lead	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	220	220	Lead	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	23	23	Lead		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	60	60	Lead		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	93	93	Lead	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	160	160	Lead	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	73	73	Lead	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Lead	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Lead	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Lead	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Lead	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Lead	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Lead	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Lead	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Lead	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Lead	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Lead		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Lead		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Lead		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Lead			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Lead		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Lead		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Lead		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Lead		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Lead		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Lead		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Lead		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Lead	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Lead	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Lead	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Lead	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Lead	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Lead	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	NA	NA	Lead		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	NA	NA	Lead		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	NA	NA	Lead		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	NA	NA	Lead		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	NA	NA	Lead		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Lead		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	78	78	Lead	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	41	41	Lead	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	19	19	Lead	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	96	96	Lead	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	76	76	Lead	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	94	94	Lead	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	7.9	7.9	Lead	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	8	8	Lead	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	140	140	Lead	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	NA	NA	Lead	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	110	110	Lead	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	NA	NA	Lead	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	110	110	Lead	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	170	170	Lead	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	NA	NA	Lead	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	27	27	Lead	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	65	65	Lead	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	NA	NA	Lead	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	100	100	Lead	OC-4	66	78	101.997672			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB14-14	78 - 90	8/20/2014	Area 2	98	98	Lead	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	NA	NA	Lead	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	90	90	Lead	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	45	45	Lead	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	87	87	Lead	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	86	86	Lead	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	110	110	Lead	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	130	130	Lead	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	310	310	Lead	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	120	120	Lead	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	190	190	Lead	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	340	340	Lead	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	850	850	Lead	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	64	64	Lead	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	69	69	Lead	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	130 F2F1	130	Lead	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	120	120	Lead	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	110	110	Lead	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	220	220	Lead	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	65	65	Lead	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	85	85	Lead	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	270	270	Lead	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	81	81	Lead	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	73	73	Lead	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	120	120	Lead	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	51	51	Lead	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	58	58	Lead	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	51	51	Lead	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	49	49	Lead	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	53	53	Lead	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	62	62	Lead	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	59	59	Lead	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	270	270	Lead	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	170	170	Lead	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	140	140	Lead	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	98.0 F1	98	Lead	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	20	20	Lead	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	58	58	Lead	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	240	240	Lead	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	400	400	Lead	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	480	480	Lead	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	280	280	Lead	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	370	370	Lead	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	400	400	Lead	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	360	360	Lead	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	420	420	Lead	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	170	170	Lead	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	380	380	Lead	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	380	380	Lead	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	240	240	Lead	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	180	180	Lead	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	170	170	Lead	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	220	220	Lead	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	160	160	Lead	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	26	26	Lead		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	120	120	Lead	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	250	250	Lead	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	150	150	Lead	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	120	120	Lead	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	180	180	Lead	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	130	130	Lead	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	140	140	Lead	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	220	220	Lead	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	150	150	Lead	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	170	170	Lead	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	130	130	Lead	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	110	110	Lead	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	150	150	Lead	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	120	120	Lead	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	45	45	Lead	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	14	14	Lead	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	390	390	Lead	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	120	120	Lead	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	230	230	Lead	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	240	240	Lead	FP-2	12	19	18.9999996			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-16	0 - 12	6/24/2015	Area 2	130	130	Lead	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	8.70 BF1	8.7	Lead	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	130 B	130	Lead	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	190 B	190	Lead	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	160 B	160	Lead	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	56.0 B	56	Lead	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	12.0 B	12	Lead	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	150 B	150	Lead	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	170 B	170	Lead	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	51.0 B	51	Lead		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	11.0 B	11	Lead		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	4.30 B	4.3	Lead		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	130 F1	130	Lead	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	180	180	Lead	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	12	12	Lead	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	81	81	Lead	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	160 F1	160	Lead	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	42	42	Lead		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	140	140	Lead	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	210 B	210	Lead	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	1,700 B	1700	Lead	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	190 B	190	Lead	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	300 B	300	Lead	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	56.0 B	56	Lead	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	180	180	Lead	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	2700	2700	Lead	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	140	140	Lead	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	92	92	Lead	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	61	61	Lead	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	46	46	Lead	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	110	110	Lead	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	130	130	Lead	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	160	160	Lead	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	78	78	Lead	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	89	89	Lead	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	130	130	Lead	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	190	190	Lead	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	190	190	Lead	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	150	150	Lead	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	28	28	Lead	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	2.5	2.5	Lead	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	88	88	Lead	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	23	23	Lead	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	8.6	8.6	Lead	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	42.0 B	42	Lead		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	110 B	110	Lead		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	34.0 B	34	Lead		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	54.0 B	54	Lead		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	30.0 B	30	Lead		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	55.0 B	55	Lead		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	100	100	Lead	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	30.0 B	30	Lead	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	62	62	Lead		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	90	90	Lead		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	9.2	9.2	Lead		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	51.0 B	51	Lead	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	40.0 B	40	Lead	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	81.0 B	81	Lead	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Lead	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Lead	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Lead	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Lead	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Lead	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Lead	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	76	76	Lead		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	80.0 B	80	Lead	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	130 B	130	Lead	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	75.0 B	75	Lead	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	24.0 B	24	Lead	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	11.0 B	11	Lead	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	11.0 B	11	Lead	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	170	170	Lead	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	130	130	Lead	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	130	130	Lead	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	110	110	Lead	OC-9	36	48	83.184			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-38	48 - 60	6/25/2015	Area 2	110	110	Lead	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	46.0 B	46	Lead	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	31.0 B	31	Lead	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	8.50 B	8.5	Lead	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	27	27	Lead		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	190	190	Lead	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	0.15	0.15	Mercury	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	0.17	0.17	Mercury	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	0.44	0.44	Mercury	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	0.18	0.18	Mercury		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	0.12	0.12	Mercury	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	0.15	0.15	Mercury	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	0.34 J+LS+	0.34	Mercury		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	0.24	0.24	Mercury		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	0.082	0.082	Mercury		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	0.058	0.058	Mercury		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	0.066	0.066	Mercury		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	0.05	0.05	Mercury		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	0.035 BL	0.035	Mercury		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	0.35	0.35	Mercury	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	0.084	0.084	Mercury	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	0.49	0.49	Mercury	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	0.84	0.84	Mercury	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	0.53	0.53	Mercury	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	0.44	0.44	Mercury	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	0.11	0.11	Mercury	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	0.56	0.56	Mercury	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	0.43	0.43	Mercury	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	0.27	0.27	Mercury	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	0.13	0.13	Mercury		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	0.17	0.17	Mercury	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	0.055	0.055	Mercury		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	0.23	0.23	Mercury		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	0.060 J	0.06	Mercury		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	0.028 J	0.028	Mercury		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	0.15 J	0.15	Mercury		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	0.23	0.23	Mercury		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	0.12 J	0.12	Mercury	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	0.14 J	0.14	Mercury	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	12 - 36	10/16/2010	Area 1	0.10 J	0.1	Mercury	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	0.2	0.2	Mercury	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	0.2	0.2	Mercury	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.061 J	0.061	Mercury		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	0.15	0.15	Mercury		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	0.22	0.22	Mercury		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	0.19	0.19	Mercury		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	0.094 J	0.094	Mercury	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	0.23	0.23	Mercury	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	0.44	0.44	Mercury	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	0.39	0.39	Mercury	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	0.015 J	0.015	Mercury	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	0.16 J	0.16	Mercury		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	0.23	0.23	Mercury		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	0.68	0.68	Mercury		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	0.34 J-	0.34	Mercury	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	0.32	0.32	Mercury		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	0.37	0.37	Mercury		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	0.21	0.21	Mercury		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	0.59	0.59	Mercury		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	0.062 J-	0.062	Mercury		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	0.29 J-	0.29	Mercury	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	0.45 J-	0.45	Mercury	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	0.20 J-	0.2	Mercury	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.34 J-	0.34	Mercury	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.19 J	0.19	Mercury		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	0.21	0.21	Mercury		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	0.26	0.26	Mercury		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	0.48	0.48	Mercury		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	0.059 J	0.059	Mercury	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	0.15 J	0.15	Mercury	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	0.11 J	0.11	Mercury	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	0.3	0.3	Mercury	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	58	58	Mercury	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	0.25	0.25	Mercury	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	0.074 J	0.074	Mercury		0	6	6.0057			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	0.12 J	0.12	Mercury		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	0.29	0.29	Mercury		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	0.12 J	0.12	Mercury		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	0.45	0.45	Mercury		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	0.47	0.47	Mercury		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	0.74 J-	0.74	Mercury	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	0.67 J-	0.67	Mercury	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	2.5 J-	2.5	Mercury	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	0.26	0.26	Mercury		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	0.11 J-	0.11	Mercury		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	0.23	0.23	Mercury	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	0.34	0.34	Mercury	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	0.62	0.62	Mercury	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	0.78	0.78	Mercury	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	1.8	1.8	Mercury	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	0.13 J	0.13	Mercury	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	0.88	0.88	Mercury	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	0.82	0.82	Mercury	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	1.9	1.9	Mercury	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	1.8 J	1.8	Mercury	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	5.9	5.9	Mercury	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	0.46 J-	0.46	Mercury		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	1.1 J-	1.1	Mercury		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	0.45 J-	0.45	Mercury		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	0.36 J-	0.36	Mercury		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	0.075 J-	0.075	Mercury		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	0.43 J-	0.43	Mercury	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	0.58 J-	0.58	Mercury	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	0.30 J-	0.3	Mercury	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	0.25 J-	0.25	Mercury	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	0.21	0.21	Mercury		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	0.048 J	0.048	Mercury		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	0.22 J-	0.22	Mercury		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.086 J-	0.086	Mercury		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.45 J-	0.45	Mercury		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	0.29	0.29	Mercury	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	0.035 J-	0.035	Mercury		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	0.15 J-	0.15	Mercury		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	0.41 J-	0.41	Mercury		12	30	30.0012996			Yes	Include
HB10-2-36	0 - 6	10/18/2010	Area 2	0.40 J-	0.4	Mercury	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	0.020 J-	0.02	Mercury		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	0.13 J-	0.13	Mercury		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	0.40 J-	0.4	Mercury	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	0.61 J-	0.61	Mercury	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	0.42 J-	0.42	Mercury	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	0.082 J-	0.082	Mercury		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	0.27 J-	0.27	Mercury		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	0.17 J-	0.17	Mercury		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	0.43 J-	0.43	Mercury	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	0.52 J-	0.52	Mercury	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	0.014 J-	0.014	Mercury	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	0.0085 J-	0.0085	Mercury	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	0.33	0.33	Mercury	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	0.048 J	0.048	Mercury	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	0.098 J	0.098	Mercury	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	0.18 J-	0.18	Mercury	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	0.32 J-	0.32	Mercury	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	0.35 J-	0.35	Mercury	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	0.037 J	0.037	Mercury		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	0.17	0.17	Mercury		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	0.26 J-	0.26	Mercury	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	0.41 J-	0.41	Mercury	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	0.13 J	0.13	Mercury	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	0.26	0.26	Mercury	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	60	66	48			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Mercury	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	NA	NA	Mercury		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Mercury		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Mercury		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Mercury		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Mercury		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Mercury		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Mercury		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Mercury		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	0.53	0.53	Mercury	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	NA	NA	Mercury	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	0.51	0.51	Mercury	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	0.75	0.75	Mercury	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	0.75	0.75	Mercury	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	1.1	1.1	Mercury	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	NA	NA	Mercury	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	0.88	0.88	Mercury	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	0.51	0.51	Mercury	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	1.6	1.6	Mercury	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	0.15 U	0.15	Mercury	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Mercury	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Mercury	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Mercury	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Mercury	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Mercury	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Mercury	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	NA	NA	Mercury	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	NA	NA	Mercury	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Mercury	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Mercury	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	0	6	48			Yes	Include
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Mercury	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Mercury		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Mercury		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Mercury		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Mercury		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Mercury		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Mercury		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Mercury		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Mercury		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	0.34	0.34	Mercury	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	0.47	0.47	Mercury	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	0.68	0.68	Mercury	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	0.46	0.46	Mercury	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Mercury		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	0.27	0.27	Mercury	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	2.2	2.2	Mercury	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	NA	NA	Mercury	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	0.58	0.58	Mercury	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	0.76	0.76	Mercury	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	0.39	0.39	Mercury	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	0.25	0.25	Mercury	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	NA	NA	Mercury	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	0.14 U	0.14	Mercury	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	0.23	0.23	Mercury	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Mercury		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Mercury	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	0.17 U	0.17	Mercury	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	NA	NA	Mercury	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	0.5	0.5	Mercury	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	0.36	0.36	Mercury	FC-6	24	42	45.9999996	-5.316	include	Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-14	24 - 46	9/12/2013	Area 2	NA	NA	Mercury	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	NA	NA	Mercury	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Mercury		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Mercury		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Mercury		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Mercury		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Mercury		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	NA	NA	Mercury		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	NA	NA	Mercury		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	NA	NA	Mercury		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Mercury		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Mercury		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	NA	NA	Mercury		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Mercury		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Mercury		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Mercury		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	0.4	0.4	Mercury		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	NA	NA	Mercury		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	0.16 U	0.16	Mercury		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	0.42	0.42	Mercury		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	NA	NA	Mercury		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	0.29	0.29	Mercury		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	0.25	0.25	Mercury		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	NA	NA	Mercury		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	0.32	0.32	Mercury		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	0.49	0.49	Mercury		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	NA	NA	Mercury		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	0.26	0.26	Mercury		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Mercury	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Mercury	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Mercury	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Mercury	OC-10	48	72	24			No	Exclude
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Mercury	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Mercury	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Mercury	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Mercury	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Mercury	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Mercury	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	0.36	0.36	Mercury	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	NA	NA	Mercury	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	0.57	0.57	Mercury	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	0.64	0.64	Mercury	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	NA	NA	Mercury	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	0.78	0.78	Mercury	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	0.48	0.48	Mercury	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	NA	NA	Mercury	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	0.24 U	0.24	Mercury	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	NA	NA	Mercury	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	NA	NA	Mercury	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	NA	NA	Mercury	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Mercury		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	NA	NA	Mercury		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Mercury	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Mercury	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Mercury	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Mercury	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	0.23	0.23	Mercury	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	NA	NA	Mercury	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Mercury	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	0.38	0.38	Mercury	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	0.55	0.55	Mercury	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	NA	NA	Mercury	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	0.46	0.46	Mercury	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Mercury	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Mercury	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Mercury	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Mercury	SND-1	42	60	60			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Mercury	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	0.19	0.19	Mercury	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	0.3	0.3	Mercury	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	0.25	0.25	Mercury	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	0.16 U	0.16	Mercury	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	0.46	0.46	Mercury	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	0.17	0.17	Mercury	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	0.19	0.19	Mercury	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	0.13 U	0.13	Mercury	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	0.19 U	0.19	Mercury		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	0.19 U	0.19	Mercury		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	0.12 U	0.12	Mercury		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	0.13 U	0.13	Mercury		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	0.16 U	0.16	Mercury		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	0.16 U	0.16	Mercury	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	0.14 U	0.14	Mercury	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	0.3	0.3	Mercury	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	0.19	0.19	Mercury	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	0.13 U	0.13	Mercury	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	0.25	0.25	Mercury	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	NA	NA	Mercury	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	0.63	0.63	Mercury	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	0.49	0.49	Mercury	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	0.24 U	0.24	Mercury	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	0.21 U	0.21	Mercury	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	0.62	0.62	Mercury	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	NA	NA	Mercury	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	2.5	2.5	Mercury	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	1.8	1.8	Mercury	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	1.6	1.6	Mercury	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	0.88	0.88	Mercury	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	0.15 U	0.15	Mercury	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	0.15 U	0.15	Mercury	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	0.31	0.31	Mercury	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Mercury	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	0.49	0.49	Mercury	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	1	1	Mercury	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	1.9	1.9	Mercury	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	NA	NA	Mercury	FS-1	0	6	30.996			Yes	Include
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	NA	NA	Mercury	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	NA	NA	Mercury	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Mercury	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	0.39	0.39	Mercury	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	NA	NA	Mercury	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	1.1	1.1	Mercury	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	1.6	1.6	Mercury	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	NA	NA	Mercury	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	NA	NA	Mercury	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	NA	NA	Mercury	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	NA	NA	Mercury	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	NA	NA	Mercury	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Mercury	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Mercury	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Mercury	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Mercury	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Mercury		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Mercury		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Mercury	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Mercury	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Mercury	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Mercury	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Mercury	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Mercury	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Mercury	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Mercury	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Mercury	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Mercury	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Mercury	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Mercury	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Mercury		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Mercury		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Mercury		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Mercury			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Mercury		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Mercury		6	24	30.588			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Mercury		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Mercury		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Mercury		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Mercury		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Mercury		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Mercury	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Mercury	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Mercury	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Mercury	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Mercury	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Mercury	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	NA	NA	Mercury		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	NA	NA	Mercury		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	NA	NA	Mercury		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	NA	NA	Mercury		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	NA	NA	Mercury		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Mercury		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Mercury	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Mercury	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Mercury	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Mercury	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Mercury	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Mercury	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Mercury	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Mercury	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	NA	NA	Mercury	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	NA	NA	Mercury	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Mercury	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	NA	NA	Mercury	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Mercury	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Mercury	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	NA	NA	Mercury	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Mercury	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Mercury	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	NA	NA	Mercury	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Mercury	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Mercury	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	NA	NA	Mercury	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Mercury	OC-4	90	102	101.997672			Yes	Include
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Mercury	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	0.41	0.41	Mercury	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	0.8	0.8	Mercury	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	1.3	1.3	Mercury	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	2.2	2.2	Mercury	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	3	3	Mercury	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	0.99	0.99	Mercury	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	1.7	1.7	Mercury	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	1.6	1.6	Mercury	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	0.73	0.73	Mercury	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	0.27	0.27	Mercury	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	0.45	0.45	Mercury	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	0.550 F1	0.55	Mercury	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	0.39	0.39	Mercury	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	0.34	0.34	Mercury	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	0.16	0.16	Mercury	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	0.190 J	0.19	Mercury	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	0.34	0.34	Mercury	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	1.5	1.5	Mercury	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	0.42	0.42	Mercury	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	0.55	0.55	Mercury	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	0.26	0.26	Mercury	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	0.180 J	0.18	Mercury	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	0.24	0.24	Mercury	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	0.4	0.4	Mercury	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	0.23	0.23	Mercury	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	0.3	0.3	Mercury	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	0.160 J	0.16	Mercury	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	0.78	0.78	Mercury	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	0.59	0.59	Mercury	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	2	2	Mercury	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	0.68	0.68	Mercury	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	0.580 F1	0.58	Mercury	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	0.0550 U	0.055	Mercury	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	0.23	0.23	Mercury	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	1.1	1.1	Mercury	CS-1	0	12	90.9955116			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	1.5	1.5	Mercury	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	2.5	2.5	Mercury	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	4	4	Mercury	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	9	9	Mercury	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	6.7	6.7	Mercury	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	8.2	8.2	Mercury	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	7.1	7.1	Mercury	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	1.4	1.4	Mercury	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	1.5	1.5	Mercury	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	2.1	2.1	Mercury	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	3.5	3.5	Mercury	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	3.8	3.8	Mercury	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	2.2	2.2	Mercury	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	1.9	1.9	Mercury	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	3.7	3.7	Mercury	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	0.170 F1	0.17	Mercury		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	0.5	0.5	Mercury	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	1	1	Mercury	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	1.7	1.7	Mercury	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Mercury	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Mercury	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Mercury	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Mercury	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Mercury	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Mercury	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Mercury	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Mercury	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Mercury	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Mercury	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Mercury	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Mercury	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Mercury	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-2	0	12	36.004608			Yes	Include
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Mercury	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Mercury	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Mercury	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Mercury	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Mercury	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Mercury	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Mercury		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Mercury		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Mercury		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Mercury	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Mercury	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Mercury	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Mercury	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Mercury	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Mercury		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	NA	NA	Mercury	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Mercury	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Mercury	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Mercury	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Mercury	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Mercury	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Mercury	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Mercury	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Mercury	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Mercury	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Mercury	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Mercury	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Mercury	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Mercury	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Mercury	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Mercury	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Mercury	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Mercury	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Mercury	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Mercury	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Mercury	FC-3	36	48	33.6	14.64	include	No	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Mercury	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Mercury	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Mercury	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Mercury	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Mercury	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Mercury		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Mercury		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Mercury		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Mercury		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Mercury		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Mercury		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Mercury	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Mercury	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	0.26	0.26	Mercury		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	0.55	0.55	Mercury		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	0.100 U	0.1	Mercury		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Mercury	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Mercury	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Mercury	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Mercury	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Mercury	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Mercury	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Mercury	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Mercury	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Mercury	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Mercury		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Mercury	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Mercury	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Mercury	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Mercury	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Mercury	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Mercury	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Mercury	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Mercury	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Mercury	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Mercury	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Mercury	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Mercury	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Mercury	OC-9	72	84	83.184			Yes	Include
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Mercury	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	0.120 J	0.12	Mercury		0	6					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Mercury	OC-13	0	6	6.003036			Yes	Include
HB2A_4	0 - 6	5/12/2007	Hughitt Ave Slip	NA	NA	Thallium	HS-1	0	6	48.00432			Yes	Include
HB2A_4	6 - 24	5/12/2007	Hughitt Ave Slip	NA	NA	Thallium	HS-1	6	24	48.00432			Yes	Include
HB2A_4	24 - 48	5/12/2007	Hughitt Ave Slip	NA	NA	Thallium	HS-1	24	48	48.00432			Yes	Include
HB2A_6	0 - 5	5/2/2007	Area 1	NA	NA	Thallium		0	5					Exclude
HB2A_7	0 - 5	5/10/2007	Area 1	NA	NA	Thallium	SND-1	0	5					Exclude
HB2A_8	0 - 5	5/10/2007	Area 1	NA	NA	Thallium	FC-12/FC-13	0	5	4.9944804	79.824	exclude	Yes	Exclude
HB2A_11	0 - 5	5/10/2007	Area 1	NA	NA	Thallium		0	5					Exclude
HB2A_13	0 - 5	5/2/2007	Area 1	NA	NA	Thallium		0	5					Exclude
HB2A_16	0 - 5	5/2/2007	Area 1	NA	NA	Thallium		0	5					Exclude
HB2A_210	0 - 6	5/16/2007	Area 1	NA	NA	Thallium		0	6					Exclude
HB2A_210	6 - 24	5/16/2007	Area 1	NA	NA	Thallium		6	24					Exclude
HB2A_210	24 - 48	5/16/2007	Area 1	NA	NA	Thallium		24	48					Exclude
HB2A_GENES	0 - 5	5/22/2007	Cummings Ave Slip	NA	NA	Thallium		0	5					Exclude
HB2B_17	0 - 6	5/12/2007	Fraser Ave Slip	NA	NA	Thallium	FS-2	0	6	24.005676			Yes	Include
HB2B_17	6 - 24	5/12/2007	Fraser Ave Slip	NA	NA	Thallium	FS-2	6	24	24.005676			Yes	Include
HB2B_18	0 - 6	5/7/2007	Area 2	NA	NA	Thallium	FP-1	0	6	47.997552			Yes	Include
HB2B_18	6 - 24	5/7/2007	Area 2	NA	NA	Thallium	FP-1	6	24	47.997552			Yes	Include
HB2B_18	24 - 48	5/7/2007	Area 2	NA	NA	Thallium	FP-1	24	48	47.997552			Yes	Include
HB2B_19	0 - 6	5/2/2007	Area 2	NA	NA	Thallium	OC-1	0	6	6.001728			Yes	Include
HB2B_19	6 - 24	5/2/2007	Area 2	NA	NA	Thallium	OC-1	6	24	6.001728			Yes	Include
HB2B_20	0 - 6	5/2/2007	Area 2	NA	NA	Thallium	OC-9	0	6	23.997336			Yes	Include
HB2B_20	6 - 24	5/2/2007	Area 2	NA	NA	Thallium	OC-9	6	24	23.997336			Yes	Include
HB2B_20	24 - 48	5/2/2007	Area 2	NA	NA	Thallium	OC-9	24	48	23.997336			No	Exclude
HB2B_21	0 - 5	5/2/2007	Area 2	NA	NA	Thallium		0	5					Exclude
HB2B_22	0 - 5	5/2/2007	Area 2	NA	NA	Thallium	OC-5	0	5	5.0028204			Yes	Include
HB3A_GENES	0 - 5	9/6/2007	Cummings Ave Slip	NA	NA	Thallium		0	5					Exclude
HB10-1-01	0 - 6	10/16/2010	Area 1	4.3 U	4.3	Thallium		0	6					Exclude
HB10-1-01	0 - 12	10/16/2010	Area 1	5.3 U	5.3	Thallium		0	12					Exclude
HB10-1-01	36 - 40	10/16/2010	Area 1	3.5 U	3.5	Thallium		36	40					Exclude
HB10-1-02	0 - 6	10/16/2010	Area 1	4.2 U	4.2	Thallium		0	6	23.0027508			Yes	Include
HB10-1-02	12 - 23	10/16/2010	Area 1	3.8 U	3.8	Thallium		12	23	23.0027508			Yes	Include
HB10-1-03	0 - 6	10/16/2010	Area 1	3.9 U	3.9	Thallium	FC-17	0	6	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	0 - 12	10/16/2010	Area 1	3.4 U	3.4	Thallium	FC-17	0	12	59.99475	49.872	exclude	Yes	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-1-03	12 - 36	10/16/2010	Area 1	3.1 U	3.1	Thallium	FC-17	12	36	59.99475	49.872	exclude	Yes	Exclude
HB10-1-03	36 - 60	10/16/2010	Area 1	3.6 U	3.6	Thallium	FC-17	36	60	59.99475	49.872	include	Yes	Include
HB10-1-03	60 - 84	10/16/2010	Area 1	3.6 U	3.6	Thallium	FC-17	60	84	59.99475	49.872	include	No	Exclude
HB10-1-04	0 - 6	10/17/2010	Area 1	0.67 J	0.67	Thallium		0	6					Exclude
HB10-1-04	0 - 12	10/17/2010	Area 1	3.1 U	3.1	Thallium		0	12					Exclude
HB10-1-04	12 - 36	10/17/2010	Area 1	3.6 U	3.6	Thallium		12	36					Exclude
HB10-1-04	36 - 50	10/17/2010	Area 1	3.4 U	3.4	Thallium		36	50					Exclude
HB10-1-05	0 - 6	10/16/2010	Area 1	3.8 U	3.8	Thallium	OC-17	0	6	5.9987496			Yes	Include
HB10-1-07	0 - 6	10/17/2010	Area 1	3.4 U	3.4	Thallium	OC-15	0	6	6.0057			Yes	Include
HB10-1-07	0 - 12	10/17/2010	Area 1	4.0 U	4	Thallium	OC-15	0	12	6.0057			Yes	Include
HB10-1-07	12 - 36	10/17/2010	Area 1	3.8 U	3.8	Thallium	OC-15	12	36	6.0057			No	Exclude
HB10-1-07	60 - 64	10/17/2010	Area 1	2.9 U	2.9	Thallium	OC-15	60	64	6.0057			No	Exclude
HB10-1-08	0 - 6	10/17/2010	Area 1	4.6 U	4.6	Thallium		0	6	36.0057			Yes	Include
HB10-1-08	0 - 12	10/17/2010	Area 1	4.5 U	4.5	Thallium		0	12	36.0057			Yes	Include
HB10-1-08	12 - 36	10/17/2010	Area 1	3.7 U	3.7	Thallium		12	36	36.0057			Yes	Include
HB10-1-10	0 - 6	10/18/2010	Area 1	5.1 U	5.1	Thallium	SND-1	0	6					Exclude
HB10-1-11	0 - 6	10/16/2010	Area 1	4.2 U	4.2	Thallium		0	6	20.9987496			Yes	Include
HB10-1-11	12 - 21	10/16/2010	Area 1	4.0 U	4	Thallium		12	21	20.9987496			Yes	Include
HB10-1-12	0 - 6	10/17/2010	Area 1	3.2 U	3.2	Thallium		0	6					Exclude
HB10-1-12	0 - 12	10/17/2010	Area 1	4.4 U	4.4	Thallium		0	12					Exclude
HB10-1-12	12 - 34	10/17/2010	Area 1	7.8 U	7.8	Thallium		12	34					Exclude
HB10-1-13	0 - 6	10/18/2010	Area 1	1.4 J-	1.4	Thallium	FC-12/FC-13	0	6	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	0 - 12	10/18/2010	Area 1	1.2 J-	1.2	Thallium	FC-12/FC-13	0	12	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	12 - 36	10/18/2010	Area 1	1.2 J-	1.2	Thallium	FC-12/FC-13	12	36	36.0053004	42.816	exclude	Yes	Exclude
HB10-1-13	60 - 67	10/18/2010	Area 1	0.85 J-	0.85	Thallium	FC-12/FC-13	60	67	36.0053004	42.816	include	No	Exclude
HB10-1-14	0 - 6	10/17/2010	Area 1	0.92 J	0.92	Thallium		0	6	66.0057			Yes	Include
HB10-1-14	0 - 12	10/17/2010	Area 1	1.3 J	1.3	Thallium		0	12	66.0057			Yes	Include
HB10-1-14	12 - 36	10/17/2010	Area 1	1.3 J	1.3	Thallium		12	36	66.0057			Yes	Include
HB10-1-14	60 - 66	10/17/2010	Area 1	1.0 J	1	Thallium		60	66	66.0057			Yes	Include
HB10-1-15	0 - 6	10/18/2010	Area 1	2.4 U	2.4	Thallium	OC-13	0	6	16.0056996			Yes	Include
HB10-1-15	12 - 16	10/18/2010	Area 1	3.8 U	3.8	Thallium	OC-13	12	16	16.0056996			Yes	Include
HB10-1-16	0 - 6	10/17/2010	Hughitt Ave Slip	2.6 U	2.6	Thallium	HS-3	0	6	31.0056996			Yes	Include
HB10-1-16	0 - 12	10/17/2010	Hughitt Ave Slip	4.2 U	4.2	Thallium	HS-3	0	12	31.0056996			Yes	Include
HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	3.5 U	3.5	Thallium	HS-3	12	31	31.0056996			Yes	Include
HB10-1-17	0 - 6	10/17/2010	Area 1	3.9 U	3.9	Thallium	OC-14	0	6	12			Yes	Include
HB10-1-20	0 - 6	10/17/2010	Hughitt Ave Slip	2.7 U	2.7	Thallium		0	6	6.0057			Yes	Include
HB10-1-21	0 - 6	10/18/2010	Cummings Ave Slip	2.4 U	2.4	Thallium		0	6	6.0012996			Yes	Include
HB10-1-21	12 - 23	10/18/2010	Cummings Ave Slip	2.4 U	2.4	Thallium		12	23	6.0012996			No	Exclude
HB10-1-23	0 - 6	10/17/2010	Area 1	4.1 U	4.1	Thallium		0	6	36.0057			Yes	Include
HB10-1-23	0 - 12	10/17/2010	Area 1	4.2 U	4.2	Thallium		0	12	36.0057			Yes	Include
HB10-1-23	12 - 36	10/17/2010	Area 1	4.2 U	4.2	Thallium		12	36	36.0057			Yes	Include
HB10-1-24	0 - 6	10/18/2010	Cummings Ave Slip	1.7 J-	1.7	Thallium	CS-4	0	6	36.0047496			Yes	Include
HB10-1-24	0 - 12	10/18/2010	Cummings Ave Slip	1.6 J-	1.6	Thallium	CS-4	0	12	36.0047496			Yes	Include
HB10-1-24	12 - 36	10/18/2010	Cummings Ave Slip	1.7 J-	1.7	Thallium	CS-4	12	36	36.0047496			Yes	Include
HB10-1-25	0 - 6	10/17/2010	Baxter Ave Embayment	4.9 U	4.9	Thallium		0	6	6.0057			Yes	Include
HB10-1-27	0 - 6	10/18/2010	Area 1	4.7 U	4.7	Thallium		0	6	-0.0027			No	Exclude
HB10-1-28	0 - 6	10/17/2010	Hughitt Ave Slip	3.8 U	3.8	Thallium	HS-1	0	6	84.0057			Yes	Include
HB10-1-28	0 - 12	10/17/2010	Hughitt Ave Slip	3.6 U	3.6	Thallium	HS-1	0	12	84.0057			Yes	Include
HB10-1-28	12 - 36	10/17/2010	Hughitt Ave Slip	4.5 U	4.5	Thallium	HS-1	12	36	84.0057			Yes	Include
HB10-1-28	36 - 60	10/17/2010	Hughitt Ave Slip	4.7 U	4.7	Thallium	HS-1	36	60	84.0057			Yes	Include
HB10-1-28	60 - 84	10/17/2010	Hughitt Ave Slip	3.9 U	3.9	Thallium	HS-1	60	84	84.0057			Yes	Include
HB10-1-28	60 - 96	10/17/2010	Hughitt Ave Slip	3.9 U	3.9	Thallium	HS-1	60	96	84.0057			Yes	Include
HB10-1-29	0 - 6	10/17/2010	Cummings Ave Slip	1.6 J	1.6	Thallium	CS-1	0	6	83.9937			Yes	Include
HB10-1-29	0 - 12	10/17/2010	Cummings Ave Slip	1.9 J	1.9	Thallium	CS-1	0	12	83.9937			Yes	Include
HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	1.9 J	1.9	Thallium	CS-1	12	36	83.9937			Yes	Include
HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	0.89 J	0.89	Thallium	CS-1	36	60	83.9937			Yes	Include
HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	0.89 J	0.89	Thallium	CS-1	60	93	83.9937			Yes	Include
HB10-1-30	0 - 6	10/18/2010	Baxter Ave Embayment	3.3 U	3.3	Thallium		0	6	60.0053004			Yes	Include
HB10-1-30	0 - 12	10/18/2010	Baxter Ave Embayment	4.0 U	4	Thallium		0	12	60.0053004			Yes	Include
HB10-1-30	12 - 36	10/18/2010	Baxter Ave Embayment	3.5 U	3.5	Thallium		12	36	60.0053004			Yes	Include
HB10-1-30	36 - 60	10/18/2010	Baxter Ave Embayment	3.2 U	3.2	Thallium		36	60	60.0053004			Yes	Include
HB10-1-30	60 - 77	10/18/2010	Baxter Ave Embayment	12 U	12	Thallium		60	77	60.0053004			Yes	Include
HB10-1-31	0 - 6	10/18/2010	Baxter Ave Embayment	5.5 U	5.5	Thallium	OC-11	0	6	35.9973			Yes	Include
HB10-1-31	0 - 12	10/18/2010	Baxter Ave Embayment	4.7 U	4.7	Thallium	OC-11	0	12	35.9973			Yes	Include
HB10-1-31	12 - 36	10/18/2010	Baxter Ave Embayment	2.2 J-	2.2	Thallium	OC-11	12	36	35.9973			Yes	Include
HB10-2-18	0 - 6	10/18/2010	Area 2	4.6 U	4.6	Thallium	OC-2	0	6	6.0053004			Yes	Include
HB10-2-26	0 - 6	10/16/2010	Area 2	3.1 U	3.1	Thallium		0	6					Exclude
HB10-2-26	12 - 17	10/16/2010	Area 2	3.0 U	3	Thallium		12	17					Exclude
HB10-2-32	0 - 6	10/18/2010	Area 2	5.3 U	5.3	Thallium		0	6					Exclude
HB10-2-33	0 - 6	10/18/2010	Area 2	0.39 J-	0.39	Thallium		0	6	6.0012996			Yes	Include
HB10-2-33	12 - 22	10/18/2010	Area 2	0.98 J-	0.98	Thallium		12	22	6.0012996			No	Exclude
HB10-2-34	0 - 6	10/18/2010	Area 2	5.0 U	5	Thallium	FC-7	0	6	6.0053004	0.816	include	Yes	Include
HB10-2-35	0 - 6	10/18/2010	Area 2	2.5 U	2.5	Thallium		0	6	30.0012996			Yes	Include
HB10-2-35	0 - 12	10/18/2010	Area 2	2.4 U	2.4	Thallium		0	12	30.0012996			Yes	Include
HB10-2-35	12 - 30	10/18/2010	Area 2	2.9 U	2.9	Thallium		12	30	30.0012996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB10-2-36	0 - 6	10/18/2010	Area 2	3.2 U	3.2	Thallium	FC-5	0	6	6.0053004	-29.184	include	Yes	Include
HB10-2-37	0 - 6	10/18/2010	Area 2	2.2 U	2.2	Thallium		0	6	23.0013			Yes	Include
HB10-2-37	12 - 23	10/18/2010	Area 2	7.9 U	7.9	Thallium		12	23	23.0013			Yes	Include
HB10-2-38	0 - 6	10/18/2010	Area 2	4.7 U	4.7	Thallium	OC-6	0	6	38.0013			Yes	Include
HB10-2-38	0 - 12	10/18/2010	Area 2	1.3 J-	1.3	Thallium	OC-6	0	12	38.0013			Yes	Include
HB10-2-38	36 - 38	10/18/2010	Area 2	2.6 U	2.6	Thallium	OC-6	36	38	38.0013			Yes	Include
HB10-2-39	0 - 6	10/18/2010	Area 2	2.2 U	2.2	Thallium		0	6	6.0012996			Yes	Include
HB10-2-39	0 - 12	10/18/2010	Area 2	2.6 U	2.6	Thallium		0	12	6.0012996			Yes	Include
HB10-2-39	12 - 28	10/18/2010	Area 2	1.7 J-	1.7	Thallium		12	28	6.0012996			No	Exclude
HB10-2-40	0 - 6	10/18/2010	Area 2	5.2 U	5.2	Thallium	OC-5	0	6	48.0053004			Yes	Include
HB10-2-40	0 - 12	10/18/2010	Area 2	4.5 U	4.5	Thallium	OC-5	0	12	48.0053004			Yes	Include
HB10-2-40	12 - 36	10/18/2010	Area 2	3.2 U	3.2	Thallium	OC-5	12	36	48.0053004			Yes	Include
HB10-2-40	36 - 48	10/18/2010	Area 2	2.6 U	2.6	Thallium	OC-5	36	48	48.0053004			Yes	Include
HB10-2-41	0 - 6	10/18/2010	Area 2	5.9 U	5.9	Thallium	FP-2	0	6	31.0012992			Yes	Include
HB10-2-41	0 - 12	10/18/2010	Area 2	3.2 U	3.2	Thallium	FP-2	0	12	31.0012992			Yes	Include
HB10-2-41	12 - 31	10/18/2010	Area 2	3.2 U	3.2	Thallium	FP-2	12	31	31.0012992			Yes	Include
HB10-2-42	0 - 6	10/18/2010	Area 2	2.8 U	2.8	Thallium	FP-1	0	6	12.0012996			Yes	Include
HB10-2-42	0 - 12	10/18/2010	Area 2	3.5 U	3.5	Thallium	FP-1	0	12	12.0012996			Yes	Include
HB10-2-42	12 - 30	10/18/2010	Area 2	3.2 U	3.2	Thallium	FP-1	12	30	12.0012996			Yes	Include
HB10-2-43	0 - 6	10/17/2010	Area 2	4.9 U	4.9	Thallium		0	6	22.0056996			Yes	Include
HB10-2-43	12 - 22	10/17/2010	Area 2	3.8 U	3.8	Thallium		12	22	22.0056996			Yes	Include
HB10-2-44	0 - 6	10/18/2010	Area 2	3.3 U	3.3	Thallium	FP-2	0	6	16.0012992			Yes	Include
HB10-2-44	12 - 16	10/18/2010	Area 2	2.8 U	2.8	Thallium	FP-2	12	16	16.0012992			Yes	Include
HB10-2-45	0 - 6	10/18/2010	Area 2	2.7 U	2.7	Thallium	FP-2	0	6	19.0012992			Yes	Include
HB10-2-45	12 - 19	10/18/2010	Area 2	2.9 U	2.9	Thallium	FP-2	12	19	19.0012992			Yes	Include
HB13-01	0 - 6 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	0	6	48			Yes	Include
HB13-01	6 - 12 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	6	12	48			Yes	Include
HB13-01	12 - 18 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	12	18	48			Yes	Include
HB13-01	18 - 24 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	18	24	48			Yes	Include
HB13-01	24 - 30 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	24	30	48			Yes	Include
HB13-01	30 - 36 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	30	36	48			Yes	Include
HB13-01	36 - 42 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	36	42	48			Yes	Include
HB13-01	42 - 48 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	42	48	48			Yes	Include
HB13-01	48 - 54 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	48	54	48			No	Exclude
HB13-01	54 - 60 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	54	60	48			No	Exclude
HB13-01	60 - 66 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	60	66	48			No	Exclude
HB13-01	66 - 72 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	66	72	48			No	Exclude
HB13-01	72 - 74 *	9/11/2013	Area 2	NA	NA	Thallium	FP-1	72	74	48			No	Exclude
HB13-02	0 - 6 *	9/9/2013	Area 2	NA	NA	Thallium		0	6	29.9960004			Yes	Include
HB13-02	6 - 12 *	9/9/2013	Area 2	NA	NA	Thallium		6	12	29.9960004			Yes	Include
HB13-02	12 - 18 *	9/9/2013	Area 2	NA	NA	Thallium		12	18	29.9960004			Yes	Include
HB13-02	18 - 24 *	9/9/2013	Area 2	NA	NA	Thallium		18	24	29.9960004			Yes	Include
HB13-02	24 - 30 *	9/9/2013	Area 2	NA	NA	Thallium		24	30	29.9960004			Yes	Include
HB13-02	30 - 36 *	9/9/2013	Area 2	NA	NA	Thallium		30	36	29.9960004			No	Exclude
HB13-02	36 - 42 *	9/9/2013	Area 2	NA	NA	Thallium		36	42	29.9960004			No	Exclude
HB13-02	42 - 48 *	9/9/2013	Area 2	NA	NA	Thallium		42	48	29.9960004			No	Exclude
HB13-03	0 - 6 *	9/9/2013	Area 2	2.4 U	2.4	Thallium	FP-2	0	6	46.0040004			Yes	Include
HB13-03	0 - 24	9/9/2013	Area 2	NA	NA	Thallium	FP-2	0	24	46.0040004			Yes	Include
HB13-03	6 - 12 *	9/9/2013	Area 2	1.5 U	1.5	Thallium	FP-2	6	12	46.0040004			Yes	Include
HB13-03	12 - 18 *	9/9/2013	Area 2	1.7 U	1.7	Thallium	FP-2	12	18	46.0040004			Yes	Include
HB13-03	18 - 24 *	9/9/2013	Area 2	1.3 U	1.3	Thallium	FP-2	18	24	46.0040004			Yes	Include
HB13-03	24 - 30 *	9/9/2013	Area 2	1.6 U	1.6	Thallium	FP-2	24	30	46.0040004			Yes	Include
HB13-03	24 - 46	9/9/2013	Area 2	NA	NA	Thallium	FP-2	24	46	46.0040004			Yes	Include
HB13-03	30 - 36 *	9/9/2013	Area 2	1.5 U	1.5	Thallium	FP-2	30	36	46.0040004			Yes	Include
HB13-03	36 - 42 *	9/9/2013	Area 2	1.5 U	1.5	Thallium	FP-2	36	42	46.0040004			Yes	Include
HB13-03	42 - 46 *	9/9/2013	Area 2	1.9 U	1.9	Thallium	FP-2	42	46	46.0040004			Yes	Include
HB13-03	46 - 51 *	9/9/2013	Area 2	1.3 U	1.3	Thallium	FP-2	46	51	46.0040004			Yes	Include
HB13-04	0 - 6 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	0	6	41.9960004			Yes	Include
HB13-04	6 - 12 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	6	12	41.9960004			Yes	Include
HB13-04	12 - 18 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	12	18	41.9960004			Yes	Include
HB13-04	18 - 24 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	18	24	41.9960004			Yes	Include
HB13-04	24 - 30 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	24	30	41.9960004			Yes	Include
HB13-04	30 - 36 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	30	36	41.9960004			Yes	Include
HB13-04	36 - 42 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	36	42	41.9960004			Yes	Include
HB13-04	42 - 44 *	9/9/2013	Area 2	NA	NA	Thallium	OC-1	42	44	41.9960004			No	Exclude
HB13-05	0 - 32 *	9/9/2013	Area 2	NA	NA	Thallium	FC-1	0	32	43.8	33.156	exclude	Yes	Exclude
HB13-05	32 - 38 *	9/9/2013	Area 2	NA	NA	Thallium	FC-1	32	38	43.8	33.156	include	Yes	Include
HB13-05	38 - 44 *	9/9/2013	Area 2	NA	NA	Thallium	FC-1	38	44	43.8	33.156	include	Yes	Include
HB13-05	44 - 50 *	9/9/2013	Area 2	NA	NA	Thallium	FC-1	44	50	43.8	33.156	include	No	Exclude
HB13-05	50 - 56 *	9/9/2013	Area 2	NA	NA	Thallium	FC-1	50	56	43.8	33.156	include	No	Exclude
HB13-05	56 - 62	9/9/2013	Area 2	NA	NA	Thallium	FC-1	56	62	43.8	33.156	include	No	Exclude
HB13-05	62 - 66	9/9/2013	Area 2	NA	NA	Thallium	FC-1	62	66	43.8	33.156	include	No	Exclude
HB13-05	68 - 74 *	9/9/2013	Area 2	NA	NA	Thallium	FC-1	68	74	43.8	33.156	include	No	Exclude
HB13-05	74 - 77 *	9/9/2013	Area 2	NA	NA	Thallium	FC-1	74	77	43.8	33.156	include	No	Exclude
HB13-06	0 - 6 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	0	6	48			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-06	6 - 12 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	6	12	48			Yes	Include
HB13-06	12 - 18 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	12	18	48			Yes	Include
HB13-06	18 - 24 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	18	24	48			Yes	Include
HB13-06	24 - 30 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	24	30	48			Yes	Include
HB13-06	30 - 36 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	30	36	48			Yes	Include
HB13-06	36 - 42 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	36	42	48			Yes	Include
HB13-06	42 - 48 *	9/9/2013	Area 2	NA	NA	Thallium	OC-2	42	48	48			Yes	Include
HB13-07	0 - 6 *	9/10/2013	Area 2	NA	NA	Thallium		0	6					Exclude
HB13-07	6 - 12 *	9/10/2013	Area 2	NA	NA	Thallium		6	12					Exclude
HB13-07	12 - 18 *	9/10/2013	Area 2	NA	NA	Thallium		12	18					Exclude
HB13-07	18 - 24 *	9/10/2013	Area 2	NA	NA	Thallium		18	24					Exclude
HB13-07	24 - 30 *	9/10/2013	Area 2	NA	NA	Thallium		24	30					Exclude
HB13-07	30 - 36 *	9/10/2013	Area 2	NA	NA	Thallium		30	36					Exclude
HB13-07	36 - 42 *	9/10/2013	Area 2	NA	NA	Thallium		36	42					Exclude
HB13-07	42 - 48 *	9/10/2013	Area 2	NA	NA	Thallium		42	48					Exclude
HB13-08	0 - 18	9/11/2013	Area 2	1.5 U	1.5	Thallium	FC-2	0	18	38.28	21.756	exclude	Yes	Exclude
HB13-08	18 - 36	9/11/2013	Area 2	1.4 U	1.4	Thallium	FC-2	18	36	38.28	21.756	include	Yes	Include
HB13-08	36 - 60	9/11/2013	Area 2	1.6 U	1.6	Thallium	FC-2	36	60	38.28	21.756	include	Yes	Include
HB13-08	60 - 92	9/11/2013	Area 2	1.1 U	1.1	Thallium	FC-2	60	92	38.28	21.756	include	No	Exclude
HB13-10	0 - 6 *	9/10/2013	Area 2	NA	NA	Thallium		0	6	0.0039996			Yes	Include
HB13-11	0 - 18	9/11/2013	Area 2	1.7	1.7	Thallium	FC-4	0	18	25.2	23.964	exclude	Yes	Exclude
HB13-11	18 - 24 *	9/11/2013	Area 2	1.5	1.5	Thallium	FC-4	18	24	25.2	23.964	include	Yes	Include
HB13-11	18 - 42	9/11/2013	Area 2	NA	NA	Thallium	FC-4	18	42	25.2	23.964	include	Yes	Include
HB13-11	24 - 30 *	9/11/2013	Area 2	1.5 U	1.5	Thallium	FC-4	24	30	25.2	23.964	include	Yes	Include
HB13-11	30 - 36 *	9/11/2013	Area 2	1.4 U	1.4	Thallium	FC-4	30	36	25.2	23.964	include	No	Exclude
HB13-11	36 - 42 *	9/11/2013	Area 2	1.4 U	1.4	Thallium	FC-4	36	42	25.2	23.964	include	No	Exclude
HB13-11	42 - 48 *	9/11/2013	Area 2	1.2 U	1.2	Thallium	FC-4	42	48	25.2	23.964	include	No	Exclude
HB13-11	42 - 60	9/11/2013	Area 2	NA	NA	Thallium	FC-4	42	60	25.2	23.964	include	No	Exclude
HB13-11	48 - 54 *	9/11/2013	Area 2	1.4 U	1.4	Thallium	FC-4	48	54	25.2	23.964	include	No	Exclude
HB13-11	54 - 60 *	9/11/2013	Area 2	1.2 U	1.2	Thallium	FC-4	54	60	25.2	23.964	include	No	Exclude
HB13-12	0 - 6 *	9/10/2013	Area 2	NA	NA	Thallium		0	6	5.9960004			Yes	Include
HB13-13	0 - 1 *	9/11/2013	Area 2	NA	NA	Thallium	SND-5	0	1	0.9999996			Yes	Include
HB13-14	0 - 6 *	9/12/2013	Area 2	1.5 U	1.5	Thallium	FC-6	0	6	45.9999996	-5.316	include	Yes	Include
HB13-14	0 - 24	9/12/2013	Area 2	NA	NA	Thallium	FC-6	0	24	45.9999996	-5.316	include	Yes	Include
HB13-14	6 - 24 *	9/12/2013	Area 2	1.6 U	1.6	Thallium	FC-6	6	24	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 42 *	9/12/2013	Area 2	1.2 U	1.2	Thallium	FC-6	24	42	45.9999996	-5.316	include	Yes	Include
HB13-14	24 - 46	9/12/2013	Area 2	NA	NA	Thallium	FC-6	24	46	45.9999996	-5.316	include	Yes	Include
HB13-14	42 - 46 *	9/12/2013	Area 2	1.2 U	1.2	Thallium	FC-6	42	46	45.9999996	-5.316	include	Yes	Include
HB13-15	0 - 6 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	0	6	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	6 - 12 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	6	12	18.9999996	18.516	exclude	Yes	Exclude
HB13-15	12 - 19 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	12	19	18.9999996	18.516	include	Yes	Include
HB13-16	0 - 6 *	9/12/2013	Area 2	NA	NA	Thallium		0	6	26.0000004			Yes	Include
HB13-16	6 - 12 *	9/12/2013	Area 2	NA	NA	Thallium		6	12	26.0000004			Yes	Include
HB13-16	12 - 18 *	9/12/2013	Area 2	NA	NA	Thallium		12	18	26.0000004			Yes	Include
HB13-16	18 - 24 *	9/12/2013	Area 2	NA	NA	Thallium		18	24	26.0000004			Yes	Include
HB13-16	24 - 27 *	9/12/2013	Area 2	NA	NA	Thallium		24	27	26.0000004			Yes	Include
HB13-17	0 - 12 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	0	12	24	16.2	exclude	Yes	Exclude
HB13-17	12 - 18 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	12	18	24	16.2	include	Yes	Include
HB13-17	18 - 24 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	18	24	24	16.2	include	Yes	Include
HB13-17	24 - 47 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	24	47	24	16.2	include	No	Exclude
HB13-18	0 - 6	9/12/2013	Area 2	NA	NA	Thallium		0	6	9.9999996			Yes	Include
HB13-18	6 - 10	9/12/2013	Area 2	NA	NA	Thallium		6	10	9.9999996			Yes	Include
HB13-18	10 - 16	9/12/2013	Area 2	NA	NA	Thallium		10	16	9.9999996			No	Exclude
HB13-19	0 - 6 *	9/13/2013	Area 2	NA	NA	Thallium		0	6					Exclude
HB13-19	6 - 24 *	9/13/2013	Area 2	NA	NA	Thallium		6	24					Exclude
HB13-19	18 - 20 *	9/13/2013	Area 2	3.2 U	3.2	Thallium		18	20					Exclude
HB13-19	24 - 42 *	9/13/2013	Area 2	NA	NA	Thallium		24	42					Exclude
HB13-19	42 - 61 *	9/13/2013	Area 2	NA	NA	Thallium		42	61					Exclude
HB13-19	61 - 67 *	9/13/2013	Area 2	NA	NA	Thallium		61	67					Exclude
HB13-20	0 - 6 *	9/12/2013	Area 2	2.1 U	2.1	Thallium		0	6	24			Yes	Include
HB13-20	0 - 12	9/12/2013	Area 2	NA	NA	Thallium		0	12	24			Yes	Include
HB13-20	6 - 12 *	9/12/2013	Area 2	1.7 U	1.7	Thallium		6	12	24			Yes	Include
HB13-20	12 - 18 *	9/12/2013	Area 2	2.0 U	2	Thallium		12	18	24			Yes	Include
HB13-20	12 - 24	9/12/2013	Area 2	NA	NA	Thallium		12	24	24			Yes	Include
HB13-20	18 - 24 *	9/12/2013	Area 2	1.7 U	1.7	Thallium		18	24	24			Yes	Include
HB13-20	24 - 30 *	9/12/2013	Area 2	1.6 U	1.6	Thallium		24	30	24			No	Exclude
HB13-20	24 - 36	9/12/2013	Area 2	NA	NA	Thallium		24	36	24			No	Exclude
HB13-20	30 - 36 *	9/12/2013	Area 2	1.5 U	1.5	Thallium		30	36	24			No	Exclude
HB13-20	36 - 42 *	9/12/2013	Area 2	5.7	5.7	Thallium		36	42	24			No	Exclude
HB13-20	36 - 48	9/12/2013	Area 2	NA	NA	Thallium		36	48	24			No	Exclude
HB13-20	42 - 48 *	9/12/2013	Area 2	1.6 U	1.6	Thallium		42	48	24			No	Exclude
HB13-21	0 - 6 *	9/13/2013	Area 2	NA	NA	Thallium	OC-10	0	6	24			Yes	Include
HB13-21	6 - 24 *	9/13/2013	Area 2	NA	NA	Thallium	OC-10	6	24	24			Yes	Include
HB13-21	24 - 48 *	9/13/2013	Area 2	NA	NA	Thallium	OC-10	24	48	24			No	Exclude
HB13-21	48 - 72 *	9/13/2013	Area 2	NA	NA	Thallium	OC-10	48	72	24			No	Exclude



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
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Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB13-21	72 - 88 *	9/13/2013	Area 2	NA	NA	Thallium	OC-10	72	88	24			No	Exclude
HB13-22	0 - 28 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	0	28	24	36.72	exclude	Yes	Exclude
HB13-22	28 - 31 *	9/12/2013	Area 2	NA	NA	Thallium	FC-7	28	31	24	36.72	exclude	No	Exclude
HB13-23	0 - 12 *	9/12/2013	Area 2	NA	NA	Thallium	SND-5	0	12	27			Yes	Include
HB13-23	12 - 18 *	9/12/2013	Area 2	NA	NA	Thallium	SND-5	12	18	27			Yes	Include
HB13-23	18 - 24 *	9/12/2013	Area 2	NA	NA	Thallium	SND-5	18	24	27			Yes	Include
HB13-23	24 - 32 *	9/12/2013	Area 2	NA	NA	Thallium	SND-5	24	32	27			Yes	Include
HB13-24	0 - 6	9/12/2013	Hughitt Ave Slip	1.6 U	1.6	Thallium	HS-3	0	6	6			Yes	Include
HB13-24	0 - 24 *	9/12/2013	HUGHITT AVE SLIP	NA	NA	Thallium	HS-3	0	24	6			Yes	Include
HB13-24	6 - 24	9/12/2013	Hughitt Ave Slip	2.3	2.3	Thallium	HS-3	6	24	6			No	Exclude
HB13-25	0 - 6 *	9/12/2013	Area 1	2.1	2.1	Thallium	OC-11	0	6	57			Yes	Include
HB13-25	0 - 18	9/12/2013	Area 1	NA	NA	Thallium	OC-11	0	18	57			Yes	Include
HB13-25	6 - 18 *	9/12/2013	Area 1	1.6 U	1.6	Thallium	OC-11	6	18	57			Yes	Include
HB13-25	18 - 36 *	9/12/2013	Area 1	1.8 U	1.8	Thallium	OC-11	18	36	57			Yes	Include
HB13-25	18 - 57	9/12/2013	Area 1	NA	NA	Thallium	OC-11	18	57	57			Yes	Include
HB13-25	36 - 57 *	9/12/2013	Area 1	1.9 U	1.9	Thallium	OC-11	36	57	57			Yes	Include
HB13-26	0 - 12	9/13/2013	Area 1	NA	NA	Thallium	FC-10	0	12	33	17.04	exclude	Yes	Exclude
HB13-26	12 - 18	9/13/2013	Area 1	NA	NA	Thallium	FC-10	12	18	33	17.04	include	Yes	Include
HB13-26	18 - 33	9/13/2013	Area 1	NA	NA	Thallium	FC-10	18	33	33	17.04	include	Yes	Include
HB13-27	0 - 6 *	9/13/2013	Area 1	NA	NA	Thallium		0	6					Exclude
HB13-27	0 - 32	9/13/2013	Area 1	NA	NA	Thallium		0	32					Exclude
HB13-28	0 - 8 *	9/13/2013	Area 1	NA	NA	Thallium	FC-11	0	8	14.0000004	13.68	exclude	Yes	Exclude
HB13-28	8 - 14 *	9/13/2013	Area 1	NA	NA	Thallium	FC-11	8	14	14.0000004	13.68	include	Yes	Include
HB13-28	14 - 26 *	9/13/2013	Area 1	NA	NA	Thallium	FC-11	14	26	14.0000004	13.68	include	Yes	Include
HB13-28	26 - 40 *	9/13/2013	Area 1	NA	NA	Thallium	FC-11	26	40	14.0000004	13.68	include	No	Exclude
HB13-29	0 - 6	9/13/2013	Area 1	1.7	1.7	Thallium	FC-12/FC-13	0	6	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 12 *	9/13/2013	Area 1	NA	NA	Thallium	FC-12/FC-13	0	12	44.0000004	1.044	include	Yes	Include
HB13-29	0 - 18 *	9/13/2013	Area 1	NA	NA	Thallium	FC-12/FC-13	0	18	44.0000004	1.044	include	Yes	Include
HB13-29	6 - 12	9/13/2013	Area 1	1.8 U	1.8	Thallium	FC-12/FC-13	6	12	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 24	9/13/2013	Area 1	1.7 U	1.7	Thallium	FC-12/FC-13	12	24	44.0000004	1.044	include	Yes	Include
HB13-29	12 - 44 *	9/13/2013	Area 1	NA	NA	Thallium	FC-12/FC-13	12	44	44.0000004	1.044	include	Yes	Include
HB13-29	24 - 44	9/13/2013	Area 1	1.3 U	1.3	Thallium	FC-12/FC-13	24	44	44.0000004	1.044	include	Yes	Include
HB13-30	0 - 6	9/10/2013	Area 1	NA	NA	Thallium	SND-1	0	6	60			Yes	Include
HB13-30	6 - 24	9/10/2013	Area 1	NA	NA	Thallium	SND-1	6	24	60			Yes	Include
HB13-30	24 - 42	9/10/2013	Area 1	NA	NA	Thallium	SND-1	24	42	60			Yes	Include
HB13-30	42 - 60	9/10/2013	Area 1	NA	NA	Thallium	SND-1	42	60	60			Yes	Include
HB13-30	60 - 78	9/10/2013	Area 1	NA	NA	Thallium	SND-1	60	78	60			No	Exclude
HB13-31	0 - 6	9/13/2013	Area 1	1.9	1.9	Thallium	FC-16	0	6	27	2.76	include	Yes	Include
HB13-31	6 - 18	9/13/2013	Area 1	1.2 U	1.2	Thallium	FC-16	6	18	27	2.76	include	Yes	Include
HB13-31	18 - 27	9/13/2013	Area 1	1.5 U	1.5	Thallium	FC-16	18	27	27	2.76	include	Yes	Include
HB13-31	27 - 33	9/13/2013	Area 1	NA	NA	Thallium	FC-16	27	33	27	2.76	include	No	Exclude
HB13-32	0 - 6	9/13/2013	Area 1	2.4	2.4	Thallium	FC-14	0	6	26.0000004	-2.52	include	Yes	Include
HB13-32	6 - 18	9/13/2013	Area 1	1.4 U	1.4	Thallium	FC-14	6	18	26.0000004	-2.52	include	Yes	Include
HB13-32	18 - 26	9/13/2013	Area 1	1.4 U	1.4	Thallium	FC-14	18	26	26.0000004	-2.52	include	Yes	Include
HB13-32	26 - 32	9/13/2013	Area 1	NA	NA	Thallium	FC-14	26	32	26.0000004	-2.52	include	Yes	Include
HB13-33	0 - 6	9/13/2013	Area 1	1.6 U	1.6	Thallium		0	6	12			Yes	Include
HB13-33	6 - 12	9/13/2013	Area 1	1.9 U	1.9	Thallium		6	12	12			Yes	Include
HB13-34	0 - 6	9/13/2013	Area 1	1.4	1.4	Thallium		0	6	0.5000004			Yes	Include
HB13-35	0 - 6	9/13/2013	Hughitt Ave Slip	1.2 U	1.2	Thallium		0	6	3.9999996			Yes	Include
HB13-35	6 - 12	9/13/2013	Hughitt Ave Slip	NA	NA	Thallium		6	12	3.9999996			No	Exclude
HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	1.5 U	1.5	Thallium	HS-3	2	6	6			Yes	Include
HB13-38	0 - 6	9/12/2013	Hughitt Ave Slip	1.4 U	1.4	Thallium	HS-3	0	6	6			Yes	Include
HB13-39	4 - 10	9/13/2013	Hughitt Ave Slip	0.85 U	0.85	Thallium	HS-2	4	10	27.9999996			Yes	Include
HB13-39	10 - 28	9/13/2013	Hughitt Ave Slip	0.91 U	0.91	Thallium	HS-2	10	28	27.9999996			Yes	Include
HB13-39	28 - 34	9/13/2013	Hughitt Ave Slip	0.91 U	0.91	Thallium	HS-2	28	34	27.9999996			No	Exclude
HB13-40	0 - 6	9/13/2013	Hughitt Ave Slip	1.4 U	1.4	Thallium	HS-2	0	6	86.0000004			Yes	Include
HB13-40	0 - 24 *	9/13/2013	Hughitt Ave Slip	NA	NA	Thallium	HS-2	0	24	86.0000004			Yes	Include
HB13-40	6 - 24	9/13/2013	Hughitt Ave Slip	1.5 U	1.5	Thallium	HS-2	6	24	86.0000004			Yes	Include
HB13-40	24 - 48	9/13/2013	Hughitt Ave Slip	1.7 U	1.7	Thallium	HS-2	24	48	86.0000004			Yes	Include
HB13-40	48 - 72	9/13/2013	Hughitt Ave Slip	2.0 U	2	Thallium	HS-2	48	72	86.0000004			Yes	Include
HB13-40	72 - 86	9/13/2013	Hughitt Ave Slip	1.7 U	1.7	Thallium	HS-2	72	86	86.0000004			Yes	Include
HB13-41	0 - 6	9/10/2013	Hughitt Ave Slip	1.8 U	1.8	Thallium	HS-2	0	6	29.0000004			Yes	Include
HB13-41	0 - 24 *	9/10/2013	Hughitt Ave Slip	NA	NA	Thallium	HS-2	0	24	29.0000004			Yes	Include
HB13-41	6 - 24	9/10/2013	Hughitt Ave Slip	1.6 U	1.6	Thallium	HS-2	6	24	29.0000004			Yes	Include
HB13-41	24 - 29	9/10/2013	Hughitt Ave Slip	1.8 U	1.8	Thallium	HS-2	24	29	29.0000004			Yes	Include
HB13-42	0 - 6	9/11/2013	Cummings Ave Slip	2	2	Thallium	CS-3	0	6	33			Yes	Include
HB13-42	6 - 24	9/11/2013	Cummings Ave Slip	1.4 U	1.4	Thallium	CS-3	6	24	33			Yes	Include
HB13-42	24 - 33	9/11/2013	Cummings Ave Slip	1.4 U	1.4	Thallium	CS-3	24	33	33			Yes	Include
HB13-42	33 - 36	9/11/2013	Cummings Ave Slip	NA	NA	Thallium	CS-3	33	36	33			No	Exclude
HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	1.1	1.1	Thallium	CS-2	0	6	24			Yes	Include
HB13-43	0 - 24 *	9/11/2013	Cummings Ave Slip	NA	NA	Thallium	CS-2	0	24	24			Yes	Include
HB13-43	6 - 24	9/11/2013	Cummings Ave Slip	1.3 U	1.3	Thallium	CS-2	6	24	24			Yes	Include
HB13-45	0 - 6	9/11/2013	Cummings Ave Slip	2.5 U	2.5	Thallium	CS-2	0	6	21			Yes	Include
HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	1.9 U	1.9	Thallium	CS-2	6	21	21			Yes	Include
HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	NA	NA	Thallium	FS-1	0	6	30.996			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	NA	NA	Thallium	FS-1	6	24	30.996			Yes	Include
HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	NA	NA	Thallium	FS-1	24	31	30.996			Yes	Include
HB13-47	31 - 37 *	9/10/2013	Fraser Ave Slip	NA	NA	Thallium	FS-1	31	37	30.996			No	Exclude
HB13-48	0 - 6 *	9/10/2013	Fraser Ave Slip	2.3	2.3	Thallium	FS-2	0	6	45.9999996			Yes	Include
HB13-48	0 - 24	9/10/2013	FRASER AVE SLIP	NA	NA	Thallium	FS-2	0	24	45.9999996			Yes	Include
HB13-48	6 - 24 *	9/10/2013	Fraser Ave Slip	2.3	2.3	Thallium	FS-2	6	24	45.9999996			Yes	Include
HB13-48	24 - 42 *	9/10/2013	Fraser Ave Slip	1.9 U	1.9	Thallium	FS-2	24	42	45.9999996			Yes	Include
HB13-48	24 - 46 *	9/10/2013	FRASER AVE SLIP	NA	NA	Thallium	FS-2	24	46	45.9999996			Yes	Include
HB13-48	42 - 46 *	9/10/2013	Fraser Ave Slip	1.4 U	1.4	Thallium	FS-2	42	46	45.9999996			Yes	Include
HB13-49	0 - 6	9/11/2013	Fraser Ave Slip	NA	NA	Thallium	FS-2	0	6	30			Yes	Include
HB13-49	6 - 24	9/11/2013	Fraser Ave Slip	NA	NA	Thallium	FS-2	6	24	30			Yes	Include
HB13-49	24 - 30	9/11/2013	Fraser Ave Slip	NA	NA	Thallium	FS-2	24	30	30			Yes	Include
HB13-50	0 - 12 *	9/13/2013	Area 1	NA	NA	Thallium	OC-12	0	12	47.0000004			Yes	Include
HB13-50	12 - 24 *	9/13/2013	Area 1	NA	NA	Thallium	OC-12	12	24	47.0000004			Yes	Include
HB13-50	24 - 36 *	9/13/2013	Area 1	NA	NA	Thallium	OC-12	24	36	47.0000004			Yes	Include
HB13-50	36 - 47 *	9/13/2013	Area 1	NA	NA	Thallium	OC-12	36	47	47.0000004			Yes	Include
HB13-51	0 - 6 *	9/11/2013	Area 2	NA	NA	Thallium		0	6					Exclude
HB13-51	6 - 15 *	9/11/2013	Area 2	NA	NA	Thallium		6	15					Exclude
HB13-52	0 - 6 *	9/11/2013	Area 2	NA	NA	Thallium	OC-10	0	6	12			Yes	Include
HB13-52	6 - 12 *	9/11/2013	Area 2	NA	NA	Thallium	OC-10	6	12	12			Yes	Include
HB13-52	12 - 17 *	9/11/2013	Area 2	NA	NA	Thallium	OC-10	12	17	12			No	Exclude
HB14-01	0 - 6	8/18/2014	Area 1	NA	NA	Thallium	SND-1	0	6					Exclude
HB14-01	6 - 18	8/18/2014	Area 1	NA	NA	Thallium	SND-1	6	18					Exclude
HB14-02	0 - 6	8/18/2014	Area 1	NA	NA	Thallium	FC-15	0	6	17.004	-12.996	include	Yes	Include
HB14-02	6 - 14	8/18/2014	Area 1	NA	NA	Thallium	FC-15	6	14	17.004	-12.996	include	Yes	Include
HB14-03	0 - 6	8/18/2014	Area 1	NA	NA	Thallium	FC-15	0	6	29.997288	-2.472	include	Yes	Include
HB14-03	6 - 18	8/18/2014	Area 1	NA	NA	Thallium	FC-15	6	18	29.997288	-2.472	include	Yes	Include
HB14-03	18 - 30	8/18/2014	Area 1	NA	NA	Thallium	FC-15	18	30	29.997288	-2.472	include	Yes	Include
HB14-03	30 - 42	8/18/2014	Area 1	NA	NA	Thallium	FC-15	30	42	29.997288	-2.472	include	No	Exclude
HB14-03	42 - 54	8/18/2014	Area 1	NA	NA	Thallium	FC-15	42	54	29.997288	-2.472	include	No	Exclude
HB14-04	0 - 6	8/18/2014	Area 1	NA	NA	Thallium		0	6	29.904			Yes	Include
HB14-04	6 - 18	8/18/2014	Area 1	NA	NA	Thallium		6	18	29.904			Yes	Include
HB14-04	18 - 30	8/18/2014	Area 1	NA	NA	Thallium		18	30	29.904			Yes	Include
HB14-05 G		8/18/2014	Area 1	NA	NA	Thallium			#VALUE!					Exclude
HB14-06	0 - 6	8/18/2014	Area 1	NA	NA	Thallium		0	6	30.588			Yes	Include
HB14-06	6 - 24	8/18/2014	Area 1	NA	NA	Thallium		6	24	30.588			Yes	Include
HB14-07	0 - 6	8/18/2014	Area 1	NA	NA	Thallium		0	6	78.012			Yes	Include
HB14-07	6 - 24	8/18/2014	Area 1	NA	NA	Thallium		6	24	78.012			Yes	Include
HB14-07	24 - 42	8/18/2014	Area 1	NA	NA	Thallium		24	42	78.012			Yes	Include
HB14-08	0 - 6	8/19/2014	Area 1	NA	NA	Thallium		0	6	34.416			Yes	Include
HB14-08	6 - 19	8/19/2014	Area 1	NA	NA	Thallium		6	19	34.416			Yes	Include
HB14-09	0 - 12	8/19/2014	Area 1	NA	NA	Thallium	OC-16	0	12	12.003804			Yes	Include
HB14-09	12 - 24	8/19/2014	Area 1	NA	NA	Thallium	OC-16	12	24	12.003804			Yes	Include
HB14-09	24 - 36	8/19/2014	Area 1	NA	NA	Thallium	OC-16	24	36	12.003804			No	Exclude
HB14-09	36 - 48	8/19/2014	Area 1	NA	NA	Thallium	OC-16	36	48	12.003804			No	Exclude
HB14-09	48 - 60	8/19/2014	Area 1	NA	NA	Thallium	OC-16	48	60	12.003804			No	Exclude
HB14-09	60 - 72	8/19/2014	Area 1	NA	NA	Thallium	OC-16	60	72	12.003804			No	Exclude
HB14-10	0 - 6	8/20/2014	Area 1	NA	NA	Thallium		0	6	54.005544			Yes	Include
HB14-10	6 - 18	8/20/2014	Area 1	NA	NA	Thallium		6	18	54.005544			Yes	Include
HB14-10	18 - 30	8/20/2014	Area 1	NA	NA	Thallium		18	30	54.005544			Yes	Include
HB14-10	30 - 42	8/20/2014	Area 1	NA	NA	Thallium		30	42	54.005544			Yes	Include
HB14-10	42 - 54	8/20/2014	Area 1	NA	NA	Thallium		42	54	54.005544			Yes	Include
HB14-10	54 - 66	8/20/2014	Area 1	NA	NA	Thallium		54	66	54.005544			Yes	Include
HB14-11	0 - 6	8/19/2014	Area 1	NA	NA	Thallium	SND-2	0	6					Exclude
HB14-11	6 - 18	8/19/2014	Area 1	NA	NA	Thallium	SND-2	6	18					Exclude
HB14-11	18 - 20	8/19/2014	Area 1	NA	NA	Thallium	SND-2	18	20					Exclude
HB14-12	0 - 6	8/19/2014	Area 1	NA	NA	Thallium	SND-4	0	6	26.34			Yes	Include
HB14-12	6 - 18	8/19/2014	Area 1	NA	NA	Thallium	SND-4	6	18	26.34			Yes	Include
HB14-12	18 - 32	8/19/2014	Area 1	NA	NA	Thallium	SND-4	18	32	26.34			Yes	Include
HB14-13	0 - 6	8/19/2014	Area 2	NA	NA	Thallium	SND-5	0	6	-0.648			No	Exclude
HB14-13	6 - 11	8/19/2014	Area 2	NA	NA	Thallium	SND-5	6	11	-0.648			No	Exclude
HB14-14	0 - 6	8/20/2014	Area 2	NA	NA	Thallium	OC-4	0	6	101.997672			Yes	Include
HB14-14	4 - 6	8/20/2014	Area 2	NA	NA	Thallium	OC-4	4	6	101.997672			Yes	Include
HB14-14	6 - 18	8/20/2014	Area 2	NA	NA	Thallium	OC-4	6	18	101.997672			Yes	Include
HB14-14	6 - 30	8/20/2014	Area 2	NA	NA	Thallium	OC-4	6	30	101.997672			Yes	Include
HB14-14	18 - 30	8/20/2014	Area 2	NA	NA	Thallium	OC-4	18	30	101.997672			Yes	Include
HB14-14	30 - 42	8/20/2014	Area 2	NA	NA	Thallium	OC-4	30	42	101.997672			Yes	Include
HB14-14	30 - 54	8/20/2014	Area 2	NA	NA	Thallium	OC-4	30	54	101.997672			Yes	Include
HB14-14	42 - 54	8/20/2014	Area 2	NA	NA	Thallium	OC-4	42	54	101.997672			Yes	Include
HB14-14	54 - 66	8/20/2014	Area 2	NA	NA	Thallium	OC-4	54	66	101.997672			Yes	Include
HB14-14	54 - 78	8/20/2014	Area 2	NA	NA	Thallium	OC-4	54	78	101.997672			Yes	Include
HB14-14	66 - 78	8/20/2014	Area 2	NA	NA	Thallium	OC-4	66	78	101.997672			Yes	Include
HB14-14	78 - 90	8/20/2014	Area 2	NA	NA	Thallium	OC-4	78	90	101.997672			Yes	Include
HB14-14	78 - 102	8/20/2014	Area 2	NA	NA	Thallium	OC-4	78	102	101.997672			Yes	Include
HB14-14	90 - 102	8/20/2014	Area 2	NA	NA	Thallium	OC-4	90	102	101.997672			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB14-14	102 - 111	8/20/2014	Area 2	NA	NA	Thallium	OC-4	102	111	101.997672			No	Exclude
HB15-01	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	0	12	51.096			Yes	Include
HB15-01	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	12	24	51.096			Yes	Include
HB15-01	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	24	36	51.096			Yes	Include
HB15-01	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	36	48	51.096			Yes	Include
HB15-01	48 - 57	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	48	57	51.096			Yes	Include
HB15-02	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	0	12	48.000696			Yes	Include
HB15-02	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	12	24	48.000696			Yes	Include
HB15-02	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	24	36	48.000696			Yes	Include
HB15-02	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	36	48	48.000696			Yes	Include
HB15-03	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	0	12	67.9950564			Yes	Include
HB15-03	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	12	24	67.9950564			Yes	Include
HB15-03	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	24	36	67.9950564			Yes	Include
HB15-03	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	36	48	67.9950564			Yes	Include
HB15-03	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	48	60	67.9950564			Yes	Include
HB15-03	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	60	68	67.9950564			Yes	Include
HB15-03R	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	0	12	67.9950564			Yes	Include
HB15-03R	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	12	24	67.9950564			Yes	Include
HB15-03R	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	24	36	67.9950564			Yes	Include
HB15-03R	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	36	48	67.9950564			Yes	Include
HB15-03R	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	48	60	67.9950564			Yes	Include
HB15-03R	60 - 68	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	60	68	67.9950564			Yes	Include
HB15-04	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	0	12	63.84			Yes	Include
HB15-04	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	12	24	63.84			Yes	Include
HB15-04	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	24	36	63.84			Yes	Include
HB15-04	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	36	48	63.84			Yes	Include
HB15-04	48 - 59	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	48	59	63.84			Yes	Include
HB15-05	0 - 12	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	0	12	71.994852			Yes	Include
HB15-05	12 - 24	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	12	24	71.994852			Yes	Include
HB15-05	24 - 36	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	24	36	71.994852			Yes	Include
HB15-05	36 - 48	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	36	48	71.994852			Yes	Include
HB15-05	48 - 60	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	48	60	71.994852			Yes	Include
HB15-05	60 - 72	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	60	72	71.994852			Yes	Include
HB15-05	72 - 80	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-1	72	80	71.994852			No	Exclude
HB15-06	0 - 9	6/23/2015	Hughitt Ave Slip	NA	NA	Thallium	HS-2	0	9	9.000636			Yes	Include
HB15-07	0 - 12	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	0	12	90.9955116			Yes	Include
HB15-07	12 - 24	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	12	24	90.9955116			Yes	Include
HB15-07	24 - 36	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	24	36	90.9955116			Yes	Include
HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	36	48	90.9955116			Yes	Include
HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	48	60	90.9955116			Yes	Include
HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	60	72	90.9955116			Yes	Include
HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	72	84	90.9955116			Yes	Include
HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	NA	NA	Thallium	CS-1	84	91	90.9955116			Yes	Include
HB15-08	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-2	0	12	65.997804			Yes	Include
HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-2	12	24	65.997804			Yes	Include
HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-2	24	36	65.997804			Yes	Include
HB15-08	36 - 48	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-2	36	48	65.997804			Yes	Include
HB15-08	48 - 60	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-2	48	60	65.997804			Yes	Include
HB15-08	60 - 66	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-2	60	66	65.997804			Yes	Include
HB15-09	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-3	0	12	45.396			Yes	Include
HB15-09	12 - 17	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-3	12	17	45.396			Yes	Include
HB15-10	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Thallium		0	12	-0.936			No	Exclude
HB15-11	0 - 12	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-5	0	12	27.9944796			Yes	Include
HB15-11	12 - 24	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-5	12	24	27.9944796			Yes	Include
HB15-11	24 - 28	6/24/2015	Cummings Ave Slip	NA	NA	Thallium	CS-5	24	28	27.9944796			Yes	Include
HB15-12	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-1	0	12	29.994876			Yes	Include
HB15-12	12 - 24	6/24/2015	Area 2	NA	NA	Thallium	FP-1	12	24	29.994876			Yes	Include
HB15-12	24 - 30	6/24/2015	Area 2	NA	NA	Thallium	FP-1	24	30	29.994876			Yes	Include
HB15-13	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-1	0	12	64.0033716			Yes	Include
HB15-13	12 - 24	6/24/2015	Area 2	NA	NA	Thallium	FP-1	12	24	64.0033716			Yes	Include
HB15-13	24 - 36	6/24/2015	Area 2	NA	NA	Thallium	FP-1	24	36	64.0033716			Yes	Include
HB15-13	36 - 48	6/24/2015	Area 2	NA	NA	Thallium	FP-1	36	48	64.0033716			Yes	Include
HB15-13	48 - 60	6/24/2015	Area 2	NA	NA	Thallium	FP-1	48	60	64.0033716			Yes	Include
HB15-13	60 - 64	6/24/2015	Area 2	NA	NA	Thallium	FP-1	60	64	64.0033716			Yes	Include
HB15-14	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-1	0	12	23.996196			Yes	Include
HB15-14	12 - 24	6/24/2015	Area 2	NA	NA	Thallium	FP-1	12	24	23.996196			Yes	Include
HB15-14	24 - 28	6/24/2015	Area 2	NA	NA	Thallium	FP-1	24	28	23.996196			No	Exclude
HB15-14	28 - 35	6/24/2015	Area 2	NA	NA	Thallium	FP-1	28	35	23.996196			No	Exclude
HB15-15	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-2	0	12	19.0051356			Yes	Include
HB15-15	12 - 19	6/24/2015	Area 2	NA	NA	Thallium	FP-2	12	19	19.0051356			Yes	Include
HB15-15R	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-2	0	12	18.9999996			Yes	Include
HB15-15R	12 - 19	6/24/2015	Area 2	NA	NA	Thallium	FP-2	12	19	18.9999996			Yes	Include
HB15-16	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-1	0	12	8.304			Yes	Include
HB15-16	12 - 19	6/24/2015	Area 2	NA	NA	Thallium	FP-1	12	19	8.304			No	Exclude
HB15-17	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-2	0	12	36.004608			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB15-17	12 - 24	6/24/2015	Area 2	NA	NA	Thallium	FP-2	12	24	36.004608			Yes	Include
HB15-17	24 - 36	6/24/2015	Area 2	NA	NA	Thallium	FP-2	24	36	36.004608			Yes	Include
HB15-17	36 - 48	6/24/2015	Area 2	NA	NA	Thallium	FP-2	36	48	36.004608			Yes	Include
HB15-17	48 - 54	6/24/2015	Area 2	NA	NA	Thallium	FP-2	48	54	36.004608			No	Exclude
HB15-18	0 - 12	6/24/2015	Area 2	NA	NA	Thallium	FP-2	0	12	23.999508			Yes	Include
HB15-18	12 - 24	6/24/2015	Area 2	NA	NA	Thallium	FP-2	12	24	23.999508			Yes	Include
HB15-19	0 - 12	6/24/2015	Area 2	NA	NA	Thallium		0	12					Exclude
HB15-19	12 - 24	6/24/2015	Area 2	NA	NA	Thallium		12	24					Exclude
HB15-19	24 - 32	6/24/2015	Area 2	NA	NA	Thallium		24	32					Exclude
HB15-20	0 - 12	6/25/2015	Area 2	NA	NA	Thallium	OC-3	0	12	33.864			Yes	Include
HB15-20	12 - 24	6/25/2015	Area 2	NA	NA	Thallium	OC-3	12	24	33.864			Yes	Include
HB15-20	24 - 28	6/25/2015	Area 2	NA	NA	Thallium	OC-3	24	28	33.864			Yes	Include
HB15-20B	0 - 6	6/25/2015	Area 2	NA	NA	Thallium	OC-13	0	6	11.996892			Yes	Include
HB15-20B	6 - 12	6/25/2015	Area 2	NA	NA	Thallium	OC-13	6	12	11.996892			Yes	Include
HB15-21G	15 - 21	6/29/2015	Fraser Ave Slip	NA	NA	Thallium		15	21					Exclude
HB15-22G	0 - 6	6/29/2015	Fraser Ave Slip	NA	NA	Thallium	OC-8	0	6	6			Yes	Include
HB15-23	0 - 12	6/25/2015	Fraser Ave Slip	NA	NA	Thallium	FS-1	0	12	55.02			Yes	Include
HB15-23	12 - 24	6/25/2015	Fraser Ave Slip	NA	NA	Thallium	FS-1	12	24	55.02			Yes	Include
HB15-23	24 - 36	6/25/2015	Fraser Ave Slip	NA	NA	Thallium	FS-1	24	36	55.02			Yes	Include
HB15-23	36 - 48	6/25/2015	Fraser Ave Slip	NA	NA	Thallium	FS-1	36	48	55.02			Yes	Include
HB15-23	48 - 56	6/25/2015	Fraser Ave Slip	NA	NA	Thallium	FS-1	48	56	55.02			Yes	Include
HB15-25	0 - 12	6/25/2015	Area 2	NA	NA	Thallium	OC-1	0	12	77.4			Yes	Include
HB15-25	12 - 24	6/25/2015	Area 2	NA	NA	Thallium	OC-1	12	24	77.4			Yes	Include
HB15-25	24 - 36	6/25/2015	Area 2	NA	NA	Thallium	OC-1	24	36	77.4			Yes	Include
HB15-25	36 - 48	6/25/2015	Area 2	NA	NA	Thallium	OC-1	36	48	77.4			Yes	Include
HB15-25	48 - 60	6/25/2015	Area 2	NA	NA	Thallium	OC-1	48	60	77.4			Yes	Include
HB15-25	60 - 72	6/25/2015	Area 2	NA	NA	Thallium	OC-1	60	72	77.4			Yes	Include
HB15-25	72 - 88	6/25/2015	Area 2	NA	NA	Thallium	OC-1	72	88	77.4			Yes	Include
HB15-26	0 - 12	6/25/2015	Area 2	NA	NA	Thallium	FC-2	0	12	38.28	6.36	include	Yes	Include
HB15-26	12 - 24	6/25/2015	Area 2	NA	NA	Thallium	FC-2	12	24	38.28	6.36	include	Yes	Include
HB15-26	24 - 36	6/25/2015	Area 2	NA	NA	Thallium	FC-2	24	36	38.28	6.36	include	Yes	Include
HB15-26	36 - 46	6/25/2015	Area 2	NA	NA	Thallium	FC-2	36	46	38.28	6.36	include	Yes	Include
HB15-27	0 - 12	6/25/2015	Area 2	NA	NA	Thallium	FC-3	0	12	33.6	14.64	exclude	Yes	Exclude
HB15-27	12 - 24	6/25/2015	Area 2	NA	NA	Thallium	FC-3	12	24	33.6	14.64	include	Yes	Include
HB15-27	24 - 36	6/25/2015	Area 2	NA	NA	Thallium	FC-3	24	36	33.6	14.64	include	Yes	Include
HB15-27	36 - 48	6/25/2015	Area 2	NA	NA	Thallium	FC-3	36	48	33.6	14.64	include	No	Exclude
HB15-27	48 - 60	6/25/2015	Area 2	NA	NA	Thallium	FC-3	48	60	33.6	14.64	include	No	Exclude
HB15-27	60 - 71	6/25/2015	Area 2	NA	NA	Thallium	FC-3	60	71	33.6	14.64	include	No	Exclude
HB15-28	0 - 12	6/25/2015	Area 2	NA	NA	Thallium	OC-7	0	12	11.994072			Yes	Include
HB15-28	12 - 24	6/25/2015	Area 2	NA	NA	Thallium	OC-7	12	24	11.994072			No	Exclude
HB15-28	24 - 30	6/25/2015	Area 2	NA	NA	Thallium	OC-7	24	30	11.994072			No	Exclude
HB15-30	0 - 12	6/25/2015	Area 2	NA	NA	Thallium		0	12	43.776			Yes	Include
HB15-30	12 - 24	6/25/2015	Area 2	NA	NA	Thallium		12	24	43.776			Yes	Include
HB15-30	24 - 36	6/25/2015	Area 2	NA	NA	Thallium		24	36	43.776			Yes	Include
HB15-30	36 - 50	6/25/2015	Area 2	NA	NA	Thallium		36	50	43.776			Yes	Include
HB15-31	0 - 12	6/25/2015	Area 2	NA	NA	Thallium		0	12					Exclude
HB15-31	12 - 20	6/25/2015	Area 2	NA	NA	Thallium		12	20					Exclude
HB15-32	0 - 12	6/25/2015	Area 1	NA	NA	Thallium	SND-4	0	12	11.995236			Yes	Include
HB15-32	12 - 26	6/25/2015	Area 1	NA	NA	Thallium	SND-4	12	26	11.995236			No	Exclude
HB15-33	0 - 12	6/25/2015	Area 1	NA	NA	Thallium		0	12	26.292			Yes	Include
HB15-33	12 - 24	6/25/2015	Area 1	NA	NA	Thallium		12	24	26.292			Yes	Include
HB15-33	24 - 39	6/25/2015	Area 1	NA	NA	Thallium		24	39	26.292			Yes	Include
HB15-34	0 - 12	6/25/2015	Area 1	NA	NA	Thallium	FC-11	0	12		35.52	exclude		Exclude
HB15-34	12 - 24	6/25/2015	Area 1	NA	NA	Thallium	FC-11	12	24		35.52	exclude		Exclude
HB15-34	24 - 32	6/25/2015	Area 1	NA	NA	Thallium	FC-11	24	32		35.52	exclude		Exclude
HB15-35	0 - 12	6/25/2015	Area 1	NA	NA	Thallium	FC-16	0	12	74.28	-6.48	include	Yes	Include
HB15-35	12 - 24	6/25/2015	Area 1	NA	NA	Thallium	FC-16	12	24	74.28	-6.48	include	Yes	Include
HB15-35	24 - 36	6/25/2015	Area 1	NA	NA	Thallium	FC-16	24	36	74.28	-6.48	include	Yes	Include
HB15-35	36 - 48	6/25/2015	Area 1	NA	NA	Thallium	FC-16	36	48	74.28	-6.48	include	Yes	Include
HB15-35	48 - 60	6/25/2015	Area 1	NA	NA	Thallium	FC-16	48	60	74.28	-6.48	include	Yes	Include
HB15-35	60 - 72	6/25/2015	Area 1	NA	NA	Thallium	FC-16	60	72	74.28	-6.48	include	Yes	Include
HB15-36G	15 - 36	6/29/2015	Area 2	NA	NA	Thallium		15	36					Exclude
HB15-37	0 - 12	6/25/2015	Area 2	NA	NA	Thallium	OC-9	0	12	51.048			Yes	Include
HB15-37	12 - 24	6/25/2015	Area 2	NA	NA	Thallium	OC-9	12	24	51.048			Yes	Include
HB15-37	24 - 36	6/25/2015	Area 2	NA	NA	Thallium	OC-9	24	36	51.048			Yes	Include
HB15-37	36 - 48	6/25/2015	Area 2	NA	NA	Thallium	OC-9	36	48	51.048			Yes	Include
HB15-37	48 - 60	6/25/2015	Area 2	NA	NA	Thallium	OC-9	48	60	51.048			Yes	Include
HB15-37	60 - 74	6/25/2015	Area 2	NA	NA	Thallium	OC-9	60	74	51.048			No	Exclude
HB15-38	0 - 12	6/25/2015	Area 2	NA	NA	Thallium	OC-9	0	12	83.184			Yes	Include
HB15-38	12 - 24	6/25/2015	Area 2	NA	NA	Thallium	OC-9	12	24	83.184			Yes	Include
HB15-38	24 - 36	6/25/2015	Area 2	NA	NA	Thallium	OC-9	24	36	83.184			Yes	Include
HB15-38	36 - 48	6/25/2015	Area 2	NA	NA	Thallium	OC-9	36	48	83.184			Yes	Include
HB15-38	48 - 60	6/25/2015	Area 2	NA	NA	Thallium	OC-9	48	60	83.184			Yes	Include
HB15-38	60 - 72	6/25/2015	Area 2	NA	NA	Thallium	OC-9	60	72	83.184			Yes	Include
HB15-38	72 - 84	6/25/2015	Area 2	NA	NA	Thallium	OC-9	72	84	83.184			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB15-38	84 - 96	6/25/2015	Area 2	NA	NA	Thallium	OC-9	84	96	83.184			No	Exclude
HB15-G28	0 - 6	6/25/2015	Hughitt Ave Slip	NA	NA	Thallium		0	80					Exclude
HB15-HC20A	0 - 6	6/25/2015	Area 1	NA	NA	Thallium	OC-13	0	30	6.003036			Yes	Include
HB17-24	0-80	6/22/2017		1160	1.16	1-Methylnaphthalene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		307	0.307	1-Methylnaphthalene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		225	0.225	1-Methylnaphthalene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		534	0.534	1-Methylnaphthalene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		260	0.26	1-Methylnaphthalene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		87.1	0.0871	1-Methylnaphthalene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		52.7	0.0527	1-Methylnaphthalene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		18.6	0.0186	1-Methylnaphthalene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		265	0.265	1-Methylnaphthalene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		715	0.715	1-Methylnaphthalene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		489	0.489	1-Methylnaphthalene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		615	0.615	1-Methylnaphthalene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		477	0.477	1-Methylnaphthalene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		213	0.213	1-Methylnaphthalene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		196	0.196	1-Methylnaphthalene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		47.8	0.0478	1-Methylnaphthalene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		184	0.184	1-Methylnaphthalene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		65.4	0.0654	1-Methylnaphthalene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		1750	1.75	2-Methylnaphthalene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		449	0.449	2-Methylnaphthalene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		347	0.347	2-Methylnaphthalene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		1070	1.07	2-Methylnaphthalene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		360	0.36	2-Methylnaphthalene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		124	0.124	2-Methylnaphthalene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		76.3	0.0763	2-Methylnaphthalene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		26.4	0.0264	2-Methylnaphthalene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		366	0.366	2-Methylnaphthalene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		993	0.993	2-Methylnaphthalene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		675	0.675	2-Methylnaphthalene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		849	0.849	2-Methylnaphthalene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		655	0.655	2-Methylnaphthalene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		304	0.304	2-Methylnaphthalene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		250	0.25	2-Methylnaphthalene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		74.7	0.0747	2-Methylnaphthalene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		255	0.255	2-Methylnaphthalene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		91.4	0.0914	2-Methylnaphthalene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		644	0.644	Acenaphthene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		194	0.194	Acenaphthene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		114	0.114	Acenaphthene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		238	0.238	Acenaphthene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		68.7	0.0687	Acenaphthene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		34.3	0.0343	Acenaphthene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		40	0.04	Acenaphthene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		9.25	0.00925	Acenaphthene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		59.6	0.0596	Acenaphthene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		613	0.613	Acenaphthene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		397	0.397	Acenaphthene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		275	0.275	Acenaphthene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		116	0.116	Acenaphthene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		184	0.184	Acenaphthene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		59.1	0.0591	Acenaphthene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		19.3	0.0193	Acenaphthene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		35	0.035	Acenaphthene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		35	0.035	Acenaphthene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		212	0.212	Acenaphthylene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		72	0.072	Acenaphthylene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		57.2	0.0572	Acenaphthylene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		159	0.159	Acenaphthylene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		39.7	0.0397	Acenaphthylene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		31.4	0.0314	Acenaphthylene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		15.3	0.0153	Acenaphthylene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		10.1	0.0101	Acenaphthylene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		42.9	0.0429	Acenaphthylene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		126	0.126	Acenaphthylene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		97.5	0.0975	Acenaphthylene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		103	0.103	Acenaphthylene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		77.9	0.0779	Acenaphthylene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		63	0.063	Acenaphthylene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		41.6	0.0416	Acenaphthylene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		13.8	0.0138	Acenaphthylene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		34.3	0.0343	Acenaphthylene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		19.5	0.0195	Acenaphthylene	OC-7	0	12	-4.68			No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB17-24	0-80	6/22/2017		1100	1.1	Anthracene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		440	0.44	Anthracene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		266	0.266	Anthracene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		531	0.531	Anthracene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		153	0.153	Anthracene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		108	0.108	Anthracene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		100	0.1	Anthracene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		26.3	0.0263	Anthracene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		174	0.174	Anthracene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		1400	1.4	Anthracene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		974	0.974	Anthracene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		527	0.527	Anthracene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		302	0.302	Anthracene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		444	0.444	Anthracene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		185	0.185	Anthracene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		58.9	0.0589	Anthracene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		132	0.132	Anthracene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		242	0.242	Anthracene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		2190	2.19	Benzo(a)anthracene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		1210	1.21	Benzo(a)anthracene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		727	0.727	Benzo(a)anthracene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		1410	1.41	Benzo(a)anthracene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		405	0.405	Benzo(a)anthracene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		314	0.314	Benzo(a)anthracene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		243	0.243	Benzo(a)anthracene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		90.6	0.0906	Benzo(a)anthracene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		452	0.452	Benzo(a)anthracene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		3840	3.84	Benzo(a)anthracene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		4060	4.06	Benzo(a)anthracene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		1180	1.18	Benzo(a)anthracene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		798	0.798	Benzo(a)anthracene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		1600	1.6	Benzo(a)anthracene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		507	0.507	Benzo(a)anthracene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		171	0.171	Benzo(a)anthracene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		409	0.409	Benzo(a)anthracene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		264	0.264	Benzo(a)anthracene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		2130	2.13	Benzo(a)pyrene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		1020	1.02	Benzo(a)pyrene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		651	0.651	Benzo(a)pyrene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		1220	1.22	Benzo(a)pyrene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		356	0.356	Benzo(a)pyrene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		281	0.281	Benzo(a)pyrene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		206	0.206	Benzo(a)pyrene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		80.4	0.0804	Benzo(a)pyrene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		384	0.384	Benzo(a)pyrene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		4040	4.04	Benzo(a)pyrene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		3440	3.44	Benzo(a)pyrene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		935	0.935	Benzo(a)pyrene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		722	0.722	Benzo(a)pyrene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		1310	1.31	Benzo(a)pyrene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		427	0.427	Benzo(a)pyrene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		156	0.156	Benzo(a)pyrene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		434	0.434	Benzo(a)pyrene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		213	0.213	Benzo(a)pyrene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		3460	3.46	Benzo(b)fluoranthene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		1670	1.67	Benzo(b)fluoranthene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		1200	1.2	Benzo(b)fluoranthene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		1630	1.63	Benzo(b)fluoranthene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		509	0.509	Benzo(b)fluoranthene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		503	0.503	Benzo(b)fluoranthene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		327	0.327	Benzo(b)fluoranthene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		135	0.135	Benzo(b)fluoranthene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		594	0.594	Benzo(b)fluoranthene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		5760	5.76	Benzo(b)fluoranthene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		5190	5.19	Benzo(b)fluoranthene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		1330	1.33	Benzo(b)fluoranthene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		1150	1.15	Benzo(b)fluoranthene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		1870	1.87	Benzo(b)fluoranthene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		653	0.653	Benzo(b)fluoranthene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		262	0.262	Benzo(b)fluoranthene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		668	0.668	Benzo(b)fluoranthene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		341	0.341	Benzo(b)fluoranthene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		1090	1.09	Benzo(g,h,i)perylene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		256	0.256	Benzo(g,h,i)perylene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		192	0.192	Benzo(g,h,i)perylene	CS-5	0	30	32.4			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than	Sample down	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft	573.6 ft (FC units)?	to target depth?	
HB17-09DUP	0-30	6/22/2017		312	0.312	Benzo(g,h,i)perylene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		129	0.129	Benzo(g,h,i)perylene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		94.1	0.0941	Benzo(g,h,i)perylene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		66.4	0.0664	Benzo(g,h,i)perylene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		25.3	0.0253	Benzo(g,h,i)perylene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		148	0.148	Benzo(g,h,i)perylene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		2020	2.02	Benzo(g,h,i)perylene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		1840	1.84	Benzo(g,h,i)perylene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		532	0.532	Benzo(g,h,i)perylene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		198	0.198	Benzo(g,h,i)perylene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		326	0.326	Benzo(g,h,i)perylene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		197	0.197	Benzo(g,h,i)perylene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		50.6	0.0506	Benzo(g,h,i)perylene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		244	0.244	Benzo(g,h,i)perylene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		80	0.08	Benzo(g,h,i)perylene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		1040	1.04	Benzo(k)fluoranthene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		599	0.599	Benzo(k)fluoranthene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		355	0.355	Benzo(k)fluoranthene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		562	0.562	Benzo(k)fluoranthene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		196	0.196	Benzo(k)fluoranthene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		133	0.133	Benzo(k)fluoranthene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		96.5	0.0965	Benzo(k)fluoranthene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		46.9	0.0469	Benzo(k)fluoranthene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		176	0.176	Benzo(k)fluoranthene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		2180	2.18	Benzo(k)fluoranthene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		1920	1.92	Benzo(k)fluoranthene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		450	0.45	Benzo(k)fluoranthene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		377	0.377	Benzo(k)fluoranthene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		569	0.569	Benzo(k)fluoranthene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		195	0.195	Benzo(k)fluoranthene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		72.8	0.0728	Benzo(k)fluoranthene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		181	0.181	Benzo(k)fluoranthene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		115	0.115	Benzo(k)fluoranthene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		2560	2.56	Chrysene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		1390	1.39	Chrysene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		1040	1.04	Chrysene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		1680	1.68	Chrysene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		506	0.506	Chrysene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		355	0.355	Chrysene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		258	0.258	Chrysene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		99.8	0.0998	Chrysene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		565	0.565	Chrysene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		5170	5.17	Chrysene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		4570	4.57	Chrysene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		1370	1.37	Chrysene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		934	0.934	Chrysene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		1670	1.67	Chrysene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		532	0.532	Chrysene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		184	0.184	Chrysene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		434	0.434	Chrysene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		320	0.32	Chrysene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		284	0.284	Dibenzo(a,h)anthracene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		83	0.083	Dibenzo(a,h)anthracene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		61.8	0.0618	Dibenzo(a,h)anthracene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		107	0.107	Dibenzo(a,h)anthracene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		39.5	0.0395	Dibenzo(a,h)anthracene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		30	0.03	Dibenzo(a,h)anthracene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		20.1	0.0201	Dibenzo(a,h)anthracene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		7.65	0.00765	Dibenzo(a,h)anthracene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		44.4	0.0444	Dibenzo(a,h)anthracene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		551	0.551	Dibenzo(a,h)anthracene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		480	0.48	Dibenzo(a,h)anthracene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		141	0.141	Dibenzo(a,h)anthracene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		64.4	0.0644	Dibenzo(a,h)anthracene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		100	0.1	Dibenzo(a,h)anthracene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		54.8	0.0548	Dibenzo(a,h)anthracene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		16.4	0.0164	Dibenzo(a,h)anthracene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		67.5	0.0675	Dibenzo(a,h)anthracene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		22.9	0.0229	Dibenzo(a,h)anthracene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		8280	8.28	Fluoranthene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		2490	2.49	Fluoranthene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		1890	1.89	Fluoranthene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		2630	2.63	Fluoranthene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		698	0.698	Fluoranthene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		588	0.588	Fluoranthene	FC-14	0	31	-2.88	1.92	include	No	Exclude

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB17-14	0-26	6/21/2017		453	0.453	Fluoranthene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		175	0.175	Fluoranthene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		772	0.772	Fluoranthene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		10000	10	Fluoranthene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		8850	8.85	Fluoranthene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		2230	2.23	Fluoranthene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		1530	1.53	Fluoranthene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		3430	3.43	Fluoranthene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		830	0.83	Fluoranthene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		318	0.318	Fluoranthene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		654	0.654	Fluoranthene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		473	0.473	Fluoranthene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		930	0.93	Fluorene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		276	0.276	Fluorene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		210	0.21	Fluorene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		416	0.416	Fluorene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		116	0.116	Fluorene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		72.8	0.0728	Fluorene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		62.1	0.0621	Fluorene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		18.6	0.0186	Fluorene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		126	0.126	Fluorene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		792	0.792	Fluorene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		567	0.567	Fluorene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		440	0.44	Fluorene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		207	0.207	Fluorene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		240	0.24	Fluorene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		126	0.126	Fluorene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		37.6	0.0376	Fluorene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		85.2	0.0852	Fluorene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		75.1	0.0751	Fluorene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		1010	1.01	Indeno(1,2,3-cd)pyrene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		293	0.293	Indeno(1,2,3-cd)pyrene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		207	0.207	Indeno(1,2,3-cd)pyrene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		355	0.355	Indeno(1,2,3-cd)pyrene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		129	0.129	Indeno(1,2,3-cd)pyrene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		102	0.102	Indeno(1,2,3-cd)pyrene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		70.2	0.0702	Indeno(1,2,3-cd)pyrene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		27.6	0.0276	Indeno(1,2,3-cd)pyrene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		145	0.145	Indeno(1,2,3-cd)pyrene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		2050	2.05	Indeno(1,2,3-cd)pyrene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		1860	1.86	Indeno(1,2,3-cd)pyrene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		512	0.512	Indeno(1,2,3-cd)pyrene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		216	0.216	Indeno(1,2,3-cd)pyrene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		352	0.352	Indeno(1,2,3-cd)pyrene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		193	0.193	Indeno(1,2,3-cd)pyrene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		55.2	0.0552	Indeno(1,2,3-cd)pyrene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		237	0.237	Indeno(1,2,3-cd)pyrene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		83.8	0.0838	Indeno(1,2,3-cd)pyrene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		302	0.302	Lead	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		225	0.225	Lead	CS-2	0	30	45.12			Yes	Include
HB17-03	36-49	6/19/2017		52.8	0.0528	Lead	CS-4	36	49	36.12			Yes	Include
HB17-09	0-30	6/22/2017		95.6	0.0956	Lead	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		109	0.109	Lead	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		175	0.175	Lead	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-06	53-60	6/19/2017		96.8	0.0968	Lead	FC-2	53	60	59.64	10.44	include	Yes	Include
HB17-11	17-51	6/21/2017		90.6	0.0906	Lead	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-26	0-12	6/23/2017		130	0.13	Lead	FP-2	0	12	37.92			Yes	Include
HB17-26 DUP	0-12	6/23/2017		121	0.121	Lead	FP-2	0	12					Exclude
HB17-26	12-24	6/23/2017		104	0.104	Lead	FP-2	12	24					Exclude
HB17-26	24-36	6/23/2017		90.3	0.0903	Lead	FP-2	24	36	37.92			Yes	Include
HB17-26	36-50	6/23/2017		80.6	0.0806	Lead	FP-2	36	50	37.92			Yes	Include
HB17-30	0-22	6/23/2017		114	0.114	Lead	FP-2	0	22	60.6			Yes	Include
HB17-31	0-28	6/23/2017		127	0.127	Lead	FP-2	0	28	26.04			Yes	Include
HB17-31	28-40	6/23/2017		59.6	0.0596	Lead	FP-2	28	40					Exclude
HB17-31	40-50	6/23/2017		19.9	0.0199	Lead	FP-2	40	50	26.04			No	Exclude
HB17-08	24-36	6/20/2017		243	0.243	Lead	FS-2	24	36	49.2			Yes	Include
HB17-08	36-41	6/20/2017		179	0.179	Lead	FS-2	36	41	49.2			Yes	Include
HB17-21	0-20	6/22/2017		333	0.333	Lead	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		274	0.274	Lead	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		310	0.31	Lead	FS-1	0	33	44.88			Yes	Include
HB17-22	33-45	6/22/2017		195	0.195	Lead	FS-1	33	45					Exclude
HB17-22	45-58	6/22/2017		175	0.175	Lead	FS-1	45	58	44.88			No	Exclude
HB17-23	0-30	6/21/2017		158	0.158	Lead	FS-1	0	30	66.24			Yes	Include
HB17-04	72-84	6/19/2017		94.2	0.0942	Lead	HS-1	72	84	84.24			Yes	Include
HB17-04	84-92	6/19/2017		17.9	0.0179	Lead	HS-1	84	92	84.24			Yes	Include



Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth Inches	Date Collected	SubArea Units	Concentration mg/kg	Concentration (Numeric) mg/kg	Chemical	RD UNIT ID	Sample Starting Depth inches	Sample End Depth inches	Target Depth inches	Depth to 573.6 ft (FC units) ft	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
HB17-28	39-51	6/22/2017		71.5	0.0715	Lead	HS-1	39	51					Exclude
HB17-28	51-63	6/22/2017		105	0.105	Lead	HS-1	51	63	74.4			Yes	Include
HB17-28	63-75	6/22/2017		211	0.211	Lead	HS-1	63	75	74.4			Yes	Include
HB17-28	75-87	6/22/2017		59.9	0.0599	Lead	HS-1	75	87	74.4			No	Exclude
HB17-28	87-99	6/22/2017		2	0.002	Lead	HS-1	87	99	74.4			No	Exclude
HB17-02	0-11	6/19/2017		45.8	0.0458	Lead	HS-3	0	11	22.08			Yes	Include
HB17-07	46-58	6/20/2017		39.3	0.0393	Lead	OC-11	46	58	36			No	Exclude
HB17-19	0-42	6/21/2017		94.3	0.0943	Lead	OC-12	0	42	73.56			Yes	Include
HB17-19	42-54	6/21/2017		101	0.101	Lead	OC-12	42	54	73.56			Yes	Include
HB17-19	54-66	6/21/2017		107	0.107	Lead	OC-12	54	66	73.56			Yes	Include
HB17-19	66-78	6/21/2017		129	0.129	Lead	OC-12	66	78					Exclude
HB17-19	78-90	6/21/2017		73.7	0.0737	Lead	OC-12	78	90	73.56			No	Exclude
HB17-19	90-102	6/21/2017		72.7	0.0727	Lead	OC-12	90	102	73.56			No	Exclude
HB17-19	102-112	6/21/2017		40.4	0.0404	Lead	OC-12	102	112					Exclude
HB17-17	0-16	6/21/2017		89.8	0.0898	Lead	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		60.4	0.0604	Lead	OC-7	0	12	-4.68			No	Exclude
HB17-18	12-24	6/21/2017		20.1	0.0201	Lead	OC-7	12	24					Exclude
HB17-35	0-17	6/23/2017		297	0.297	Lead	OC-8	0	17	27.36			Yes	Include
HB17-24	0-80	6/22/2017		1.7	0.0017	Mercury	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		0.86	0.00086	Mercury	CS-2	0	30	45.12			Yes	Include
HB17-03	36-49	6/19/2017		0.1	0.0001	Mercury	CS-4	36	49	36.12			Yes	Include
HB17-09	0-30	6/22/2017		0.52	0.00052	Mercury	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		0.41	0.00041	Mercury	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		0.4	0.0004	Mercury	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-06	53-60	6/19/2017		0.61	0.00061	Mercury	FC-2	53	60	59.64	10.44	include	Yes	Include
HB17-11	17-51	6/21/2017		0.44	0.00044	Mercury	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-26	0-12	6/23/2017		1.1	0.0011	Mercury	FP-2	0	12	37.92			Yes	Include
HB17-26 DUP	0-12	6/23/2017		0.69	0.00069	Mercury	FP-2	0	12					Exclude
HB17-26	12-24	6/23/2017		0.55	0.00055	Mercury	FP-2	12	24					Exclude
HB17-26	24-36	6/23/2017		0.2	0.0002	Mercury	FP-2	24	36	37.92			Yes	Include
HB17-26	36-50	6/23/2017		0.13	0.00013	Mercury	FP-2	36	50	37.92			Yes	Include
HB17-30	0-22	6/23/2017		0.4	0.0004	Mercury	FP-2	0	22	60.6			Yes	Include
HB17-31	0-28	6/23/2017		0.53	0.00053	Mercury	FP-2	0	28	26.04			Yes	Include
HB17-31	28-40	6/23/2017		0.13	0.00013	Mercury	FP-2	28	40					Exclude
HB17-31	40-50	6/23/2017		0.09	0.00009	Mercury	FP-2	40	50	26.04			No	Exclude
HB17-08	24-36	6/20/2017		0.075	0.000075	Mercury	FS-2	24	36	49.2			Yes	Include
HB17-08	36-41	6/20/2017		0.3	0.0003	Mercury	FS-2	36	41	49.2			Yes	Include
HB17-21	0-20	6/22/2017		0.4	0.0004	Mercury	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		0.28	0.00028	Mercury	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		0.54	0.00054	Mercury	FS-1	0	33	44.88			Yes	Include
HB17-22	33-45	6/22/2017		0.58	0.00058	Mercury	FS-1	33	45					Exclude
HB17-22	45-58	6/22/2017		0.3	0.0003	Mercury	FS-1	45	58	44.88			No	Exclude
HB17-23	0-30	6/21/2017		0.75	0.00075	Mercury	FS-1	0	30	66.24			Yes	Include
HB17-04	72-84	6/19/2017		0.25	0.00025	Mercury	HS-1	72	84	84.24			Yes	Include
HB17-04	84-92	6/19/2017		0.061	0.000061	Mercury	HS-1	84	92	84.24			Yes	Include
HB17-28	39-51	6/22/2017		0.51	0.00051	Mercury	HS-1	39	51					Exclude
HB17-28	51-63	6/22/2017		0.97	0.00097	Mercury	HS-1	51	63	74.4			Yes	Include
HB17-28	63-75	6/22/2017		0.51	0.00051	Mercury	HS-1	63	75	74.4			Yes	Include
HB17-28	75-87	6/22/2017		0.25	0.00025	Mercury	HS-1	75	87	74.4			No	Exclude
HB17-28	87-99	6/22/2017		0.0017	0.0000017	Mercury	HS-1	87	99	74.4			No	Exclude
HB17-02	0-11	6/19/2017		0.22	0.00022	Mercury	HS-3	0	11	22.08			Yes	Include
HB17-07	46-58	6/20/2017		0.19	0.00019	Mercury	OC-11	46	58	36			No	Exclude
HB17-19	0-42	6/21/2017		0.37	0.00037	Mercury	OC-12	0	42	73.56			Yes	Include
HB17-17	0-16	6/21/2017		0.24	0.00024	Mercury	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		0.12	0.00012	Mercury	OC-7	0	12	-4.68			No	Exclude
HB17-35	0-17	6/23/2017		0.47	0.00047	Mercury	OC-8	0	17	27.36			Yes	Include
HB17-24	0-80	6/22/2017		2180	2.18	Naphthalene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		495	0.495	Naphthalene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		394	0.394	Naphthalene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		1010	1.01	Naphthalene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		294	0.294	Naphthalene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		159	0.159	Naphthalene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		90.2	0.0902	Naphthalene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		33.2	0.0332	Naphthalene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		307	0.307	Naphthalene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		911	0.911	Naphthalene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		572	0.572	Naphthalene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		705	0.705	Naphthalene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		559	0.559	Naphthalene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		404	0.404	Naphthalene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		253	0.253	Naphthalene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		91.2	0.0912	Naphthalene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		227	0.227	Naphthalene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		94.9	0.0949	Naphthalene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		7300	7.3	Phenanthrene	CS-1	0	80	86.76			Yes	Include

Table 5b: List of Samples Included in Arithmetic Average Calculations for Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI

Location ID	Sample Depth	Date Collected	SubArea	Concentration	Concentration (Numeric)	Chemical	RD UNIT ID	Sample Starting Depth	Sample End Depth	Target Depth	Depth to 573.6 ft (FC units)	Shallower than 573.6 ft (FC units)?	Sample down to target depth?	Include Sample?
	Inches		Units	mg/kg	mg/kg			inches	inches	inches	ft			
HB17-25	0-30	6/22/2017		1900	1.9	Phenanthrene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		1460	1.46	Phenanthrene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		2170	2.17	Phenanthrene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		700	0.7	Phenanthrene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		381	0.381	Phenanthrene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		386	0.386	Phenanthrene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		104	0.104	Phenanthrene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		754	0.754	Phenanthrene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		7270	7.27	Phenanthrene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		6050	6.05	Phenanthrene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		2210	2.21	Phenanthrene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		1340	1.34	Phenanthrene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		2400	2.4	Phenanthrene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		696	0.696	Phenanthrene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		195	0.195	Phenanthrene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		461	0.461	Phenanthrene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		345	0.345	Phenanthrene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		7110	7.11	Pyrene	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		2260	2.26	Pyrene	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		1800	1.8	Pyrene	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		2590	2.59	Pyrene	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		750	0.75	Pyrene	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		579	0.579	Pyrene	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		462	0.462	Pyrene	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		171	0.171	Pyrene	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		790	0.79	Pyrene	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		8880	8.88	Pyrene	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		7580	7.58	Pyrene	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		2130	2.13	Pyrene	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		1520	1.52	Pyrene	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		2840	2.84	Pyrene	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		832	0.832	Pyrene	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		324	0.324	Pyrene	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		715	0.715	Pyrene	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		454	0.454	Pyrene	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		<0.84	0.00084	Thallium	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		<0.67	0.00067	Thallium	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		<0.64	0.00064	Thallium	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		<0.53	0.00053	Thallium	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		<0.44	0.00044	Thallium	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-11	17-51	6/21/2017		<0.59	0.00059	Thallium	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		<0.74	0.00074	Thallium	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		<0.81	0.00081	Thallium	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		<0.59	0.00059	Thallium	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		0.83	0.00083	Thallium	FS-1	0	30	66.24			Yes	Include
HB17-19	0-42	6/21/2017		<0.69	0.00069	Thallium	OC-12	0	42	73.56			Yes	Include
HB17-17	0-16	6/21/2017		<0.53	0.00053	Thallium	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		<0.58	0.00058	Thallium	OC-7	0	12	-4.68			No	Exclude
HB17-24	0-80	6/22/2017		44430	44.43	Total PAH18	CS-1	0	80	86.76			Yes	Include
HB17-25	0-30	6/22/2017		15404	15.404	Total PAH18	CS-2	0	30	45.12			Yes	Include
HB17-09	0-30	6/22/2017		11197	11.197	Total PAH18	CS-5	0	30	32.4			Yes	Include
HB17-09DUP	0-30	6/22/2017		18624	18.624	Total PAH18	CS-5	0	30					Exclude
HB17-10	44-86	6/21/2017		5708.9	5.7089	Total PAH18	FC-1	44	86	53.64	10.44	include	Yes	Include
HB17-12	0-31	6/21/2017		3976.7	3.9767	Total PAH18	FC-14	0	31	-2.88	1.92	include	No	Exclude
HB17-14	0-26	6/21/2017		3024.8	3.0248	Total PAH18	FC-15	0	26	31.2	-1.2	include	Yes	Include
HB17-16	0-63	6/21/2017		1105.7	1.1057	Total PAH18	FC-16	0	63	71.88	-8.52	include	Yes	Include
HB17-11	17-51	6/21/2017		6164.9	6.1649	Total PAH18	FC-3	17	51	50.52	16.92	include	Yes	Include
HB17-21	0-20	6/22/2017		57311	57.311	Total PAH18	FS-1	0	20	19.2			Yes	Include
HB17-21 DUP	0-20	6/22/2017		49611.5	49.6115	Total PAH18	FS-1	0	20					Exclude
HB17-22	0-33	6/22/2017		16534	16.534	Total PAH18	FS-1	0	33	44.88			Yes	Include
HB17-23	0-30	6/21/2017		11243.3	11.2433	Total PAH18	FS-1	0	30	66.24			Yes	Include
HB17-28	0-63	6/22/2017		18319	18.319	Total PAH18	HS-1	0	63	74.4			Yes	Include
HB17-19	0-42	6/21/2017		6227.5	6.2275	Total PAH18	OC-12	0	42	73.56			Yes	Include
HB17-20	0-16	6/21/2017		2148.3	2.1483	Total PAH18	OC-16	0	16	27			Yes	Include
HB17-17	0-16	6/21/2017		5457	5.457	Total PAH18	OC-3	0	16	17.88			Yes	Include
HB17-18	0-12	6/21/2017		3335	3.335	Total PAH18	OC-7	0	12	-4.68			No	Exclude

Notes:

CS = Cummings Avenue Slip  
FC = within Federal Channel and slopes

FP = Frog Pond Dock  
ft = feet

FS = Fraser Slip  
HS = Hughitt Avenue Slip

mg/kg = milligrams per kilogram  
NM = not measured

OC = outside Federal Channel and slopes  
RD = remedial design

SND = strategic navigation dredging

1. Sample intervals included in arithmetic average calculation for each DMU include all sample intervals down to the target dredge depths.
2. For FC Units, samples shallower than 573.6 ft were excluded from calculation (these will be addressed through the SND).

**Table 5c: Average Concentration for Contaminants of Concern in Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

RD Unit	Lead	Mercury	Tributyltin	Perylene	Acenaphthene
CS-1	329	3.67	0.002	0.504	0.742
CS-2	195	1.65	0.002	1.09	0.585
CS-3	147	1.37	--	0.273	0.126
CS-4	163	0.978	0.002	0.103	0.048
CS-5	104	0.640	--	--	0.176
FC-1	159	0.000	--	--	0.170
FC-2	121	0.390	0.009	--	0.096
FC-3	98.7	0.000	--	--	0.060
FC-4	176	0.594	0.001	--	0.052
FC-5	120	0.400	0.002	--	0.023
FC-6	93.0	0.315	0.001	--	0.005
FC-7	104	0.290	0.003	--	0.020
FC-9	53.4	0.000	--	--	0.059
FC-10	99.3	--	--	--	0.006
FC-11	64.7	--	--	--	--
FC-12/FC-13	88.6	0.339	0.002	0.115	0.033
FC-14	44.0	0.221	0.007	--	0.034
FC-15	--	--	0.004	--	0.040
FC-16	41.7	0.205	0.010	--	0.009
FC-17	38.4	0.152	0.004	--	0.013
FP-1	132	0.452	0.001	0.075	0.032
FP-2	144	0.330	0.002	0.390	0.093
FS-1	232	0.000	--	--	0.454
FS-2	341	0.503	0.003	--	0.209
HS-1	110	0.591	0.367	--	0.063
HS-2	152	0.608	0.004	--	0.091
HS-3	52.8	7.44	0.024	0.163	0.179
OC-1	274	0.275	--	--	0.008
OC-2	109	0.250	0.004	--	0.014
OC-3	80.5	0.000	--	--	0.035
OC-4	95.5	--	--	--	0.243
OC-5	73.5	0.229	0.002	0.153	0.011
OC-6	114	0.477	0.002	--	0.059
OC-7	23.9	0.000	--	--	0.035
OC-8	70.1	0.000	--	--	0.067
OC-9	81.9	0.420	--	--	0.017
OC-10	66.5	--	--	--	--
OC-11	137	0.416	0.002	--	0.018
OC-12	53.4	0.000	--	--	0.059
OC-13	117	0.105	0.002	0.006	0.015
OC-14	120	0.250	0.002	0.086	0.016
OC-15	35.5	0.269	0.001	0.480	0.210
OC-16	--	--	0.001	--	0.019
OC-17	32.000	0.094	0.004	0.060	0.024
SND-1	48.429	0.230	0.002	0.205	0.129
SND-2	46.000	--	--	--	--
SND-4	79.200	--	--	--	--
SND-5	43.271	--	--	--	--

**Notes:**

- = All sample intervals were excluded from average calculation or analyte was not analyzed in all sample intervals included in average
- CS = Cummings Avenue Slip
- FC = within Federal Channel and slopes
- FP = Frog Pond Dock
- FS = Fraser Slip
- HS = Hughitt Avenue Slip
- OC = outside Federal Channel and slopes
- RD = remedial design

1. All concentrations provided in milligrams per kilogram (mg/kg).
2. Sample intervals included in arithmetic average calculation for each DMU include all sample intervals down to the target dredge depth.
3. For FC Units, samples shallower than 573.6 ft were also excluded from calculation.

**Table 5c: Average Concentration for Contaminants of Concern in Each Dredge Management Unit Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

RD Unit	Acenaphthylene	Anthracene	Chrysene	Fluoranthene	Fluorene
CS-1	0.178	1.64	3.76	9.44	0.899
CS-2	0.298	1.82	4.01	9.55	0.691
CS-3	0.072	0.306	0.690	1.45	0.119
CS-4	0.027	0.161	0.457	1.12	0.061
CS-5	0.108	0.399	1.36	2.26	0.313
FC-1	0.052	0.099	0.385	0.599	0.256
FC-2	0.040	0.163	0.530	0.878	0.130
FC-3	0.043	0.174	0.565	0.772	0.126
FC-4	0.033	0.133	0.397	0.677	0.075
FC-5	0.024	0.049	0.350	0.500	0.046
FC-6	0.005	0.018	0.055	0.091	0.011
FC-7	0.018	0.049	0.220	0.330	0.035
FC-9	0.042	0.185	0.532	0.830	0.126
FC-10	0.006	0.021	0.074	0.129	0.012
FC-11	--	--	--	--	--
FC-12/FC-13	0.018	0.091	0.282	0.507	0.047
FC-14	0.031	0.108	0.355	0.588	0.073
FC-15	0.015	0.100	0.258	0.453	0.062
FC-16	0.010	0.026	0.100	0.175	0.019
FC-17	0.014	0.051	0.184	0.352	0.021
FP-1	0.019	0.082	0.244	0.468	0.052
FP-2	0.026	0.342	0.550	1.19	0.129
FS-1	0.111	0.966	3.33	6.60	0.595
FS-2	0.081	0.647	1.76	3.22	0.304
HS-1	0.030	0.139	0.512	1.000	0.081
HS-2	0.027	0.181	0.471	0.968	0.119
HS-3	0.072	0.634	1.32	2.71	0.241
OC-1	0.005	0.022	0.048	0.094	0.013
OC-2	0.020	0.052	0.330	0.450	0.031
OC-3	0.034	0.132	0.434	0.654	0.085
OC-4	0.060	0.585	1.36	1.22	0.358
OC-5	0.012	0.048	0.145	0.219	0.017
OC-6	0.020	0.174	0.519	0.940	0.076
OC-7	0.020	0.242	0.320	0.473	0.075
OC-8	0.015	0.092	0.240	0.460	0.063
OC-9	0.011	0.038	0.106	0.214	0.022
OC-10	--	--	--	--	--
OC-11	0.020	0.064	0.284	0.423	0.032
OC-12	0.042	0.185	0.532	0.830	0.126
OC-13	0.013	0.046	0.135	0.329	0.022
OC-14	0.019	0.061	0.150	0.350	0.028
OC-15	0.024	0.562	0.791	2.10	0.363
OC-16	0.014	0.059	0.184	0.318	0.038
OC-17	0.013	0.120	0.340	0.970	0.031
SND-1	0.031	0.515	0.905	2.370	0.128
SND-2	--	--	--	--	--
SND-4	--	--	--	--	--
SND-5	--	--	--	--	--

**Notes:**

-- = All sample intervals were excluded from average calculation or analyte was not analyzed in all sample intervals included in average

CS = Cummings Avenue Slip

FC = within Federal Channel and slopes

FP = Frog Pond Dock

FS = Fraser Slip

1. All concentrations provided in milligrams per kilogram (mg/kg).

2. Sample intervals included in arithmetic average calculation for each DMU include all sample intervals down to the target dredge depth

3. For FC Units, samples shallower than 573.6 ft were also excluded from calculation.



**Table 5c: Average Concentration for Contaminants of Concern in Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

RD Unit	Naphthalene	Phenanthrene	Pyrene	Thallium
CS-1	0.994	7.39	7.49	1.20
CS-2	0.671	6.21	7.98	0.790
CS-3	0.193	1.05	1.33	1.13
CS-4	0.067	0.500	0.827	1.67
CS-5	0.702	1.82	2.20	0.000
FC-1	0.361	1.01	0.663	0.000
FC-2	0.203	0.685	0.845	0.700
FC-3	0.307	0.754	0.790	0.000
FC-4	0.138	0.500	0.660	0.906
FC-5	0.037	0.320	0.540	1.60
FC-6	0.031	0.073	0.098	0.688
FC-7	0.032	0.180	0.340	2.50
FC-9	0.253	0.696	0.832	0.000
FC-10	0.033	0.084	0.124	--
FC-11	--	--	--	--
FC-12/FC-13	0.045	0.329	0.494	1.09
FC-14	0.159	0.381	0.579	1.27
FC-15	0.090	0.386	0.462	--
FC-16	0.033	0.104	0.171	1.08
FC-17	0.031	0.166	0.284	1.76
FP-1	0.063	0.300	0.400	1.58
FP-2	0.119	0.923	1.07	1.21
FS-1	0.688	4.87	5.94	0.000
FS-2	0.396	2.26	3.03	1.56
HS-1	0.083	0.695	0.885	2.03
HS-2	0.171	0.770	0.908	0.735
HS-3	0.194	1.86	2.45	1.39
OC-1	0.023	0.083	0.082	--
OC-2	0.041	0.260	0.460	2.30
OC-3	0.227	0.461	0.715	0.000
OC-4	0.362	3.07	2.27	--
OC-5	0.025	0.095	0.191	1.94
OC-6	0.058	0.779	0.910	1.65
OC-7	0.095	0.345	0.454	0.000
OC-8	0.150	0.400	0.410	--
OC-9	0.041	0.128	0.183	--
OC-10	--	--	--	--
OC-11	0.045	0.238	0.460	1.72
OC-12	0.253	0.696	0.832	0.000
OC-13	0.018	0.176	0.321	1.55
OC-14	0.026	0.130	0.280	1.95
OC-15	0.161	2.20	1.54	1.76
OC-16	0.091	0.195	0.324	--
OC-17	0.021	0.480	0.660	1.900
SND-1	0.050	1.355	1.710	2.550
SND-2	--	--	--	--
SND-4	--	--	--	--
SND-5	--	--	--	--

**Notes:**

-- = All sample intervals were excluded from average calculation or analyte was not analyzed in all sample intervals

CS = Cummings Avenue Slip

FC = within Federal Channel and slopes

FP = Frog Pond Dock

FS = Fraser Slip

1. All concentrations provided in milligrams per kilogram (mg/kg).
2. Sample intervals included in arithmetic average calculation for each DMU include all sample intervals down to 10 ft.
3. For FC Units, samples shallower than 573.6 ft were also excluded from calculation.

**Table 5c: Average Concentration for Contaminants of Concern in Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

RD Unit	1-Methylnaphthalene	2-Methylnaphthalene	Benzo(a)anthracene	Benzo(a)pyrene
CS-1	0.342	0.712	1.96	3.11
CS-2	0.220	0.590	2.33	3.20
CS-3	0.091	0.190	0.348	0.579
CS-4	0.040	0.065	0.229	0.460
CS-5	0.380	0.709	1.07	0.936
FC-1	0.260	0.480	0.227	0.315
FC-2	--	0.260	0.228	0.418
FC-3	0.265	0.366	0.452	0.384
FC-4	--	0.167	0.177	0.320
FC-5	--	0.056	0.195	0.390
FC-6	--	0.028	0.026	0.041
FC-7	--	0.043	0.105	0.230
FC-9	0.196	0.250	0.507	0.427
FC-10	--	0.035	0.035	0.062
FC-11	--	--	--	--
FC-12/FC-13	0.032	0.037	0.154	0.304
FC-14	0.087	0.124	0.314	0.281
FC-15	0.053	0.076	0.243	0.206
FC-16	0.019	0.026	0.091	0.080
FC-17	--	0.026	0.091	0.155
FP-1	0.027	0.053	0.133	0.224
FP-2	0.170	0.155	0.290	0.536
FS-1	0.574	0.753	2.10	2.53
FS-2	--	0.580	0.858	1.39
HS-1	0.213	0.085	0.273	0.445
HS-2	--	0.128	0.246	0.392
HS-3	0.071	0.192	0.749	1.14
OC-1	--	--	0.027	0.041
OC-2	--	0.051	0.187	0.390
OC-3	0.184	0.255	0.409	0.434
OC-4	--	0.468	0.499	0.550
OC-5	0.024	0.013	0.065	0.103
OC-6	--	0.066	0.284	0.497
OC-7	0.065	0.091	0.264	0.213
OC-8	--	0.200	0.117	0.180
OC-9	--	--	0.062	0.091
OC-10	--	--	--	--
OC-11	--	0.047	0.162	0.328
OC-12	0.196	0.250	0.507	0.427
OC-13	0.002	0.018	0.077	0.155
OC-14	0.021	0.028	0.090	0.160
OC-15	0.350	0.128	0.463	0.701
OC-16	0.048	0.075	0.171	0.156
OC-17	0.009	0.013	0.184	0.370
SND-1	0.032	0.032	0.424	0.700
SND-2	--	--	--	--
SND-4	--	--	--	--
SND-5	--	--	--	--

**Notes:**

-- = All sample intervals were excluded from average calculation or analyte was not analyzed in all sample intervals included in ave  
 CS = Cummings Avenue Slip  
 FC = within Federal Channel and slopes  
 FP = Frog Pond Dock  
 FS = Fraser Slip

1. All concentrations provided in milligrams per kilogram (mg/kg).
2. Sample intervals included in arithmetic average calculation for each DMU include all sample intervals down to the target dredge
3. For FC Units, samples shallower than 573.6 ft were also excluded from calculation.

**Table 5c: Average Concentration for Contaminants of Concern in Each Dredge Management Unit  
Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

RD Unit	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Indeno(1,2,3-cd)pyrene
CS-1	4.17	1.28	1.636	1.372
CS-2	3.71	1.34	2.176	1.455
CS-3	0.711	0.337	0.476	0.341
CS-4	0.473	0.273	0.237	0.287
CS-5	1.42	0.252	0.459	0.281
FC-1	0.473	0.102	0.229	0.096
FC-2	0.618	0.195	0.168	0.188
FC-3	0.594	0.148	0.176	0.145
FC-4	0.470	0.150	0.153	0.154
FC-5	0.490	0.300	0.260	0.250
FC-6	0.052	0.025	0.021	0.022
FC-7	0.270	0.200	0.210	0.160
FC-9	0.653	0.197	0.195	0.193
FC-10	0.082	0.036	0.034	0.030
FC-11	--	--	--	--
FC-12/FC-13	0.360	0.209	0.221	0.183
FC-14	0.503	0.094	0.133	0.102
FC-15	0.327	0.066	0.097	0.070
FC-16	0.135	0.025	0.047	0.028
FC-17	0.200	0.115	0.079	0.098
FP-1	0.238	0.157	0.188	0.146
FP-2	0.682	0.316	0.320	0.294
FS-1	3.78	1.20	1.318	1.181
FS-2	1.79	0.723	0.633	0.673
HS-1	0.580	0.263	0.289	0.230
HS-2	0.551	0.214	0.238	0.191
HS-3	1.43	0.578	0.530	0.546
OC-1	0.034	0.029	0.039	0.027
OC-2	0.450	0.320	0.340	0.280
OC-3	0.668	0.244	0.181	0.237
OC-4	0.710	0.211	0.235	0.172
OC-5	0.107	0.066	0.081	0.060
OC-6	0.544	0.371	0.407	0.317
OC-7	0.341	0.080	0.115	0.084
OC-8	0.240	0.120	0.100	0.100
OC-9	0.075	0.062	0.084	0.057
OC-10	--	--	--	--
OC-11	0.422	0.237	0.231	0.213
OC-12	0.653	0.197	0.195	0.193
OC-13	0.177	0.163	0.123	0.088
OC-14	0.200	0.100	0.091	0.100
OC-15	0.711	0.321	0.363	0.311
OC-16	0.262	0.051	0.073	0.055
OC-17	0.430	0.220	0.200	0.190
SND-1	0.730	0.335	0.465	0.345
SND-2	--	--	--	--
SND-4	--	--	--	--
SND-5	--	--	--	--

**Notes:**

-- = All sample intervals were excluded from average calculation or analyte was not analyzed in all sample intervals included in average calculation

CS = Cummings Avenue Slip

FC = within Federal Channel and slopes

FP = Frog Pond Dock

FS = Fraser Slip

1. All concentrations provided in milligrams per kilogram (mg/kg).
2. Sample intervals included in arithmetic average calculation for each DMU include all sample intervals down to the target dredge depth
3. For FC Units, samples shallower than 573.6 ft were also excluded from calculation.

**Table 5c: Average Concentration for Contaminants of Conc  
Design Document Report - Sediment Cleanup in Howards Bay**

RD Unit	Dibenzo(a,h)anthracene	Total PAH18
CS-1	0.284	44.430
CS-2	0.083	15.404
CS-3	--	--
CS-4	--	--
CS-5	0.084	14.911
FC-1	0.040	5.709
FC-2	--	--
FC-3	0.044	6.165
FC-4	--	--
FC-5	--	--
FC-6	--	--
FC-7	--	--
FC-9	0.055	6.228
FC-10	--	--
FC-11	--	--
FC-12/FC-13	--	--
FC-14	0.030	3.977
FC-15	0.020	3.025
FC-16	0.008	1.106
FC-17	--	--
FP-1	--	--
FP-2	--	--
FS-1	0.309	33.675
FS-2	--	--
HS-1	0.100	18.319
HS-2	--	--
HS-3	--	--
OC-1	--	--
OC-2	--	--
OC-3	0.068	5.457
OC-4	--	--
OC-5	--	--
OC-6	--	--
OC-7	0.023	3.335
OC-8	--	--
OC-9	--	--
OC-10	--	--
OC-11	--	--
OC-12	0.055	6.228
OC-13	--	--
OC-14	--	--
OC-15	--	--
OC-16	0.016	2.148
OC-17	--	--
SND-1	--	--
SND-2	--	--
SND-4	--	--
SND-5	--	--

**Notes:**

-- = All sample intervals were excluded from average calculation  
 CS = Cummings Avenue Slip  
 FC = within Federal Channel and slopes  
 FP = Frog Pond Dock  
 FS = Fraser Slip

1. All concentrations provided in milligrams per kilogram (mg/kg)
2. Sample intervals included in arithmetic average calculation for
3. For FC Units, samples shallower than 573.6 ft were also exc



**Table 5d: Sample Concentration Exceedance the 5 Time Placement Criteria**

Chemical	DMU Average Concentration	RD_UNITID	Location ID:	Sample Depth (Inches):	Date Collected:	SubArea:	Concentration	Concentration (numeric)	Group	Criteria	concentration> 5*criteria	Include
Benzo(a)pyrene	3.108	CS-1	HB10-1-29	12 - 36	10/17/2010	Cummings Ave Slip	5	5	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-1	HB10-1-29	36 - 60	10/17/2010	Cummings Ave Slip	2.5	2.5	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-1	HB10-1-29	60 - 93	10/17/2010	Cummings Ave Slip	2.7	2.7	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-1	HB15-07	36 - 48	6/23/2015	Cummings Ave Slip	3.2	3.2	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-1	HB15-07	48 - 60	6/23/2015	Cummings Ave Slip	5.3	5.3	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-1	HB15-07	60 - 72	6/23/2015	Cummings Ave Slip	3.4	3.4	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-1	HB15-07	72 - 84	6/23/2015	Cummings Ave Slip	3.8	3.8	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-1	HB15-07	84 - 91	6/23/2015	Cummings Ave Slip	4.4	4.4	PAHs	0.447	TRUE	Include
Benzo(a)pyrene	3.20	CS-2	HB13-43	0 - 6	9/11/2013	Cummings Ave Slip	10	10	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-2	HB13-45	6 - 21	9/11/2013	Cummings Ave Slip	3.5	3.5	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-2	HB15-08	12 - 24	6/24/2015	Cummings Ave Slip	3	3	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		CS-2	HB15-08	24 - 36	6/24/2015	Cummings Ave Slip	2.8	2.8	PAHs	0.447	TRUE	Include
Benzo(a)pyrene	2.53	FS-1	HB13-47	0 - 6	9/10/2013	Fraser Ave Slip	2.5	2.5	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		FS-1	HB13-47	6 - 24	9/10/2013	Fraser Ave Slip	2.7	2.7	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		FS-1	HB13-47	24 - 31	9/10/2013	Fraser Ave Slip	3.4	3.4	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		FS-1	HB17-21	0-20	6/22/2017	Fraser Ave Slip	4040	4.04	PAHs	0.447	TRUE	Include
Benzo(a)pyrene		FS-1	HB17-21 DUP	0-20	6/22/2017	Fraser Ave Slip	3440	3.44	PAHs	0.447	TRUE	Exclude
Benzo(a)pyrene	1.39	FS-2	HB13-48	24 - 46 *	9/10/2013	Fraser Ave Slip	3.3	3.3	PAHs	0.447	TRUE	Include
Benzo(a)pyrene	1.14	HS-3	HB13-37	2 - 6	9/10/2013	Hughitt Ave Slip	3.3	3.3	PAHs	0.447	TRUE	Include
Benzo(a)pyrene	0.04	OC-15	HB10-1-07	0 - 6	10/17/2010	Area 1	2.3	2.3	PAHs	0.447	TRUE	Include
Lead	35.48	OC-1	HB15-25	12 - 24	6/25/2015	Area 2	2700	2700	inorganics	400	TRUE	Include
Mercury	7.44	HS-3	HB10-1-16	12 - 31	10/17/2010	Hughitt Ave Slip	58	58	inorganics	3.13	TRUE	Include

1. All concentrations provided in milligrams per kilogram (mg/kg).
2. Sample intervals included in arithmetic average calculation for each DMU include all sample intervals down to the target dredge depths.
3. Only samples in DMUs that the average concentration exceeded the 5 times placement criteria are included

**Table 7: Air Quality Action Levels and Response Actions**  
**Design Document Report - Sediment Cleanup in Howards Bay, Superior, WI**

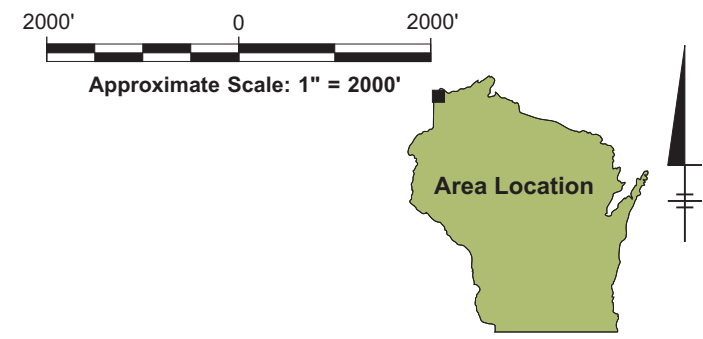
Parameter	Perimeter Reading (15-minute average levels)	Action
Flammable Vapors, Lower Explosive Limit (LEL)	<p>&lt; 10% LEL</p> <p>≥ 10% LEL</p>	<p>Normal operations.</p> <p>Stop work, ventilate area, investigate source of vapors. Take measurement at each perimeter location every 30 minutes until normal range is achieved.</p>
Airborne Particulates (above upwind location)	<p>0 to &lt; 100 microgram per cubic meter (<math>\mu\text{g}/\text{m}^3</math>)</p> <p>100 <math>\mu\text{g}/\text{m}^3</math> – 150 <math>\mu\text{g}/\text{m}^3</math></p> <p>≥ 150 <math>\mu\text{g}/\text{m}^3</math></p>	<p>Normal operations; continue continuous perimeter monitoring.</p> <p>Initiate dust suppression measures. Continue continuous perimeter monitoring.</p> <p>Continue dust suppression measures; if suppression measures are insufficient to reduce particulates below 150 <math>\mu\text{g}/\text{m}^3</math>, cease work. Continue continuous perimeter monitoring.</p>


# FIGURES





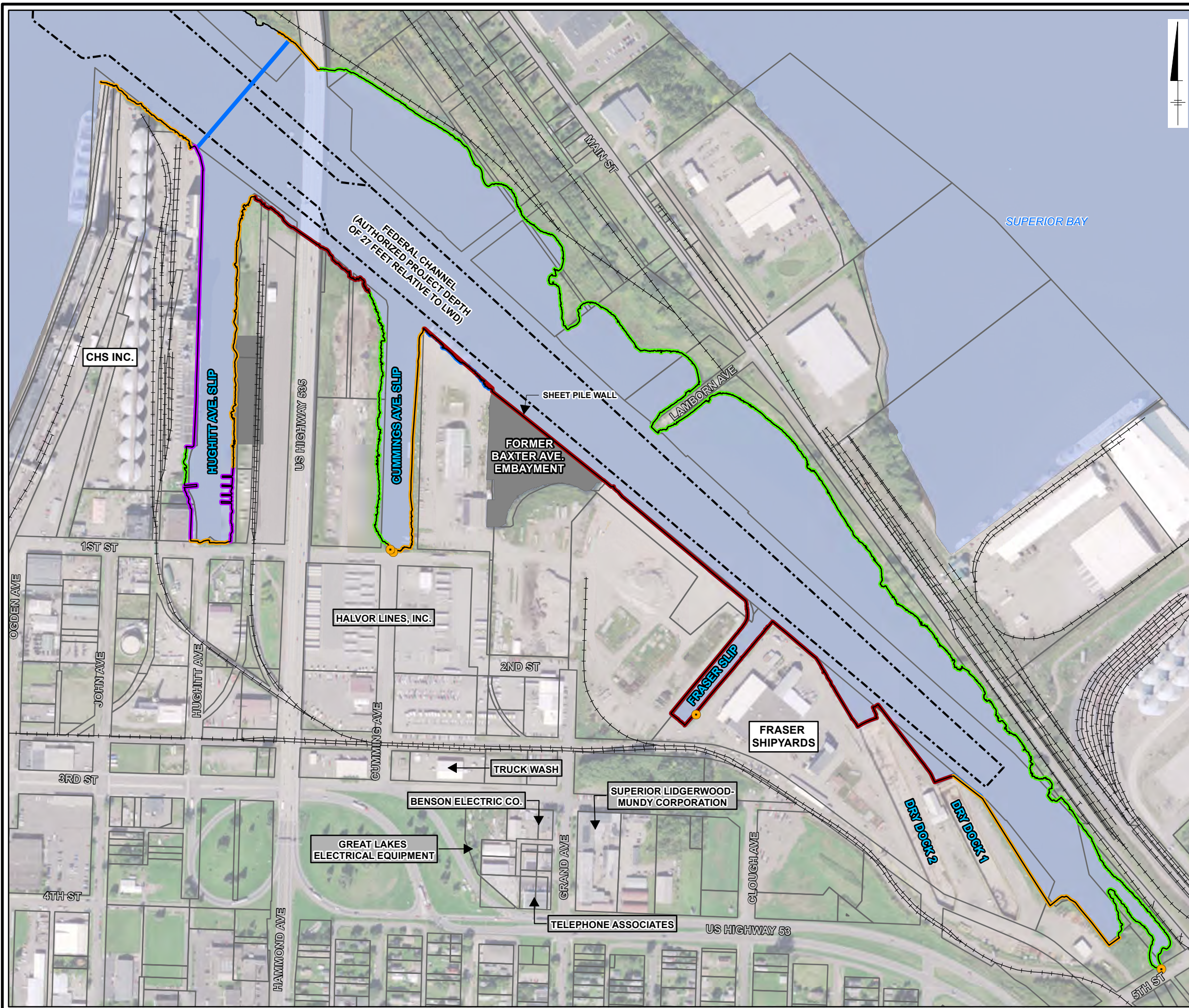
REFERENCE: BASE MAP USGS 7.5 MIN. QUADS., SUPERIOR, WI-MN, 2013 AND DULUTH, MN, 2013.



HOWARDS BAY SUPERIOR, WISCONSIN <b>DESIGN DOCUMENT REPORT</b>	
<b>SITE LOCATION MAP</b>	
 <b>ARCADIS</b>	Design & Consultancy for natural and built assets
FIGURE <b>1</b>	



City: SYR Div/Group: SWG Created By: J.RAPP Last Saved By: kives  
 FRASER SHIPYARD (C:\001796\0001\_0003)  
 Q:\FraserShipyard\Superior\W\Design\Document\Report\MainFeatures.mxd 6/5/2017 9:59:13 AM



**★ SUPERIOR**

WISCONSIN

**SITE LOCATION**

**LEGEND:**

- STORMWATER OUTFALL
- SHORELINE (APPROXIMATE)
- RAILROAD
- - - FEDERAL CHANNEL

**BANK TYPE:**

- EARTHEN BANK (APPROXIMATE)
- EARTHEN WITH RIP RAP AND MASONRY RUBBLE AND WOOD PILING (APPROXIMATE)
- CONCRETE (APPROXIMATE)
- STEEL SHEET PILING (APPROXIMATE)
- ▭ PARCEL BOUNDARY
- ▭ BAXTER AVE EMBAYMENT
- ▭ EXTENT OF PROJECT IN HOWARDS BAY

0 400 800 Feet

GRAPHIC SCALE

**NOTES:**

1. JULY 6, 2011 IMAGERY PROVIDED BY ESRI IMAGE SERVICE.
2. PARCELS, RAILROADS, AND OUTFALLS OBTAINED FROM <http://www.ci.superior.wi.us/>
3. CHANNEL BOUNDARY AND BATHYMETRY PROVIDED BY THE US ARMY CORPS OF ENGINEERS - DETROIT DISTRICT <http://www.lre.usace.army.mil>
4. LWD = LOW WATER DATUM OF 601.1 FEET (IGLD 85)

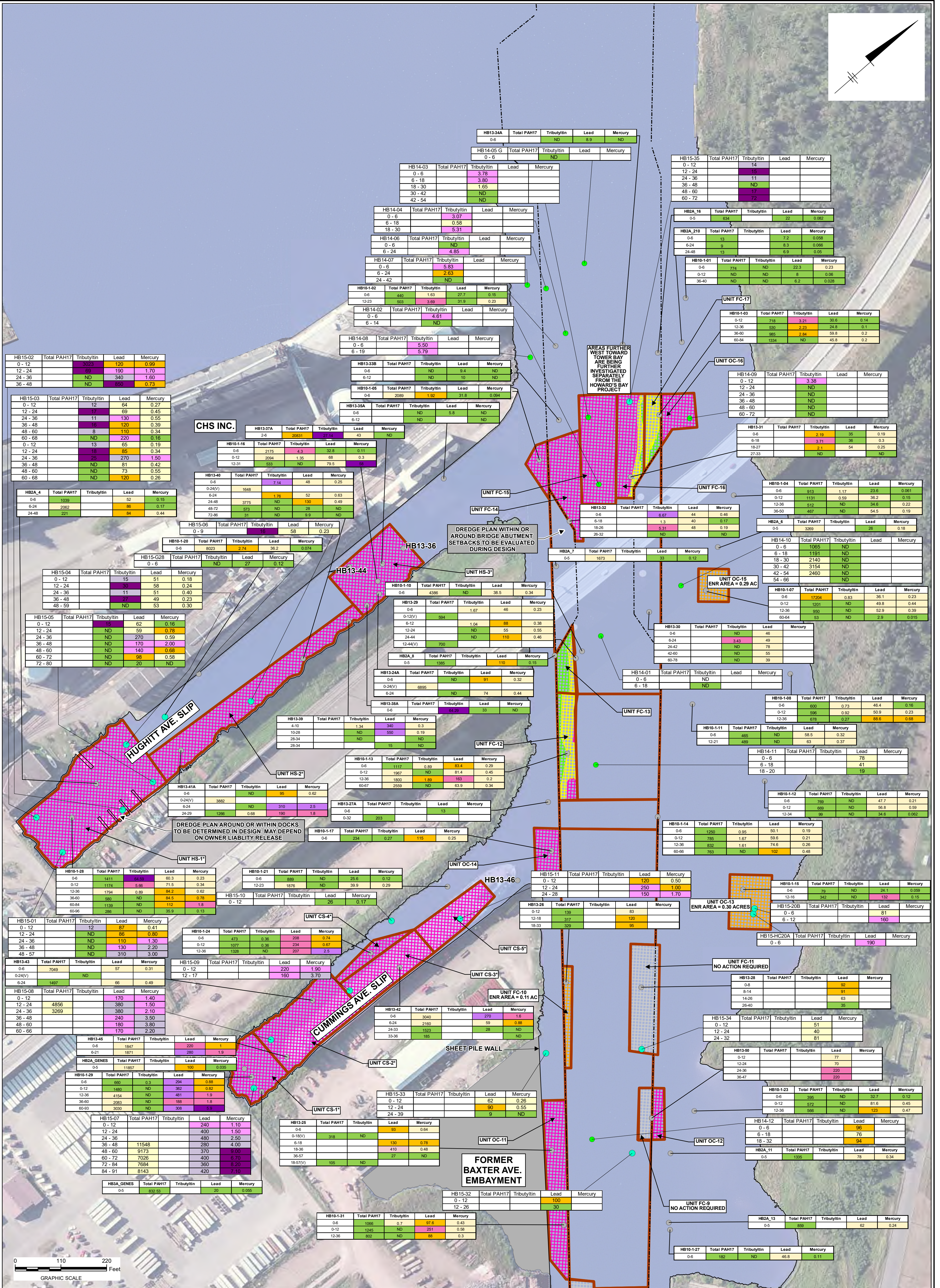
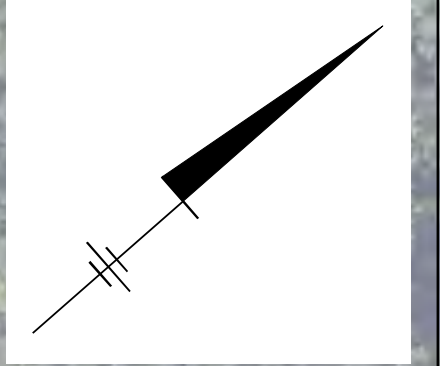
HOWARDS BAY  
 SUPERIOR, WISCONSIN  
**DESIGN DOCUMENT REPORT**

**SITE AREAS AND MAIN FEATURES**

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**FIGURE**  
**2**



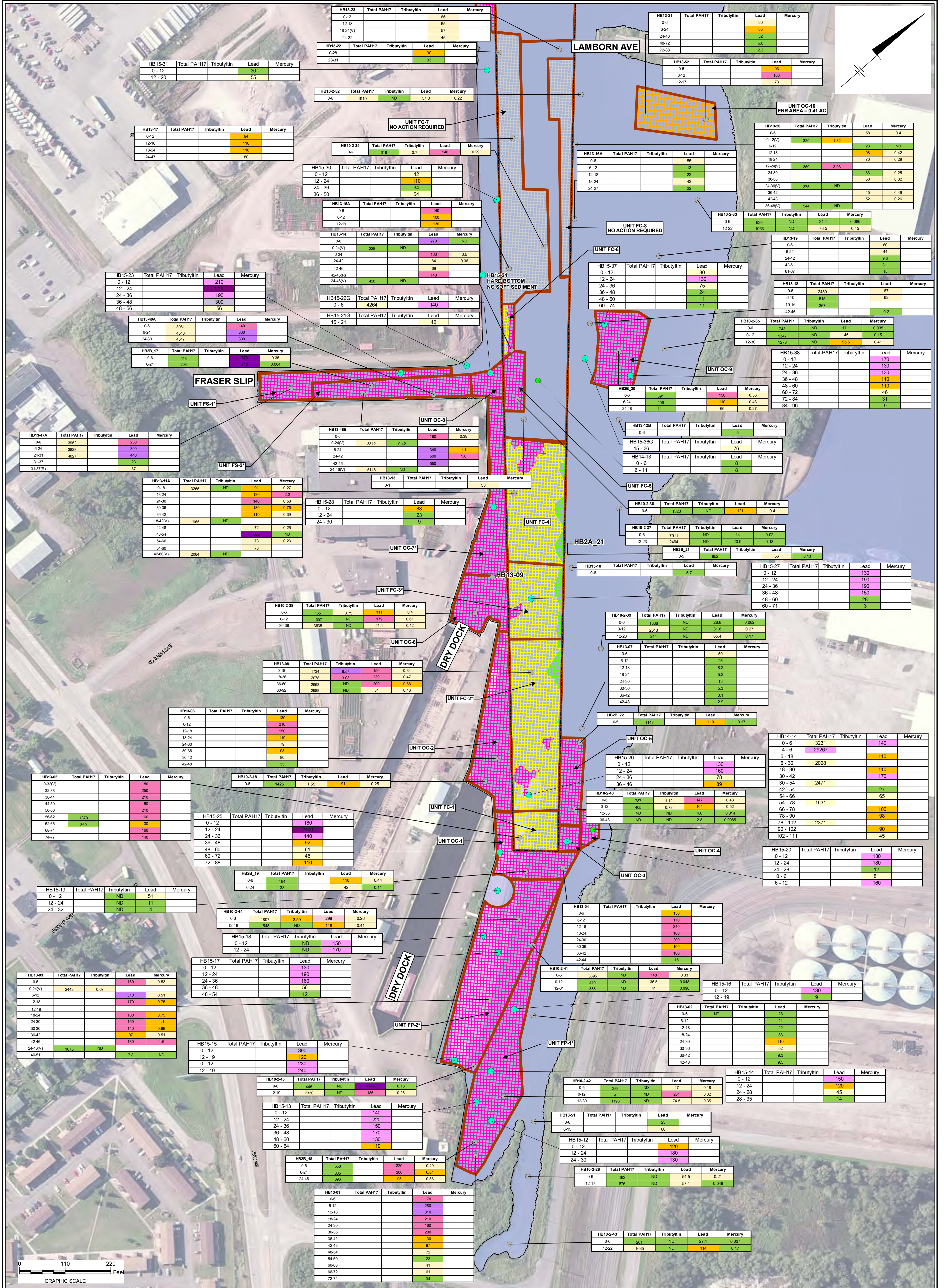


**HOWARDS BAY  
SUPERIOR, WISCONSIN  
DESIGN DOCUMENT REPORT**

**SUMMARY OF ANALYTICAL DATA  
(1 OF 2)**

**FIGURE  
3**





**LEGEND**

- 2007, 2010, or 2013 SAMPLE LOCATION
- 2014 SEDIMENT SAMPLE LOCATION
- 2015 SAMPLE LOCATION
- SHORELINE (APPROXIMATE)
- FEDERAL CHANNEL
- SEDIMENT MANAGEMENT UNIT
- ADDITIONAL CLEAN-UP DREDGE AREA
- STRATEGIC NAVIGATION DREDGE AREA
- OVERLAPPING CLEAN-UP DREDGE AREA
- STRATEGIC NAVIGATION DREDGE AREA
- NO ACTION
- ENHANCED NATURAL RECOVERY (ENR)

**NOTES:**

- JULY 6, 2011 IMAGERY PROVIDED BY ESRI IMAGE SERVICE
- SAMPLE INFORMATION FROM DATABASES PROVIDED BY WNDR ON MAY 23, 2013 AND 2014 AND 2015 DATA FROM WNDR
- CHANNEL BOUNDARY PROVIDED BY THE US ARMY CORPS OF ENGINEERS - DETROIT DISTRICT HTTP://WWW.LRE.USACE.ARMY.MIL
- TOTAL PAHS WERE CALCULATED BY SUM OF 17 PAHS. THE ASSOCIATE VALUE TO NON-DETECT IS 1/2 REPORTING LIMIT.
- ORGANIC RESULTS WERE NORMALIZED TO TOC CONTENT PRIOR TO COMPARISON TO THE CRITERIA FOR SAMPLES WITH DETECTED TOC CONTENT GREATER THAN 2 G/KG.
- "F" = FINAL REMOVAL DEPTH TO BE DETERMINED BASED ON FIELD OBSERVATION AS TO PRESENCE OF SEDIMENT AND/OR SAMPLING FOR LEAD CONCENTRATIONS
- 17 TOTAL PAHS WERE CALCULATED BY SUM OF THE FOLLOWING 17 PAHS: 2-METHYLNAPHTHALENE, ACENAPHTHENE, ACENAPHTHYLENE, ANTHRACENE, BENZO(A)ANTHRACENE, BENZO(B)FLUORANTHENE, BENZO(G,H,I)PERYLENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, CHRYSENE, DIBENZO(A,H)ANTHRACENE, FLUORANTHENE, FLUORENE, INDENOV(1,2,3-C,D)PYRENE, NAPHTHALENE, PHENANTHRENE, AND PYRENE.
- ALL DREDGE BOUNDARIES ARE SUBJECT TO REVISION DURING THE DESIGN PHASE AND WILL ACCOUNT FOR STRUCTURAL SETBACKS AS NEEDED.

9. AC = ACRES  
CY = CUBIC YARDS  
FT = FEET  
ND = NON-DETECT  
V = VERTICALLY COMPOSITE  
R = REPLICATE  
A = SECOND LOCATION ATTEMPT  
B = THIRD LOCATION ATTEMPT  
TEC = THRESHOLD EFFECT CONCENTRATION  
MEC = MIDPOINT EFFECT CONCENTRATION  
PEC = PROBABLE EFFECT CONCENTRATION  
G/KG-OC = MICROGRAM PER KILOGRAM OF SEDIMENT (DRY WEIGHT) NORMALIZED TO TOTAL ORGANIC CARBON AT 1 PERCENTTOC = TOTAL ORGANIC CARBON  
PAH = POLYCYCLIC AROMATIC HYDROCARBONS  
"F" = FINAL REMOVAL DEPTH TO BE DETERMINED DURING DESIGN OR BASED ON FIELD CONDITIONS

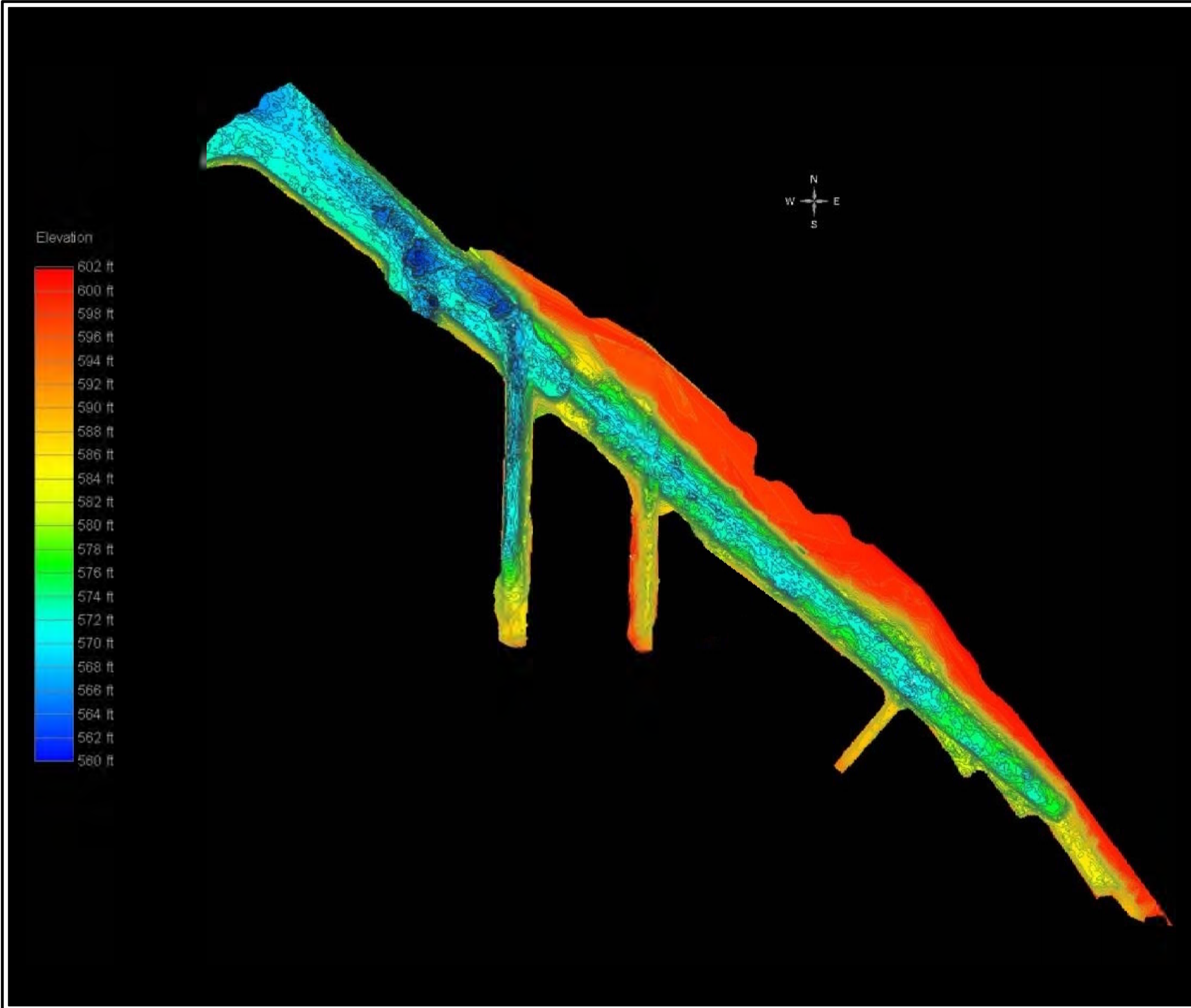
Location ID	Total PAH17 (ug/kg-OC)	Tributyltin (ug/kg-OC)	Lead (mg/kg)	Mercury (mg/kg)
Depth (Inches)	NA	NA	NA	NA
<TEC	<TEC	<TEC	<TEC	<TEC
>TEC1810+MEC	>TEC1810+MEC	>TEC1810+MEC	>TEC1810+MEC	>TEC1810+MEC
>MEC1220+PEC	>MEC1220+PEC	>MEC1220+PEC	>MEC1220+PEC	>MEC1220+PEC
>PEC2300+SPEC	>PEC2300+SPEC	>PEC2300+SPEC	>PEC1810+SPEC	>PEC1220+SPEC
>SPEC4500+SPEC	>SPEC4500+SPEC	>SPEC4500+SPEC	>SPEC2300+SPEC	>SPEC1220+SPEC
>SPEC114000	>SPEC114000	>SPEC114000	>SPEC1810	>SPEC1220

HOWARDS BAY  
SUPERIOR, WISCONSIN  
**DESIGN DOCUMENT REPORT**  
**SUMMARY OF ANALYTICAL DATA**  
(2 OF 2)

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FIGURE 4





NOTES:

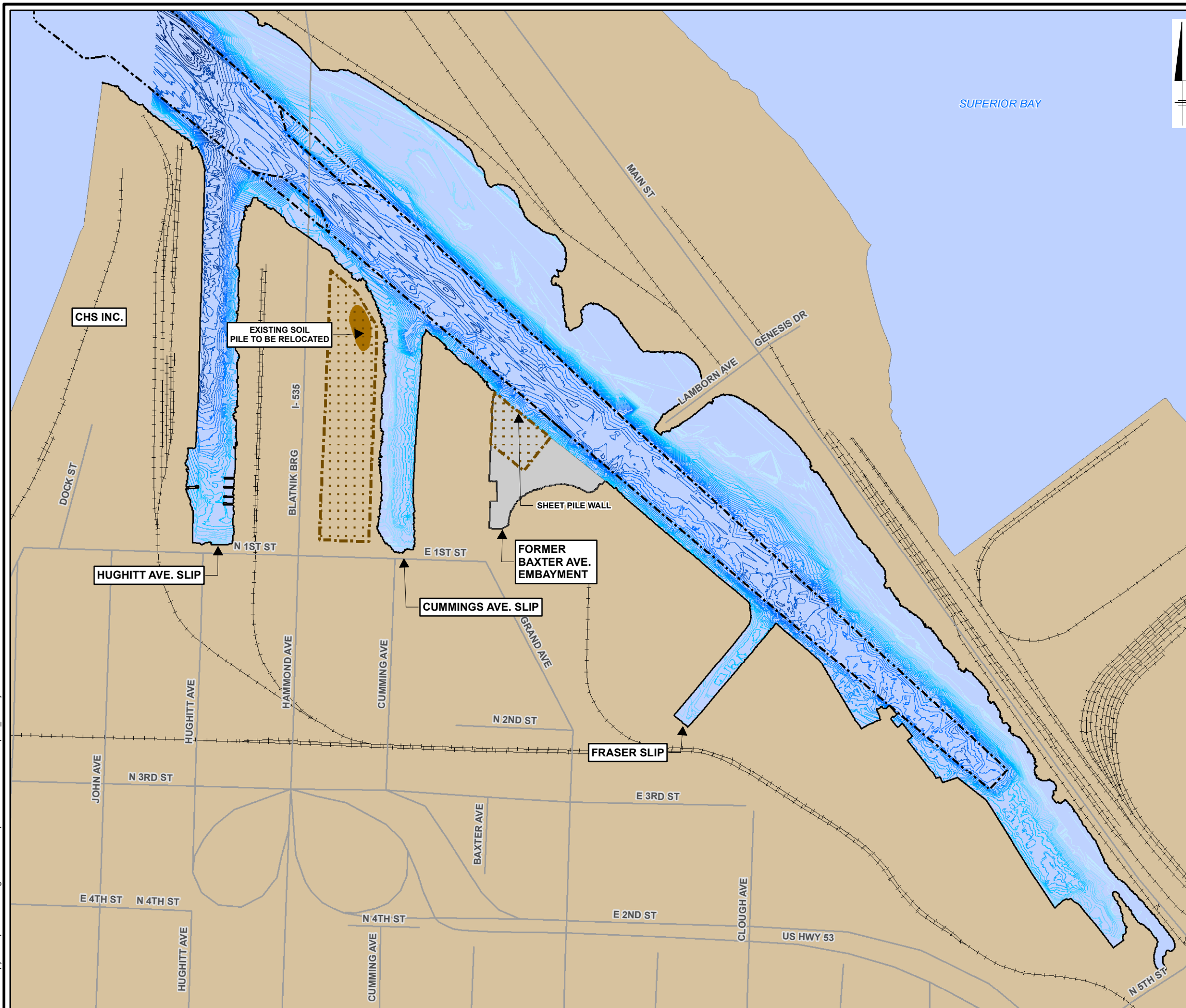
1. EXISTING BATHYMETRIC SURFACE CREATED FROM COMBINED SURVEY DATA COLLECTED BY USACE IN 2013, 2014, AND 2015.

HOWARDS BAY  
SUPERIOR, WISCONSIN  
DESIGN DOCUMENT REPORT

BATHYMETRIC SURFACE



City: SYR Div/Group: SWG Created By: J.RAPP Last Saved By: kives  
 FRASER SHIPYARD (C:\001796\0001\_0003)  
 C:\FraserShipyard\Superior\WIDesign\Document\Report\mxd\SedimentSamples\_Sitelayout.mxd 6/1/2017 5:18:21 PM



**LEGEND:**

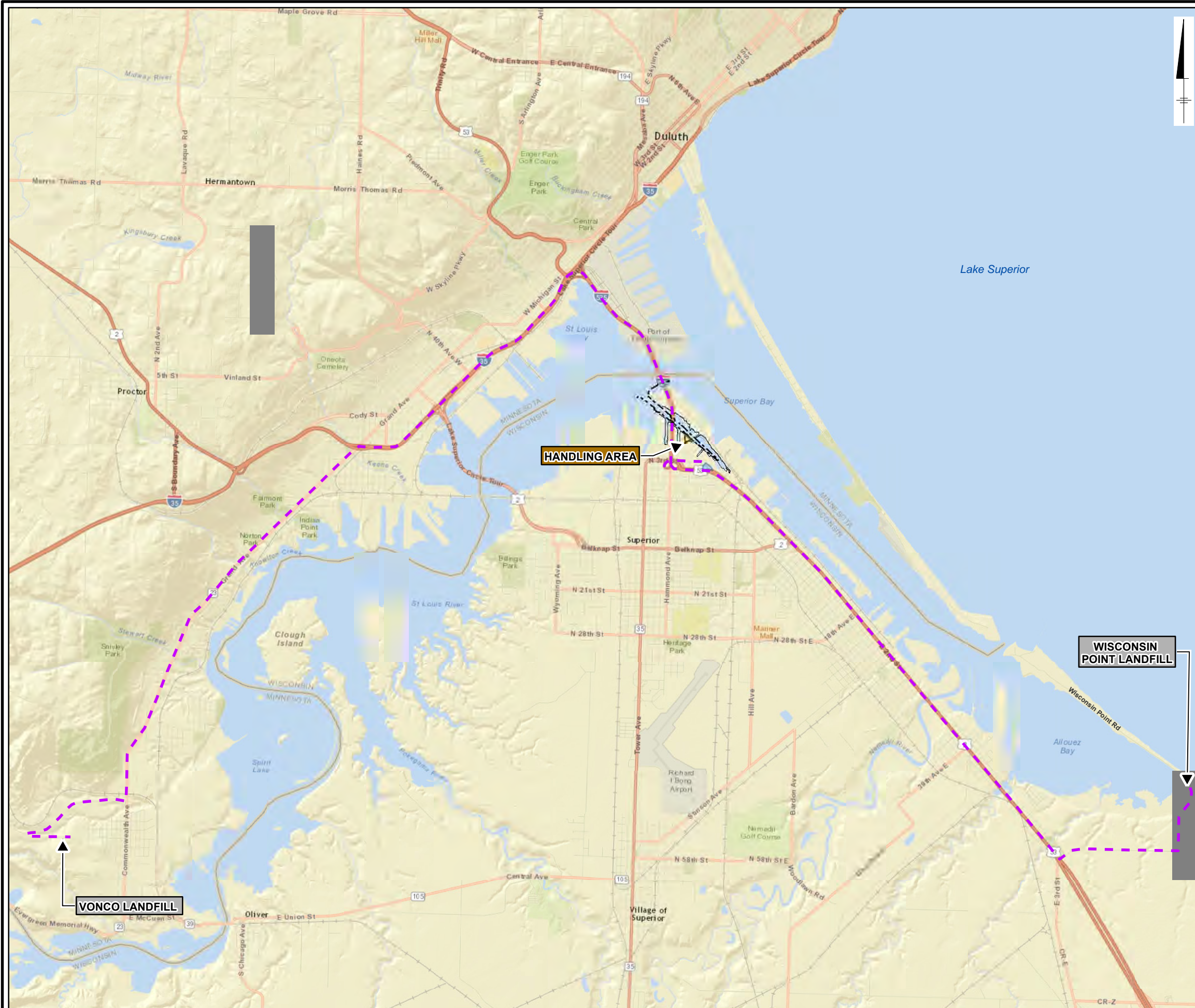
- FEDERAL CHANNEL
- SHORELINE (APPROXIMATE)
- ROADS
- RAILROAD
- APPROXIMATE LOCATION OF AREA AVAILABLE FOR STAGING
- EXISTING SOIL PILE
- FORMER BAXTER AVE EMBAYMENT



**NOTE:**  
 1. CHANNEL BOUNDARY PROVIDED BY THE US ARMY CORPS OF ENGINEERS - DETROIT DISTRICT  
[HTTP://WWW.LRE.USACE.ARMY.MIL](http://www.lre.usace.army.mil)

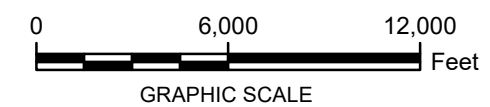
HOWARDS BAY SUPERIOR, WISCONSIN <b>DESIGN DOCUMENT REPORT</b>	
<b>PROPOSED STAGING AREAS</b>	
<b>ARCADIS</b> <small>Design &amp; Consultancy for natural and built assets</small>	<b>FIGURE</b> <b>7</b>





**LEGEND**

- TRUCK ROUTE
- FEDERAL CHANNEL
- SHORELINE (APPROXIMATE)
- APPROXIMATE LOCATION OF DREDGED MATERIAL HANDLING/DEWATERING AREA
- BENEFICIAL REUSE/DISPOSAL OPTION LOCATION
- HANDLING AREA



- NOTES:**
1. BASEMAP PROVIDED BY ESRI IMAGE SERVICE.
  2. CHANNEL BOUNDARY PROVIDED BY THE US ARMY CORPS OF ENGINEERS - DETROIT DISTRICT  
[HTTP://WWW.LRE.USACE.ARMY.MIL](http://www.lre.usace.army.mil)

**HOWARDS BAY  
 SUPERIOR, WISCONSIN  
 DESIGN DOCUMENT REPORT**

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**PROPOSED OFF-SITE  
 PLACEMENT LOCATIONS**

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**FIGURE  
 8**

# APPENDIX A

## Sediment Core Logs



Field Data Collection Form  
H St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB 1

Water Depth: 17'2" Total Core Recovery (sediment depth): 41"

Sample Date: 10/16/10 Sample Time: 0825

Sample Collected By: T. Walls

Sample Observations (color, texture, odor, etc)

Overall: Silt w/ tr sand; organics; dark brown; faint odor; wet  
0 to 0.5 foot: Silt w/ tr sand; organics; dark brown; faint odor; wet  
0.5 to 1 feet: Silt w/ tr sand; organics; dark brown; faint odor; wet  
1 to 3 feet: Silt transitioning to clayey silt w/ tr sand; dark brown; wet  
3 to ~~4~~<sup>40"</sup> feet: Clayey silt w/ tr sand; dark brown/gray; wet; faint odor  
5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR 0-6" VIBRACORE OTHER  
Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB arochlor<sup>1</sup> TPH/DRO<sup>2</sup>  
TPH/DRO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>  
Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>  
PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46°44.610348' N 92°05.955111' W

Other Comments: \_\_\_\_\_



**Field Data Collection Form**  
*Harbor* St. Louis Bay  
 Duluth, St. Louis County, Minnesota

**Sample Location ID:** HB-2

**Water Depth:** 28'3"      **Total Core Recovery (sediment depth):** 28"

**Sample Date:** 10/16/10      **Sample Time:** 0905

**Sample Collected By:** T. Walls

**Sample Observations (color, texture, odor, etc)**

Overall: Fine silt w/ to sand; dark brown; faint odor; wet  
 0 to 0.5 foot: Silt w/ to sand; dark brown; faint odor; wet  
 0.5 to 1 feet: silt w/ to sand; dark brown; faint odor; wet  
 1 to <sup>28"</sup> feet: Clayey silt; dark brown; faint odor; wet  
 3 to 5 feet: \_\_\_\_\_  
 5 to 7 feet: \_\_\_\_\_

**Sample Type:**      PONAR 0-6"      VIBRACORE      OTHER

**Analysis (all):**      TAL Metals<sup>1</sup>      PAH (17 List)<sup>1</sup>      PCB aroclor<sup>1</sup>      TPH DRO<sup>2</sup>  
                          TPH ORO<sup>2</sup>      TOC<sup>2</sup>      Grain Size<sup>2</sup>      % Moisture<sup>1</sup>

**Analysis (10%):**      TCL Pesticides<sup>1</sup>      TCL SVOCs<sup>1</sup>      Dioxins<sup>1</sup>      PCB congeners<sup>1</sup>  
                          PAH (34 List)<sup>1</sup>      Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:**      YES / NO      \_\_\_\_\_

**Photos:**      YES / NO      \_\_\_\_\_

**Coordinates same as projected:**      YES / NO      \_\_\_\_\_

**If no - new coordinates:**      46°44.558675'N 92°05.981828'W

**Other Comments:**      \_\_\_\_\_

Field Data Collection Form  
H St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-3

Water Depth: 23'4" Total Core Recovery (sediment depth): 88"

Sample Date: 10/16/16 Sample Time: 0930

Sample Collected By: T. Walls

Sample Observations (color, texture, odor, etc)

Overall: Silt w/ tr sand; dark brown; faint odor; wet

0 to 0.5 foot: Silt w/ tr sand; dark brown; faint odor; wet

0.5 to 1 feet: Silt w/ tr sand; dark brown; faint odor; wet

1 to 3 feet: Silt w/ tr sand; dark brown; faint odor; wet

3 to 5 feet: Silt w/ sand; dark brown; faint odor; wet

5 to 7 feet: Silt w/ sand → clayey silt; dark brown; faint odor; wet

Sample Type: PONAR 0.6" VIBRACORE OTHER

Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPH DRQ<sup>2</sup>

TPH ORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO HB10-1-3-06DP

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44.572669'N 92°05.912947'W

Other Comments: \_\_\_\_\_

Field Data Collection Form  
H. St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-04

Water Depth: 2.5' Total Core Recovery (sediment depth): \_\_\_\_\_

Sample Date: 10/17/10 Sample Time: 1120

Sample Collected By: T. Wallis

Sample Observations (color, texture, odor, etc)

Overall: silt w/ tr sand; saturated; dark brown; no odor

0 to 0.5 foot: silt w/ tr sand; saturated; dark brown; no odor

0.5 to 1 feet: silt w/ tr sand; dark brown; no odor; tr organics

1 to 3 feet: silt w/ tr sand and organics; dark brown; no odor

<sup>50"</sup>  
3 to ~~X~~ feet: silty sand; dark brown; no odor; wet

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER Handpull

Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPH/DRO<sup>2</sup>

TPH/ORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46° 44' 57.5 N 92° 05' 35.1 W

Other Comments: \_\_\_\_\_

Field Data Collection Form  
St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: LR-5

Water Depth: 25'2" Total Core Recovery (sediment depth): \_\_\_\_\_

Sample Date: 10/16/10 Sample Time: 1002

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: \_\_\_\_\_

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR-6<sup>4</sup> VIBRACORE OTHER

Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPH DRO<sup>2</sup>

TPH ORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44.524860'N 92°05.087251'W

Other Comments: \_\_\_\_\_



Field Data Collection Form  
H. St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-6

Water Depth: 23' 1" Total Core Recovery (sediment depth): 56"

Sample Date: 10/16/10 Sample Time: 1030

Sample Collected By: T. Walle

Sample Observations (color, texture, odor, etc)

Overall: silt w/ fr sand; dark brown, faint odor; wet

0 to 0.5 foot: silt w/ fr sand; dark brown; faint odor; wet

0.5 to 1 feet: silt w/ fr sand; dark brown; faint odor; wet

1 to 3 feet: silt → clayey silt w/ fr sand / dark brown; faint odor; wet

3 to 5 feet: silt w/ fr sand; dark brown; faint odor; wet

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR 0-6" VIBRACORE OTHER

Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPH-DRO<sup>2</sup>

TPH-ORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46°44.524112'N 92°05.860549'W

Other Comments: \_\_\_\_\_

**Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin**

**Sample Location ID:** HB-07

**Water Depth:** 4.5' **Total Core Recovery (sediment depth):** 111"

**Sample Date:** 10/17/10 **Sample Time:** 1418

**Sample Collected By:** T. Walls

**Sample Observations (color, texture, odor, etc)**

**Overall:** Silt w/ sand, dark brown, saturated, sheen, odor slight petroleum

**0 to 0.5 foot:** Same as above

**0.5 to 1 feet:** Same as above

**1 to 3 feet:** Same as above; sheen stopped @ ~ 15"

39"  
39"  
64"  
64"  
111"  
111"

**3 to 5 feet:** Fine sand, brown, saturated, no odor

**5 to 7 feet:** Same as above

**Sample Type:**  PONAR  VIBRACORE  OTHER

**Analysis (all):**

TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup>	TPH DRO <sup>2</sup>
TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup>	Grain Size <sup>2</sup>
TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup>	TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES /  NO

**Photos:**  YES / NO

**Coordinates same as projected:** YES / NO

**If no - new coordinates:** 46°44.542366'N 92°05.818035'W

**Other Comments:** \_\_\_\_\_

**Field Data Collection Form**  
~~H. St. Louis Bay~~  
 Duluth, St. Louis County, Minnesota

**Sample Location ID:** HB-08

**Water Depth:** 2.5'      **Total Core Recovery (sediment depth):** 30

**Sample Date:** 10/17/10      **Sample Time:** 1140

**Sample Collected By:** T. Wells

**Sample Observations (color, texture, odor, etc)**

Overall: silt w/ fr sand; dark brown; saturated; sheen; faint odor

0 to 0.5 foot: silt w/ fr sand; dark brown; saturated; sheen; faint odor

0.5 to 1 feet: silt w/ fr sand; dark brown; saturated; sheen; faint odor

1 to 3 feet: silt w/ fr sand; dark brown; saturated; sheen; faint odor

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

**Sample Type:**      PONAR      VIBRACORE      OTHER Handpulled

**Analysis (all):**      TAL Metals<sup>1</sup>      PAH (17 List)<sup>1</sup>      PCB aroclor<sup>1</sup>      TPH DRO<sup>2</sup>

TPH ORO<sup>2</sup>      TOC<sup>2</sup>      Grain Size<sup>2</sup>      % Moisture<sup>1</sup>

**Analysis (10%):**      TCL Pesticides<sup>1</sup>      TCL SVOCs<sup>1</sup>      Dioxins<sup>1</sup>      PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup>      Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:**      YES / NO      \_\_\_\_\_

**Photos:**      YES / NO      \_\_\_\_\_

**Coordinates same as projected:**      YES / NO      \_\_\_\_\_

**If no - new coordinates:**      46° 44.547' N      092° 05' 750 W

**Other Comments:** \_\_\_\_\_

**Field Data Collection Form**  
**Howard's Bay**  
**Superior, Douglas County, Wisconsin**

**Sample Location ID:** HR-09

**Water Depth:** \_\_\_\_\_ **Total Core Recovery (sediment depth):** \_\_\_\_\_

**Sample Date:** 10/17/10 **Sample Time:** ~~0833~~ 0840

**Sample Collected By:** \_\_\_\_\_

**Sample Observations (color, texture, odor, etc)**

**Overall:** 0-6" interval not sampled due to presence of taconite pellets

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

<b>Sample Type:</b>	<u>PONAR</u>	VIBRACORE	OTHER
<b>Analysis (all):</b>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES / NO \_\_\_\_\_

**Photos:** YES / NO \_\_\_\_\_

**Coordinates same as projected:** YES / NO \_\_\_\_\_

**If no - new coordinates:** 46° 44' . 48 N, 92° 05' 96 W

**Other Comments:** No core - all day + taconite pellets



**Field Data Collection Form**  
~~H. St. Louis Bay~~  
 Duluth, St. Louis County, Minnesota

**Sample Location ID:** HB-10

**Water Depth:** 27' 01"      **Total Core Recovery (sediment depth):** 0 - ponar only

**Sample Date:** 10/18      **Sample Time:** 8:50

**Sample Collected By:** \_\_\_\_\_

**Sample Observations (color, texture, odor, etc)**

- Overall: \_\_\_\_\_
- 0 to 0.5 foot: \_\_\_\_\_
- 0.5 to 1 feet: \_\_\_\_\_
- 1 to 3 feet: \_\_\_\_\_
- 3 to 5 feet: \_\_\_\_\_
- 5 to 7 feet: \_\_\_\_\_

<b><u>Sample Type:</u></b>	PONAR	VIBRACORE	OTHER	
<b><u>Analysis (all):</u></b>	TAL Metals <sup>1</sup>	PAH (17 List) <sup>1</sup>	PCB aroclor <sup>1</sup>	TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	TOC <sup>2</sup>	Grain Size <sup>2</sup>	% Moisture <sup>1</sup>
<b><u>Analysis (10%):</u></b>	TCL Pesticides <sup>1</sup>	TCL SVOCs <sup>1</sup>	Dioxins <sup>1</sup>	PCB congeners <sup>1</sup>
	PAH (34 List) <sup>1</sup>	Black Carbon <sup>2</sup>		

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:**      YES / NO      \_\_\_\_\_

**Photos:**      YES / NO      \_\_\_\_\_

**Coordinates same as projected:**      YES / NO      46° 44.489341 92° 05.836806

**If no - new coordinates:** \_\_\_\_\_

**Other Comments:** \_\_\_\_\_

\_\_\_\_\_

Field Data Collection Form  
St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: WB-11

Water Depth: 15'2" Total Core Recovery (sediment depth): 40"

Sample Date: 10/16/10 Sample Time: 1115

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: Fine silt w/ fr sand → clayey silt; dark brown; wet; faint odor

0 to 0.5 foot: silt w/ fr sand; dark brown; faint odor; wet; coal chunks

0.5 to 1 feet: silt w/ fr sand; dark brown; faint odor; wet

1 to 3 feet: Clayey silt w/ fr sand; dark brown; faint odor; wet

3 to 5 feet: @ 29" natural red clay.

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR 0-6" VIBRACORE OTHER

Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPH DRO<sup>2</sup>

TPH LORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44.509501' N 92°05.772775' W

Other Comments: \_\_\_\_\_

Field Data Collection Form  
1. St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-12

Water Depth: 3.0' Total Core Recovery (sediment depth): 34"

Sample Date: 10/17/10 Sample Time: 1400

Sample Collected By: Tim Walls

Sample Observations (color, texture, odor, etc)

Overall: Silt w/ tr sand; dark brown; no odor; sat water

0 to 0.5 foot: Silt w/ tr sand; dark brown; no odor; saturated;

0.5 to 1 feet: silt w/ tr sand; dark brown; no odor; sat water; wood chunks

1 to <sup>34"</sup> feet: silt w/ tr sand; dark brown; no odor; saturated; wood chunk

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER Handpulled

Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPHDRO<sup>2</sup>

TPHORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46° 44' .512 N 92° 05' .712 W

Other Comments: \_\_\_\_\_

Field Data Collection Form  
St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-13  
Water Depth: 23' 10" Total Core Recovery (sediment depth): 88" 67"  
Sample Date: 10/18 Sample Time: 9:13

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: Silt w/ tr sand; dark brown; faint odor; saturated  
0 to 0.5 foot: silt w/ tr sand; dark brown; faint odor; saturated  
0.5 to 1 feet: silt w/ tr sand; dark brown; faint odor; saturated  
1 to 3 feet: silt w/ sand; dark brown; faint odor; wet; sand lens  
<sup>67"</sup>  
3 to X feet: silt w/ sand; dark brown; faint odor; wet; sand lens  
5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER  
Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPH DRO<sup>2</sup>  
TPH ORO<sup>2</sup> TOC<sup>3</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>  
Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>  
PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46° 44.4899 92.05.796937

Other Comments: \_\_\_\_\_



**Field Data Collection Form**  
**Howard's Bay**  
**Superior, Douglas County, Wisconsin**

Sample Location ID: HB-14

Water Depth: 24.4' Total Core Recovery (sediment depth): 83"

Sample Date: 10/7/10 Sample Time: 1136

Sample Collected By: T. Waller

Sample Observations (color, texture, odor, etc)

Overall: silt w/ tr sand; dark brown; faint odor; saturated

0 to 0.5 foot: silt w/ tr sand; dark brown; faint odor; saturated

0.5 to 1 feet: silt w/ tr sand; organics; dark brown; faint odor; saturated

1 to 3 feet: silt w/ tr sand; dark brown; faint odor; saturated

66"  
 3 to ~~3~~ feet: silt w/ tr sand; dark brown; faint odor; saturated

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER  
Analysis (all): TAL Metals<sup>1</sup> PAH (34 List)<sup>1</sup> RCB Aroclor<sup>1</sup> TPH DRO<sup>2</sup>  
TPH ORO<sup>2</sup> Mercury<sup>2</sup> Tri-butyltin<sup>2</sup> Grain Size<sup>2</sup>  
TCL Pesticides<sup>1</sup> PAH (17 List) AVS/SEM<sup>1</sup> TOC<sup>2a</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: \_\_\_\_\_

Other Comments: \_\_\_\_\_

**Field Data Collection Form**  
**St. Louis Bay**  
**Duluth, St. Louis County, Minnesota**

**Sample Location ID:** HB-15

**Water Depth:** 3.25' **Total Core Recovery (sediment depth):** 16"

**Sample Date:** 10/17/10 **Sample Time:** 1415

**Sample Collected By:** T. Walls

**Sample Observations (color, texture, odor, etc)**

Overall: silt w/ fr sand, dark brown, no odor, wood chunks, saturated  
 0 to 0.5 foot: silt w/ fr sand, dark brown, no odor, wood chunks, saturated  
                   16"  
 0.5 to 1 feet: silt w/ fr sand, dark brown, no odor, wood chunks, saturated  
 1 to 3 feet: \_\_\_\_\_  
 3 to 5 feet: \_\_\_\_\_  
 5 to 7 feet: \_\_\_\_\_

**Sample Type:**      PONAR                      VIBRACORE                      OTHER Handpull  
**Analysis (all):**      TAL Metals<sup>1</sup>                      PAH (17 List)<sup>1</sup>                      PCB aroclor<sup>1</sup>    TPH DRO<sup>2</sup>  
                                  TPH ORO<sup>2</sup>                      TOC<sup>2</sup>                                      Grain Size<sup>2</sup>      % Moisture<sup>1</sup>  
**Analysis (10%):**      TCL Pesticides<sup>1</sup>                      TCL SVOCs<sup>1</sup>                      Dioxins<sup>1</sup>                      PCB congeners<sup>1</sup>  
                                  PAH (34 List)<sup>1</sup>                      Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:**      YES /      NO      \_\_\_\_\_

**Photos:**                                      YES /      NO      \_\_\_\_\_

**Coordinates same as projected:**      YES /      NO      46° 44' 478N      92° 05' 672 N

**If no – new coordinates:** \_\_\_\_\_

**Other Comments:** \_\_\_\_\_

\_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-16

Water Depth: ~~26.1~~<sup>31</sup> 16.1' Total Core Recovery (sediment depth): 33"

Sample Date: 10/17/10 Sample Time: 0910

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: silt w/ fr sand; dark brown w/ organics; dark brown; faint odor; sheen

0 to 0.5 foot: silt w/ fr sand; dark brown; fr organics; dark brown; faint odor;

0.5 to 1 feet: silt w/ fr sand, dark brown; fr organics; dark brown; faint odor  
31"

1 to ~~2~~ feet: silt w/ fr sand; dark brown w/ organics; dark brown; faint odor  
sheen saturated.

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type:	<u>PONAR</u>	<u>VIBRACORE</u>	OTHER
Analysis (all):	<u>TAL Metals</u> <sup>1</sup>	<u>PAH (34 List)</u> <sup>1</sup>	<u>PCB Aroclor</u> <sup>1</sup> <u>TPHDRO</u> <sup>2</sup>
	<u>TPHORO</u> <sup>2</sup>	<u>Mercury</u> <sup>1</sup>	<u>Tri-butyl tin</u> <sup>2</sup> <u>Grain Size</u> <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46°41' 44.5N, 93°05' 24.8W

Other Comments: Sheen noted when core was taken

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

**Sample Location ID:** HB-17

**Water Depth:** \_\_\_\_\_ **Total Core Recovery (sediment depth):** \_\_\_\_\_

**Sample Date:** 10/17/10 **Sample Time:** 1106

**Sample Collected By:** \_\_\_\_\_

**Sample Observations (color, texture, odor, etc)**

Overall: \_\_\_\_\_  
0 to 0.5 foot: \_\_\_\_\_  
0.5 to 1 feet: \_\_\_\_\_  
1 to 3 feet: \_\_\_\_\_  
3 to 5 feet: \_\_\_\_\_  
5 to 7 feet: \_\_\_\_\_

<b>Sample Type:</b>	<u>PONAR</u>	VIBRACORE	OTHER
<b>Analysis (all):</b>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES / NO \_\_\_\_\_

**Photos:** YES / NO \_\_\_\_\_

**Coordinates same as projected:** YES / NO \_\_\_\_\_

**If no - new coordinates:** 46°44' 428N, 92°05' 75W

**Other Comments:** No core recovery



**Field Data Collection Form**  
**Howard's Bay**  
**Superior, Douglas County, Wisconsin**

**Sample Location ID:** HB-18

**Water Depth:** ~~16'3"~~ 16'4" **Total Core Recovery (sediment depth):** 6"

**Sample Date:** 10/14/10 **Sample Time:** 1615

**Sample Collected By:** \_\_\_\_\_

**Sample Observations (color, texture, odor, etc)**

- Overall: \_\_\_\_\_
- 0 to 0.5 foot: \_\_\_\_\_
- 0.5 to 1 feet: \_\_\_\_\_
- 1 to 3 feet: \_\_\_\_\_
- 3 to 5 feet: \_\_\_\_\_
- 5 to 7 feet: \_\_\_\_\_

<b>Sample Type:</b>	<u>PONAR 0-6"</u>	VIBRACORE	OTHER
<b>Analysis (all):</b>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES / NO \_\_\_\_\_

**Photos:** YES / NO \_\_\_\_\_

**Coordinates same as projected:** YES / NO \_\_\_\_\_

**If no - new coordinates:** 46°44.133246'N 92°05.235770'W

**Other Comments:** unable to collect core sample (hard bottom)  
ponar only / alot of debris on bottom.

Field Data Collection Form  
~~St. Louis Bay~~  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-19

Water Depth: 2.5' Total Core Recovery (sediment depth):

Sample Date: 10/17/10 Sample Time: 1440

Sample Collected By: T. Walls

Sample Observations (color, texture, odor, etc)

Overall: \_\_\_\_\_

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

<u>Sample Type:</u>	PONAR	VIBRACORE	<u>OTHER</u> <i>Handpull</i>
<u>Analysis (all):</u>	TAL Metals <sup>1</sup>	PAH (17 List) <sup>1</sup>	PCB aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	TOC <sup>2</sup>	Grain Size <sup>2</sup> % Moisture <sup>1</sup>
<u>Analysis (10%):</u>	TCL Pesticides <sup>1</sup>	TCL SVOCs <sup>1</sup>	Dioxins <sup>1</sup> PCB congeners <sup>1</sup>
	PAH (34 List) <sup>1</sup>	Black Carbon <sup>2</sup>	

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44'442 N 92°05'632 W

Other Comments: \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-20

Water Depth: 27.10 Total Core Recovery (sediment depth): \_\_\_\_\_

Sample Date: 10/17/10 Sample Time: 0938

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: \_\_\_\_\_  
0 to 0.5 foot: \_\_\_\_\_  
0.5 to 1 feet: \_\_\_\_\_  
1 to 3 feet: \_\_\_\_\_  
3 to 5 feet: \_\_\_\_\_  
5 to 7 feet: \_\_\_\_\_

<u>Sample Type:</u>	<u>PONAR</u>	VIBRACORE	OTHER
<u>Analysis (all):</u>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44' 36.7N, 92°05' 9.68W

Other Comments: No core recovery

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-21

Water Depth: 3.5' Total Core Recovery (sediment depth): 23''

Sample Date: 10-18-2010 Sample Time: 1425

Sample Collected By: Tim Walls

Sample Observations (color, texture, odor, etc)

Overall: F&M sand; dark brown; saturated; faint odor

0 to 0.5 foot: F&M sand; dark brown; saturated; faint odor

0.5 to 1 feet: F&M sand; dark brown; saturated faint odor

1 to <sup>23''</sup>feet: F&M sand; dark brown; saturated faint odor

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER Hand drive  
Analysis (all): TAL Metals<sup>1</sup> PAH (34 List)<sup>1</sup> PCB Arochlor<sup>1</sup> TPH DRO<sup>2</sup>  
TPHORO<sup>2</sup> Mercury<sup>1</sup> Tri-butyl tin<sup>2</sup> Grain Size<sup>2</sup>  
TCL Pesticides<sup>1</sup> PAH (17 Dist) AVS/SEM\* TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: N 5236370.982 E -347348.847

Other Comments: Sheen was observed at this location



Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-22

Water Depth: 29.9' Total Core Recovery (sediment depth):

Sample Date: 10/17/10 Sample Time: 1453

Sample Collected By:

Sample Observations (color, texture, odor, etc)

Overall: \_\_\_\_\_

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER

Analysis (all): TAL Metals<sup>1</sup> PAH (34 List)<sup>1</sup> PCB Aroclor<sup>1</sup> TPH DRO<sup>2</sup>  
TPH ORO<sup>2</sup> Mercury<sup>1</sup> Tri-butyl tin<sup>2</sup> Grain Size<sup>2</sup>  
TCL Pesticides<sup>1</sup> PAH (17 List) AVS/SEM<sup>1</sup> TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44.397184'N 92°05.655540'W

Other Comments: Only getting native soil-eliminating location

**Field Data Collection Form**  
**H. St. Louis Bay**  
**Duluth, St. Louis County, Minnesota**

**Sample Location ID:** HB-23

**Water Depth:** 3.25' **Total Core Recovery (sediment depth):** ~~PONAR~~ 36'

**Sample Date:** 10/17/10 **Sample Time:** 15:10

**Sample Collected By:** T. Walls

**Sample Observations (color, texture, odor, etc)**

**Overall:** Silt w/ sand; dark brown; no odor; saturated

**0 to 0.5 foot:** silt w/ tr sand; dark brown; no odor; saturated

**0.5 to 1 feet:** Silt w/ tr sand; dark brown; no odor; damp

**1 to 3 feet:** silt w/ tr sand; wood chunks; dark brown damp

**3 to 5 feet:** \_\_\_\_\_

**5 to 7 feet:** \_\_\_\_\_

**Sample Type:** PONAR      VIBRACORE      ~~OTHER~~ Handpulled

**Analysis (all):** ~~TAL Metals~~<sup>1</sup>      ~~PAH (17 List)~~<sup>1</sup>      ~~PCB aroclor~~<sup>1</sup>      ~~TPH/DRO~~<sup>2</sup>

~~TPH/DRO~~<sup>2</sup>      ~~TOC~~<sup>2</sup>      ~~Grain Size~~<sup>2</sup>      ~~% Moisture~~<sup>1</sup>

**Analysis (10%):** ~~TCL Pesticides~~<sup>1</sup>      ~~TCL SVOCs~~<sup>1</sup>      ~~Dioxins~~<sup>1</sup>      ~~PCB congeners~~<sup>1</sup>

PAH (34 List)<sup>1</sup>      Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES / NO      HB10-1-23-0607

**Photos:** YES / NO      \_\_\_\_\_

**Coordinates same as projected:** YES / NO      \_\_\_\_\_

**If no - new coordinates:** 46° 44' 407N      92° 05' 592

**Other Comments:** \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-24

Water Depth: ~~10-17~~ 60" Total Core Recovery (sediment depth): 42"

Sample Date: 10-19-70 Sample Time: \_\_\_\_\_

Sample Collected By: T. Wallis

Sample Observations (color, texture, odor, etc)

Overall: Silt - black, v. soft, v. moist, pet. odor, organics toward bottom  
 0 to 0.5 foot: Silt - black, v. soft, v. moist, pet. odor.  
 0.5 to 1 feet: Silt - black, w-soft, v. moist, pet-odor, m.g. sand seen @ 20"  
 1 to 3 feet: sandy silt, black, v. soft, v. moist, pet. odor, some m.g. sand, trace organics  
 3 to <sup>42"</sup> feet: As above.  
 5 to 7 feet: \_\_\_\_\_

<u>Sample Type:</u>	<input checked="" type="radio"/> PONAR	<input checked="" type="radio"/> VIBRACORE	<input type="radio"/> OTHER
<u>Analysis (all):</u>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES /  NO \_\_\_\_\_

Photos:  YES / NO \_\_\_\_\_

Coordinates same as projected:  YES / NO \_\_\_\_\_

If no - new coordinates: \_\_\_\_\_

Other Comments: \_\_\_\_\_

\_\_\_\_\_

**Field Data Collection Form**  
**Howard's Bay**  
**Superior, Douglas County, Wisconsin**

**Sample Location ID:** HB-25

**Water Depth:** 13.0' **Total Core Recovery (sediment depth):** \_\_\_\_\_

**Sample Date:** 10/17/10 **Sample Time:** 1501

**Sample Collected By:** \_\_\_\_\_

**Sample Observations (color, texture, odor, etc)**

Overall: \_\_\_\_\_

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

<b>Sample Type:</b>	<u>PONAR</u>	VIBRACORE	OTHER
<b>Analysis (all):</b>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES /  NO \_\_\_\_\_

**Photos:** YES /  NO \_\_\_\_\_

**Coordinates same as projected:** YES /  NO \_\_\_\_\_

**If no - new coordinates:** 46°44.359986'N 92°05.67176'W

**Other Comments:** No core recovery



Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-26

Water Depth: 3.0' Total Core Recovery (sediment depth): 17"

Sample Date: 10/16/10 Sample Time: 0906

Sample Collected By: T. Walls

Sample Observations (color, texture, odor, etc)

Overall: Fine sand w/ silt, dark brown, saturated, no odor, slightly mottled

0 to <sup>17"</sup>0.5 foot: Same as above

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER  
Analysis (all): TAL Metals<sup>1</sup> PAH (34 List)<sup>1</sup> PCB Aroclor<sup>1</sup> TPH DRO<sup>2</sup>  
TPH ORO<sup>2</sup> Mercury<sup>1</sup> Tri-butyl tin<sup>2</sup> Grain Size<sup>2</sup>  
TCL Pesticides<sup>1</sup> PAH (17 List) AVS/SEM<sup>1</sup> TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: \_\_\_\_\_

Other Comments: \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: H18-27

Water Depth: 6' 02" Total Core Recovery (sediment depth): 34"

Sample Date: 10-18-10 Sample Time: 1105

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: Red modeling clay; no odor; natural; wet

0 to 0.5 foot: Red modeling clay; no odor; natural; wet

0.5 to 1 feet: Red modeling clay; no odor; natural; wet

1 to 3 feet: Red modeling clay; peat mass @ 22"

3 to 5 feet: No sample taken

5 to 7 feet: \_\_\_\_\_

<u>Sample Type:</u>	<u>PONAR</u>	<u>VIBRACORE</u>	OTHER
<u>Analysis (all):</u>	<del>TAL Metals<sup>1</sup></del>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46° 44.369 528 92° 05.548368

Other Comments: \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-28

Water Depth: 13.9' Total Core Recovery (sediment depth): 105"

Sample Date: 10/17/10 Sample Time: 0958

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: Silt w/ tr sand, dark brown, saturated, faint odor  
0 to 0.5 foot: silt w/ tr sand, dark brown, faint odor, saturated  
0.5 to 1 feet: silt w/ tr sand, dark brown, faint odor, saturated  
1 to 3 feet: silt w/ tr sand, dark brown, faint odor, saturated  
3 to 5 feet: silt w/ tr sand, dark brown, faint odor, saturated  
5 to <sup>9.6"</sup> 10 feet: clayey silt w/ tr sand, dark brown, faint odor, wet

Sample Type:  PONAR  VIBRACORE  OTHER  
Analysis (all):  TAL Metals<sup>1</sup>  PAH (34 List)<sup>1</sup>  PCB Aroclor<sup>1</sup>  TPH DRO<sup>2</sup>  
 TPHORO<sup>2</sup>  Mercury<sup>1</sup>  Tri-butyl tin<sup>2</sup>  Grain Size<sup>2</sup>  
TCL Pesticides<sup>1</sup> PAH (17 List) AVS/SEM<sup>1</sup> TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES /  NO

Photos:  YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: 46°44' 29.2N, 92°05' 9.51W

Other Comments: \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-29

Water Depth: 8.3' Total Core Recovery (sediment depth): 101"

Sample Date: 10/17/10 Sample Time: 1033

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: Silt - black, soft, saturated, fine 6" is native clay - red, s. stiff, med. plastic

0 to 0.5 foot: Silt - A. U.

0.5 to 1 feet: Silt - A. U.

1 to 3 feet: Silt - A. U.

3 to ~~7~~ <sup>7</sup> feet: Silt - A. U.

~~7~~ <sup>7.5</sup> to ~~7~~ <sup>7</sup> feet: Clay - red, s. stiff, moist, med. plasticity.

<u>Sample Type:</u>	<u>PONAR</u>	<u>VIBRACORE</u>	OTHER
<u>Analysis (all):</u>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44' 28"N, 92°05' 70"W

Other Comments: \_\_\_\_\_



**Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin**

**Sample Location ID:** HB-30  
**Water Depth:** 2' 10" **Total Core Recovery (sediment depth):** 80"  
**Sample Date:** 10/18/10 **Sample Time:** 0950  
**Sample Collected By:** T. Walls

**Sample Observations (color, texture, odor, etc)**

**Overall:** silt w/ tr sand; faint odor; organics; dark brown; wet  
**0 to 0.5 foot:** Sandy silt; dark brown; faint odor; saturated  
**0.5 to 1 feet:** sandy silt; dark brown; faint odor; wet  
**1 to 3 feet:** silt w/ tr sand; faint odor; organics; dark brown  
**3 to 5 feet:** silt w/ tr sand; faint odor; organics; dark brown  
**5 to <sup>77"</sup> feet:** silt w/ tr sand; faint odor; organics; dark brown; #

**Sample Type:**  PONAR  VIBRACORE  OTHER  
**Analysis (all):**  TAL Metals<sup>1</sup>  PAH (34 List)<sup>1</sup>  PCB Aroclor<sup>1</sup>  TPH DRO<sup>2</sup>  
 TPH ORO<sup>3</sup>  Mercury<sup>1</sup>  Tri-butyl tin<sup>2</sup>  Grain Size<sup>2</sup>  
 TCL Pesticides<sup>1</sup>  PAH (17 List)  AVS/SEM<sup>1</sup>  TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES /  NO  
**Photos:**  YES / NO  
**Coordinates same as projected:** YES / NO  
**If no - new coordinates:** 46° 44' 32.5541 92° 05' 64.3979

**Other Comments:** \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-31

Water Depth: 24' 08" Total Core Recovery (sediment depth): 41" 36"

Sample Date: 10-18-10 Sample Time: 1025

Sample Collected By: T. Walls

Sample Observations (color, texture, odor, etc)

Overall: Silt w/ tr sand and organics; dark brown; saturated  
0 to 0.5 foot: silt w/ tr sand and organics; dark brown; saturated  
0.5 to 1 feet: silt w/ tr sand and organics; dark brown; saturated  
1 to 3 feet: silt and sand and organics; dark brown; saturated  
red clay large.  
3 to 5 feet: \_\_\_\_\_  
5 to 7 feet: \_\_\_\_\_

<u>Sample Type:</u>	<u>PONAR</u>	<u>VIBRACORE</u>	OTHER
<u>Analysis (all):</u>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46° 44.338479 92.05.589555

Other Comments: \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-32

Water Depth: 21' 11" Total Core Recovery (sediment depth): 6"

Sample Date: 10/18/10 Sample Time: 1415

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: \_\_\_\_\_

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

<u>Sample Type:</u>	<u>PONAR 0-6"</u>	VIBRACORE	OTHER
<u>Analysis (all):</u>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44.3365'N 92°05.504525'W

Other Comments: dressed bottom/too hard for vibracore, paper

Sample only

**Field Data Collection Form**  
**St. Louis Bay**  
**Duluth, St. Louis County, Minnesota**

**Sample Location ID:** HR-33

**Water Depth:** 2' **Total Core Recovery (sediment depth):** 22"

**Sample Date:** 10-18-2010 **Sample Time:** 0855

**Sample Collected By:** Tim Walls

**Sample Observations (color, texture, odor, etc)**

Overall: Silt w/ tr sand; dark brown; tr. organics; slight odor  
 0 to 0.5 foot: Silt w/ tr sand; dark brown; tr. organics; slight odor  
 0.5 to 1 feet: Silt w/ tr sand; dark brown; tr. organics; slight odor  
 1 to ~~2~~<sup>22"</sup> feet: Silt w/ tr sand; dark brown; tr. organics; slight odor  
 3 to 5 feet: \_\_\_\_\_  
 5 to 7 feet: \_\_\_\_\_

**Sample Type:** PONAR VIBRACORE OTHER *Hand drive*  
**Analysis (all):** TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclors<sup>1</sup> TPH/DRO<sup>2</sup>  
PHORO<sup>2</sup> TOC<sup>3</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>  
**Analysis (10%):** TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>  
PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES / NO \_\_\_\_\_

**Photos:** YES / NO \_\_\_\_\_

**Coordinates same as projected:** YES / NO \_\_\_\_\_

**If no - new coordinates:** \_\_\_\_\_

**Other Comments:** \_\_\_\_\_  
 \_\_\_\_\_



Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-34

Water Depth: 27' 4" Total Core Recovery (sediment depth): 14"

Sample Date: 10/18/10 Sample Time: 1442

Sample Collected By: T. Wall

Sample Observations (color, texture, odor, etc)

Overall: Red natru clay; no odor; damp

0 to 0.5 foot: fine silt; saturated; tr sand; damp; no odor

0.5 to 1 feet: Red natru clay; modeling; no odor; damp

1 to 3 feet: No core sample

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR 0-6" VIBRACORE OTHER

Analysis (all): TAL Metals<sup>1</sup> PAH (34 List)<sup>1</sup> PCB Aroclor<sup>1</sup> TPH DRO<sup>2</sup>

TPH ORO<sup>2</sup> Mercury<sup>1</sup> Tri-butyl tin<sup>2</sup> Grain Size<sup>2</sup>

TCL Pesticides<sup>1</sup> PAH (17 List) AVS/SEM<sup>1</sup> TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO 71810-1-43 06150

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44.286777'N 92°05.451011'W

Other Comments: \_\_\_\_\_

**Field Data Collection Form**  
**H. St. Louis Bay**  
**Duluth, St. Louis County, Minnesota**

**Sample Location ID:** HB-35

**Water Depth:** 2' **Total Core Recovery (sediment depth):** \_\_\_\_\_

**Sample Date:** 10-18-2010 **Sample Time:** 0908

**Sample Collected By:** Tim Walls

**Sample Observations (color, texture, odor, etc)**

Overall: Fine sand; dark brown; strong odor; wet  
 0 to 0.5 foot: Fine sand; dark brown; strong odor; wet  
 0.5 to 1 feet: Fine sand; dark brown; strong odor; wet  
 1 to 3 feet: Fine sand; dark brown; strong odor; wet  
 3 to 5 feet: \_\_\_\_\_  
 5 to 7 feet: \_\_\_\_\_

**Sample Type:** PONAR VIBRACORE OTHER Hand drive

**Analysis (all):** TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB aroclor<sup>1</sup> TPH DRO<sup>2</sup>  
TPH ORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

**Analysis (10%):** TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>  
PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES / ~~NO~~ \_\_\_\_\_

**Photos:** YES / NO \_\_\_\_\_

**Coordinates same as projected:** YES / NO \_\_\_\_\_

**If no - new coordinates:** \_\_\_\_\_

**Other Comments:** \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-36

Water Depth: 29'10" Total Core Recovery (sediment depth): 6"

Sample Date: 10/18/10 Sample Time: 1516

Sample Collected By: \_\_\_\_\_

Sample Observations (color, texture, odor, etc)

Overall: \_\_\_\_\_

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR 0-6" VIBRACORE OTHER

Analysis (all): TAL Metals<sup>1</sup> PAH (34 List)<sup>1</sup> PCB Aroclor<sup>1</sup> TPH DRO<sup>2</sup>

TPH ORO<sup>2</sup> Mercury<sup>1</sup> Tri-butyl tin<sup>2</sup> Grain Size<sup>2</sup>

TCL Pesticides<sup>1</sup> PAH (17 List) AVS/SEM<sup>1</sup> TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: 46°44.240142'N 92°05.392977'W

Other Comments: Dressed bottom/unable to collect core sample,

Ponar only

Field Data Collection Form  
H. St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-37

Water Depth: 1' Total Core Recovery (sediment depth): 28"

Sample Date: 10-18-2010 Sample Time: 0922

Sample Collected By: Tim Walls

Sample Observations (color, texture, odor, etc)

Overall: Fine sand; dark brown; wet; faint odor

0 to 0.5 foot: Fine sand; dark brown; saturated; faint odor

0.5 to 1 feet: Fine sand; dark brown; saturated; faint odor

1 to <sup>23"</sup> feet: Fine sand w/ oysters, black banding; dark brown; faint odor

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER Hand drive

Analysis (all): TAL Metals<sup>1</sup> PAH (17 List)<sup>1</sup> PCB arochlor TPH DRO<sup>2</sup>

TPH ORO<sup>2</sup> TOC<sup>2</sup> Grain Size<sup>2</sup> % Moisture<sup>1</sup>

Analysis (10%): TCL Pesticides<sup>1</sup> TCL SVOCs<sup>1</sup> Dioxins<sup>1</sup> PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup> Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / ~~NO~~ \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: N 5236015.728 E -346783.180

Other Comments: \_\_\_\_\_





Field Data Collection Form  
H. St. Louis Bay  
Duluth, St. Louis County, Minnesota

Sample Location ID: HB-39

Water Depth: 1.5' Total Core Recovery (sediment depth): \_\_\_\_\_

Sample Date: 10-18-2010 Sample Time: 0939

Sample Collected By: Tim Walls

Sample Observations (color, texture, odor, etc)

Overall: Clayey silt w/ tr sand; reddish; ~~tr~~ organic; wet

0 to 0.5 foot: F → medium sand; dark brown; faint odor; scattered

0.5 to 1 feet: Clayey silt w/ tr sand; reddish color; faint odor; wet

1 to 3 feet: clayey silt w/ tr sand, reddish color; faint odor; damp

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type:  PONAR  VIBRACORE  OTHER Handdrive

Analysis (all):  TAL Metals<sup>1</sup>  PAH (17 List)<sup>1</sup>  PCB aroclor  TPH DRO<sup>2</sup>

TPHORO<sup>2</sup>  TOC<sup>2</sup>  Grain Size<sup>2</sup>  % Moisture<sup>1</sup>

Analysis (10%):  TCL Pesticides<sup>1</sup>  TCL SVOCs<sup>1</sup>  Dioxins<sup>1</sup>  PCB congeners<sup>1</sup>

PAH (34 List)<sup>1</sup>  Black Carbon<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES /  NO \_\_\_\_\_

Photos:  YES /  NO \_\_\_\_\_

Coordinates same as projected:  YES /  NO \_\_\_\_\_

If no – new coordinates: \_\_\_\_\_

Other Comments: \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HR-40

Water Depth: 12' 10" Total Core Recovery (sediment depth): 53"

Sample Date: 10/18/10 Sample Time: 1645

Sample Collected By: T. Wallis

Sample Observations (color, texture, odor, etc)

Overall: Silt w/ tr sand; dark brown; faint odor; wet

0 to 0.5 foot: silt w/ tr sand; dark brown; faint odor; wet

0.5 to 1 feet: silt w/ tr sand; dark brown; faint odor; wet

1 to 3 feet: silt w/ tr sand; dark brown; faint odor; wet

3 to <sup>4.9"</sup> 4 feet: silt w/ tr sand; dark brown; faint odor; wet

5 to 7 feet: \_\_\_\_\_

Sample Type:  PONAR 0-6"  VIBRACORE  OTHER

Analysis (all):  TAL Metals<sup>1</sup>  PAH (34 List)<sup>1</sup>  PCB Aroclor<sup>1</sup>  TPH DRO<sup>2</sup>

TPH ORO<sup>2</sup>  Mercury<sup>1</sup>  Tri-butyl tin<sup>2</sup>  Grain Size<sup>2</sup>

TCL Pesticides<sup>1</sup>  PAH (17 List)  AVS/SEM<sup>1</sup>  TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES /  NO

Photos:  YES / NO

Coordinates same as projected: YES /  NO

If no - new coordinates: 46°44.157640'N 92°05.190185'W

Other Comments: \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-41

Water Depth: 8' Total Core Recovery (sediment depth): \_\_\_\_\_

Sample Date: 10-18-2010 Sample Time: 1630

Sample Collected By: Tim Walls

Sample Observations (color, texture, odor, etc)

Overall: \_\_\_\_\_

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

<u>Sample Type:</u>	<u>PONAR</u>	<u>VIBRACORE</u>	OTHER
<u>Analysis (all):</u>	TAL Metals <sup>1</sup>	PAH (34 List) <sup>1</sup>	PCB Aroclor <sup>1</sup> TPH DRO <sup>2</sup>
	TPH ORO <sup>2</sup>	Mercury <sup>1</sup>	Tri-butyl tin <sup>2</sup> Grain Size <sup>2</sup>
	TCL Pesticides <sup>1</sup>	PAH (17 List)	AVS/SEM <sup>1</sup> TOC <sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO \_\_\_\_\_

Photos: YES / NO \_\_\_\_\_

Coordinates same as projected: YES / NO \_\_\_\_\_

If no - new coordinates: \_\_\_\_\_

Other Comments: \_\_\_\_\_

\_\_\_\_\_



**Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin**

**Sample Location ID:** HB-42

**Water Depth:** 5' **Total Core Recovery (sediment depth):** \_\_\_\_\_

**Sample Date:** 10-18-2010 **Sample Time:** 1128

**Sample Collected By:** Tim Walls

**Sample Observations (color, texture, odor, etc)**

Overall: Sandy silt w/ trace organics; dark gray, strong odor; saturated  
 0 to 0.5 foot: Sandy silt w/ tr organics; dark gray; strong odor; saturated  
 0.5 to 1 feet: Sandy silt w/ tr organics; dark gray; strong odor; saturated  
 1 to <sup>30"</sup> 2 feet: F → Medium sand; tr organics; dark brown; strong odor; saturated  
 3 to 5 feet: \_\_\_\_\_  
 5 to 7 feet: \_\_\_\_\_

<b>Sample Type:</b>	<u>PONAR</u>	<u>VIBRACORE</u>	OTHER
<b>Analysis (all):</b>	<u>CAL Metals<sup>1</sup></u>	<u>PAH (34 List)<sup>1</sup></u>	<u>RGB Aroclor<sup>1</sup></u> <u>TPH DRO<sup>2</sup></u>
	<u>TPH ORO<sup>2</sup></u>	<u>Mercury<sup>1</sup></u>	<u>Tri-butyl tin<sup>2</sup></u> <u>Grain Size<sup>2</sup></u>
	<u>TCL Pesticides<sup>1</sup></u>	<u>PAH (17 List)</u>	<u>AVS/SEM<sup>1</sup></u> <u>TOC<sup>2</sup></u>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

**Field duplicate/replicate:** YES / NO

**Photos:** YES / NO

**Coordinates same as projected:** YES / NO

**If no - new coordinates:** \_\_\_\_\_

**Other Comments:** \_\_\_\_\_

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HOB-43

Water Depth: 3.5' Total Core Recovery (sediment depth): Ponar Only

Sample Date: 10/17/10 Sample Time: 0915

Sample Collected By: T. Waller

Sample Observations (color, texture, odor, etc)

Overall: Sandy silt; dark brown, saturated; no odor

0 to 0.5 foot: \_\_\_\_\_

0.5 to 1 feet: \_\_\_\_\_

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type:

PONAR

VIBRACORE

OTHER

Analysis (all):

TAL Metals<sup>1</sup>

PAH (34 List)<sup>1</sup>

PCB Aroclor<sup>1</sup> TPH DRO<sup>2</sup>

TPH ORO<sup>2</sup>

Mercury<sup>1</sup>

Tri-butyl tin<sup>2</sup> Grain Size<sup>2</sup>

TCL Pesticides<sup>1</sup>

PAH (17 List)

AVS/SEM<sup>1</sup> TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate:

YES / NO

Photos:

YES / NO

Coordinates same as projected:

YES / NO

If no - new coordinates:

Other Comments:

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-44

Water Depth: 12.8' Total Core Recovery (sediment depth): \_\_\_\_\_

Sample Date: 10-18-10 Sample Time: 1158

Sample Collected By: TIM WALLS

Sample Observations (color, texture, odor, etc)

Overall: Sandy silt, dark brown, no odor, saturated

0 to 0.5 foot: Sandy silt, dark brown, no odor, saturated

0.5 to <sup>16"</sup> feet: Sandy silt, dark brown, no odor, saturated

1 to 3 feet: \_\_\_\_\_

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type: PONAR VIBRACORE OTHER \_\_\_\_\_  
Analysis (all): TAL Metals<sup>1</sup> PAH (34 List)<sup>1</sup> PCB Arochlor TPH DRO<sup>2</sup>  
TPH ORO<sup>2</sup> Mercury<sup>1</sup> Tri-butyl tin<sup>2</sup> Grain Size<sup>2</sup>  
TCL Pesticides PAH (17 List) AVS/SEM<sup>1</sup> TQC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES / NO

Photos: YES / NO

Coordinates same as projected: YES / NO

If no - new coordinates: N 5235742.373 E -346638.314

Other Comments: NO GPS COORDINATIONS AVAILABLE

Also sheen observed after pulling up core.

Field Data Collection Form  
Howard's Bay  
Superior, Douglas County, Wisconsin

Sample Location ID: HB-45

Water Depth: 12' Total Core Recovery (sediment depth): 19"

Sample Date: 10-18-2010 Sample Time: 1539

Sample Collected By: Tim Walls

Sample Observations (color, texture, odor, etc)

Overall: Sandy silt; black; sheen; strong odor;

0 to 0.5 foot: Sandy silt; black; sheen; strong odor;

0.5 to 1 feet: Sandy silt; black; sheen; strong odor;

1 to <sup>19"</sup>~~3~~ feet: Sandy silt; black; sheen; strong odor; for organics

3 to 5 feet: \_\_\_\_\_

5 to 7 feet: \_\_\_\_\_

Sample Type:  PONAR  VIBRACORE  OTHER  
Analysis (all):  TAL Metals<sup>1</sup>  PAH (34 List)<sup>1</sup>  PCB Aroclor<sup>1</sup>  TPH DRO<sup>2</sup>  
 TPHORO<sup>2</sup>  Mercury<sup>1</sup>  Tri-butyl tin<sup>2</sup>  Grain Size<sup>2</sup>  
 PCL Pesticides<sup>1</sup>  PAH (17 List)  AVS/SEM<sup>1</sup>  TOC<sup>2</sup>

<sup>1</sup>CLP Lab

<sup>2</sup>WESTON Procured Lab

Field duplicate/replicate: YES /  NO \_\_\_\_\_

Photos:  YES / NO \_\_\_\_\_

Coordinates same as projected:  YES / NO \_\_\_\_\_

If no - new coordinates: \_\_\_\_\_

Other Comments: Sheen was observed at this location





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, Flory **Sampling Method:** Vibracore  
**Weather:** Cloudy, sunny **Logged by:** JM, PV  
**Sample ID:** HB13-01 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-01	11:27	11'8"	7'0"	6'2"	10'0"

Depth (feet)	Description	PID
0-7	silt, trace clay, grey-brown, poorly sorted, non-plastic, very soft, wet	
7-9	silt with wood, trace clay, grey-brown, poorly sorted, non-plastic, very soft, wet	
9-21	silt and trace sand, grey-brown, poorly sorted, low plasticity, very soft, wet	
21-23	silt with little sand and organics, grey brown, poorly sorted, medium plasticity, very soft, wet	
23-30	silt with little sand, grey brown, poorly sorted, medium-plasticity, very soft, wet	
30-45	clay, grey-brown, poorly sorted, high-plasticity, soft, wet	
45-46	coarse sand with trace silt, brown, poorly sorted, loose, wet	
46-68	clay with little sand, brown-grey, poorly sorted, high-plasticity, very soft, wet	
68-69	gravel sand, silt with wood, grey-brown, well sorted, dense, wet	
69-74	silty sand with organics, grey-brown, poorly sorted, high plasticity, soft, wet, wood at 72"	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Bottom was "squishy" when taking water depth. 88% recovery.



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09092013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, rainy **Logged by:** JM, PV  
**Sample ID:** HB13-02 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-02	1033	3'2"	4'2"	4'2"	NA

Depth (inches)	Description	PID
0-6	sandy clay (CL), greyish brown, medium plasticity, soft, wet, poorly sorted	
6-12	sandy clay (CL), greyish brown, medium plasticity, soft, wet, poorly sorted; wood at 10"	
12-18		
18-24		
24-30	clay with little sand (CL), greyish brown, high plasticity, soft, wet, poorly sorted; trace woodchips	
30-36		
36-42		
42-48	wood chip layer 1" thick 36-37"; clay with little sand (CL) and wood organics, greyish brown, high plasticity, soft, wet, poorly sorted	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge = 9.0'



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09092013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, rainy **Logged by:** JM, PV  
**Sample ID:** HB13-03 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-03	1105	16'3"	NA	4'3"	NA

Depth (inches)	Description	PID
0-10	silt with little sand (ML); greenish brown, poorly sorted, non-plastic, wet, very soft	
10-12		
12-18		
18-24	silt with little sand (ML); greenish brown, poorly sorted, low plasticity, wet, very soft; 12-18" layer has paint chips (?)	
24-30		
30-36		
36-46	silt with little sand, trace clay, organics with wood, greenish brown, poorly sorted, low plasticity, wet, very soft	
46-51	clay (CL), reddish brown, poorly sorted, high plasticity, wet, stiff	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge 9' at 10:49



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09092013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, rainy **Logged by:** JM, PV  
**Sample ID:** HB13-04 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-04	12:05	16'0"	NA	3'8"	NA

Depth (inches)	Description	PID
0-32	silt, trace sand, greenish brown, poorly sorted, nonplastic, very soft, wet	
32-38	sandy silt, greenish brown, poorly sorted, low plasticity, very soft, wet	
38-42	sandy silt, greenish brown, poorly sorted, med. plasticity, very soft, wet	
42-44	sand with some silt, brown, poorly sorted, medium plasticity, firm, moist	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** staff gauge 9' at 10:49





# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09092013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, rainy **Logged by:** JM, PV  
**Sample ID:** HB13-05 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-05	14:52	25'9"	NA	6'5"	NA

Depth (inches)	Description	PID
0-6		
6-12	silt with little sand, greenish brown, poorly sorted, nonplastic very soft, wet	
12-18		
18-24		
24-30		
30-36	silt with trace sand, greenish brown, poorly sorted, low plasticity, very soft, wet; 0.5" lens of wood chips from 51-51.5"; 56-62" interval - odor	
36-42		
42-48		
48-54	silt with little sand, greenish brown, poorly sorted, medium plasticity very soft, wet	
54-60		
60-65		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge 8.64' at 13:45



## SAMPLE COLLECTION FIELD LOG

<b>Project Title:</b>	Fraser Shipyards	<b>Sampling Date:</b>	09092013
<b>Project #:</b>	CI001796.0001	<b>Sample Matrix:</b>	Sediment
<b>Field Personnel:</b>	P Viana, J Mayo, S Inman, E Endsley	<b>Sampling Method:</b>	Vibracore
<b>Weather:</b>	Cloudy, rainy	<b>Logged by:</b>	JM, PV
<b>Sample ID:</b>	HB13-06	<b>Latitude:</b>	
		<b>Longitude:</b>	

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-06	15:27	20'1"	NA	4'6"	NA

Depth (inches)	Description	PID
0-6		
6-12	sandy silt, greenish brown, poorly sorted, non-plastic, very soft, wet	
12-18		
18-24		
24-30	silt with some sand, greenish brown, poorly sorted, medium plasticity soft, wet	
30-36		
36-42	silt with some sand, greenish brown, poorly sorted, medium plasticity very soft, wet; organics	
42-48	silt with clay, little sand, organics, mixed material grading into reddish brown native clay; firm; medium plasticity	
48-54	native clay, reddish brown, firm, high plasticity, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** Staff gauge 8.64' at 13:45



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09092013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, rainy **Logged by:** JM, PV  
**Sample ID:** HB13-07 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-07	16:02	14'9"	4.0	48"	

Depth (inches)	Description	PID
0-7	silty sand, greenish brown, poorly sorted, low plasticity, soft, wet; wood debris present  sandy silt, greenish brown, poorly sorted, medium plasticity, soft, wet  silt with some sand, greenish brown, poorly sorted, medium plasticity, soft, wet  clay with some silt, trace sand, red grey, poorly sorted, high plasticity, soft, wet  silty sand, greenish brown, poorly sorted, medium plasticity, firm, wet	
7-12		
12-18		
18-20		
20-24		
24-30		
30-36		
36-42		
42-48		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge 8.64' at 13:45



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, F Olson **Sampling Method:** Vibracore  
**Weather:** Cloudy, sunny **Logged by:** JM, PV  
**Sample ID:** HB13-08 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-08	13:46	26'6"	8'5"	92"	10'0"

Depth (inches)	Description	PID
0-22	silt with little sand, grey-brown, poor sorted, non-plastic, very soft, wet	
22-30	silt with little sand and trace organics, grey-brown, poor sorted, low plasticity, very soft, wet	
30-32	silt with little sand, grey-brown, poor sorted, non-plastic, very soft, wet	
32-50	silt with little sand and trace organics, grey-brown, poor sorted, low plasticity, very soft, wet	
50-58	silt with little sand, grey-brown, poor sorted, medium plasticity, soft, wet, odor	
58-60	medium grain sand with trace silt, grey-brown, medium dense, wet	
60-76	sandy silt, grey-brown, poorly sorted, medium plasticity very soft, wet	
76-84	clay, grey, poorly sorted, high plasticity, firm, wet	
84-92	fine sand, brownish-gray, very dense, moist, poorly sorted	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 89% recovery





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, sunny **Logged by:** JM, PV  
**Sample ID:** HB13-09 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-09	14:22	21'2"	6"	0	7'6"

Depth (inches)	Description	PID
	Core tube hit native clay at surface. Petite ponar used. No sediment observed at this location. Location abandoned.	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** \_\_\_\_\_



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-10 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-10	8:14	20'6"	2'0"	1'10"	7'6"

Depth (inches)	Description	PID
0-6 6-12 12-18 18-22	native clay, reddish brown, poorly sorted, high plasticity, very stiff, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 91% recovery



## SAMPLE COLLECTION FIELD LOG

<b>Project Title:</b>	Fraser Shipyards	<b>Sampling Date:</b>	09112013
<b>Project #:</b>	CI001796.0001	<b>Sample Matrix:</b>	Sediment
<b>Field Personnel:</b>	P Viana, J Mayo, S Inman, Flory	<b>Sampling Method:</b>	Vibracore
<b>Weather:</b>	Cloudy, sunny	<b>Logged by:</b>	JM, PV
<b>Sample ID:</b>	HB13-11A	<b>Latitude:</b>	
		<b>Longitude:</b>	

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-11A	10:58	26'7"	6' 0"	60"	7'6"

Depth (inches)	Description	PID
0-6	silt with some sand, grey-brown, wet, poorly sorted, non-plastic, very soft	
6-12	silt with some sand, grey-brown, wet, poorly sorted, non-plastic, with some gravel and wood, very soft, shells	
12-15	gravel with silt and trace sand, grey-brown, wet, poorly sorted, non-plastic, very soft	
15-20	clay and some silt with trace sand, grey-brown, non-sorted, high plasticity, wet, very soft	
20-31	silt with some sand, grey-brown, poorly sorted, non-plastic, wet, very soft	
31-32	silty sand and trace organics, grey brown, poorly sorted, low plasticity, very soft, wet	
32-36	silt with some sand, grey-brown, poorly sorted, non-plastic, wet, very soft	
36-37	silty sand and trace organics, grey brown, poorly sorted, low plasticity, very soft, wet	
37-39	silt with some sand, grey-brown, poorly sorted, non-plastic, wet, very soft	
39-41	gravel with silt and trace sand, grey-brown, wet, poorly sorted, non-plastic, very soft	
41-44	silt with some sand, grey-brown, poorly sorted, non-plastic, wet, very soft	
44-49	clay and some silt with trace sand, grey-brown, non sorted, high plasticity, wet, very soft	
49-54	native red clay, reddish brown, poorly sorted, high plasticity, firm	
54-60	medium grain sand, grey-brown, very dense, moist, poorly sorted,	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** 85% recovery



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-12B **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-12B	9:23	5'3"	1'6"	1'5"	7'6"

Depth (inches)	Description	PID
0-6	silty sand, grey brown, poorly sorted, non-plastic, firm, wet  clay, reddish brown, poorly sorted, high plasticity, firm, wet	
6-12		
12-17		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 93% recovery





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, sunny **Logged by:** JM, PV  
**Sample ID:** HB13-13 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-13	14:55	29'8"	5'0"	42"	7'6"

Depth (inches)	Description	PID
0-1	silt with little sand, woodchips, brown, poorly sorted, non-plastic, very soft, wet  clay, reddish-brown, poorly sorted, high-plasticity, firm, wet	
1-42		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge 8.64' at 13:45. 72% recovery.



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-14 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-14	11:11	29'1"	4'6"	3'10"	7'6"

Depth (inches)	Description	PID
0-6	clay with gravel and little sand, brown, poorly sorted, medium plasticity, soft, wet	
6-8	native red clay, reddish brown, poorly sorted, high plasticity, hard, wet	
8-18	clay with trace sand and organics, greyish brown, medium plasticity, soft, wet	
18-26		
26-30	silty sand with organics, grey brown, poorly sorted, medium plasticity, soft, wet; odor at 33-35"	
30-36		
36-42	sand with trace silt, greyish brown, poorly sorted, medium plasticity, soft, wet	
42-46		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** 88% recovery; sounding felt firm when testing depth



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-15A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-15A	10:48	26'11"	2'0"	1'7"	7'6"

Depth (inches)	Description	PID
0-6 6-12 12-19	silt with little sand, organics, grey brown, poorly sorted, nonplastic, very soft, wet; gravel from 1-3 inches	

**Additional Notes:**  
**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 92% recovery



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-16A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-16A	8:40	26'11"	3'3"	3'0"	7'6"

Depth (inches)	Description	PID
0-6	silt with little sand, with chunks (gravel size pieces) of red native clay mixed in, brown, poorly sorted, nonplastic, very soft, wet	
6-12		
12-18	silt with little sand, with higher percentage of (50%) chunks of red native clay mixed in, brown, poorly sorted, nonplastic, very soft, wet	
18-26		
26-36	native clay, reddish brown, poorly sorted, high plasticity, firm, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** Staff gauge 8.64' at 13:45; 93% recovery





# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-17 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-17	9:41	27'3"	4'6"	3'11"	10'0"

Depth (inches)	Description	PID
0-6		
6-12		
12-18	silt with trace sand, grey brown, poorly sorted, nonplastic, very soft, wet	
18-24		
24-32		
32-38		
38-42	clay with some silt, reddish brown, poorly sorted, high plasticity, soft, wet	
42-47		
	silt and little sand, organics, brown, poorly sorted, medium plasticity, soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 90% recovery, oil sheen noted when pulling core



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-18 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-18	7:56	24'3"	3'0"	1'10"	7'6"

Depth (inches)	Description	PID
0-5	silt with little sand, brown grey, shells, gravel, wood, poorly sorted, very soft, wet, nonplastic	
5-10		
10-22		
	silt with little sand, grey brown, poorly sorted, very soft, wet	
	native clay, reddish brown, poorly sorted, high plasticity, hard, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge 8.64' at 13:45; 75% recovery; sheen in mud and at surface



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, rainy **Logged by:** JM, PV  
**Sample ID:** HB13-19 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-19	1550	3'11"	6'0"	70"	10'0"

Depth (inches)	Description	PID
0-26	clay with little sand, grey brown, poorly sorted, high plasticity, soft, wet.	
26-27	organics(wood) with silt, black and brown, non-plastic, very soft, wet	
27-39	clay , grey grading to red brown, poorly sorted, high plasticity, soft, wet	
39-49	clay with organics, grey, poorly sorted, high plasticity, soft, wet	
49-61	Organics with silt, black, poorly sorted, non-plastic, soft, wet	
61-69	clay, black, poorly sorted, high plasticity, firm, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** 97% recovery, vibracore above water=more penetration, 10' core used. Woody organic layer at 49" with gleyed clay beneath



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy, rainy **Logged by:** JM, PV  
**Sample ID:** HB13-20 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-20	9:05	25'5"	5'0"	4'4"	7'6"

S

Depth (inches)	Description	PID
0-6	silt with trace sand, grey brown, poorly sorted, nonplastic, very soft, wet; coarse gravel in top two inches	
6-12		
12-18	silt with trace sand and chunks of native clay (6-9"), grey brown, poorly sorted, nonplastic, very soft, wet	
18-20		
20-24		
30-36		
36-42	silt with trace sand and chunks of native clay, grey brown, poorly sorted, nonplastic, very soft, wet	
42-48		
48-52		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** Staff gauge 8.56'at 9:09; 87% recovery; soundings showed soft bottom





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-21 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-21	1520	3'3"	7'0"	88"	10'

Depth (inches)	Description	PID
0-2	sandy silt, grey brown, poorly sorted, very soft, low plasticity, wet	
2-32	clay with trace sand, grey brown, poorly sorted, high plasticity, soft, wet	
32-36	silt with organics(wood), brown, poorly sorted, non plastic, soft, wet	
36-57	clay with organics and trace sand, grey brown, poorly sorted, medium plasticity, soft, wet.	
57-88	sand with some gravel, brown, poorly sorted, non-plastic, firm, wet.	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** acore motor was above water level because of 10'core since the weight was not bouyan



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-22 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-22	10:13	25'5"	2'6"	2'7"	7'6"

Depth (inches)	Description	PID
0-6	Silt with little sand, grey brown, poorly sorted nonplastic, very soft wet; cobble near surface	
6-12		
12-18	Silt with some coarse sand and gravel, well graded, red brown, nonplastic, soft, wet	
18-24		
24-31		
	Native clay, reddish brown, poorly sorted, high plasticity, firm, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 94% recovery



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-23 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-23	14:35	28'4"	3'0"	32"	7'6"

Depth (inches)	Description	PID
0-7	silt with little sand, grey brown, poorly sorted, non-plastic, very soft, wet clay, little sand, grey brown, poorly sorted, non-plastic, very soft, wet. Wood at 24" clay, red brown, poorly sorted, high plasticity, hard, wet	
7-27		
27-32		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 94% recovery



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-24 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-24A	1605	18'7"	3'0"	26"	7'6"

Depth (inches)	Description	PID
0-4	silt with some sand and organics, grey brown, poorly sorted, nonplastic, very soft, wet	
4-6	silt with trace sand and organics, grey brown, poorly sorted, low plasticity, very soft, wet	
6-12	silty sand, oranics, grey brown, poorly sorted, medium plasticity, very soft, wet	
12-18	silt with little sand, grey brown, poorly sorted, medium plasticity, very soft, wet	
18-22	silty sand, organics, grey brown, poorly sorted, medium plasticity, very soft, wet	
22-24	organics with silt, grey brown, poorly sorted, low plasticity, very soft, wet	
24-26	sandy silt, grey brown, poorly sorted, medium plasticity, very soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** 75% recovery; oil sheen observed



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Clear skies, 70's **Logged by:** JM, PV  
**Sample ID:** HB13-25 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-25	1501	17'4"	5'6"	57"	7'6"

Depth (inches)	Description	PID
0-36	silt with little sand, grey brown, poorly sorted, medium plasticity, very soft, wet	
36-47	clay, trace sand, organics, brown, poorly sorted, high plasticity, soft, wet	
47-48	organics with clay, brown, poorly sorted, high plasticity, soft, wet	
48-57	clay, trace sand, organics, brown, poorly sorted, high plasticity, soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 86% recovery





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Clear skies, 70's **Logged by:** JM, PV  
**Sample ID:** HB13-26 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-26	1624	27'0"	3'3"	37"	7'6"

Depth (inches)	Description	PID
0-24	silt with some sand trace gravel, grey brown, poorly sorted, non-plastic, very soft, wet	
24-28	silt with little sand, grey brown, poorly sorted, medium plasticity, very soft, wet	
28-33	silty sand, organics, grey brown, poorly sorted, loose, wet, odor noticed	

**Additional Notes:**  
**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 94.8% recovery, sheen noted when pulling core



**SAMPLE COLLECTION FIELD LOG**

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-27A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-27A	0829	19'11"	2-3'	2'8"	7'6"

Depth (inches)	Description	PID
0-26	clay, red brown, poorly sorted, high plasticity, firm, wet	
26-32	clay with trace sand, organics, brown, high plasticity, soft, wet.	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Penetration depth unknown due to tipping. Sheen noted in sediment when capping core table.  
 \_\_\_\_\_



**SAMPLE COLLECTION FIELD LOG**

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Clear skies, 40"s **Logged by:** JM, PV  
**Sample ID:** HB13-28 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-28	1559	27'3"	see note	43"	7'6"

Depth (inches)	Description	PID
0-14	silt with some sand, grey-brown, poorly sorted, non plastic, very soft, wet	
14-20	sandy silt, grey brown, poorly sorted, non-plastic, very soft, wet	
20-40	silt with little sand, grey brown, poorly sorted, low plasticity, very soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Core tube tipped & could not determine the % recovery



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Clear skies, 40"s **Logged by:** JM, PV  
**Sample ID:** HB13-29 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-29	1652	28'4"	4'0"	44"	7'6"

Depth (inches)	Description	PID
0-5	silt with some sand, grey-brown, poorly sorted, non-plastic, very soft, wet	
5-17	silt with little sand, grey brown, poorly sorted, low plasticity, very soft, wet	
17-22	silt with little sand, grey brown, poorly sorted, medium plasticity, very soft, wet	
22-44	silty sand, brown, poorly sorted, medium plasticity, very soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** 87.5% recovery, site shifted 30'due to a dolphin being in the original location.



## SAMPLE COLLECTION FIELD LOG

<b>Project Title:</b>	Fraser Shipyards	<b>Sampling Date:</b>	09102013
<b>Project #:</b>	CI001796.0001	<b>Sample Matrix:</b>	Sediment
<b>Field Personnel:</b>	P Viana, J Mayo, S Inman, E Endsley	<b>Sampling Method:</b>	Vibracore
<b>Weather:</b>	Sunny	<b>Logged by:</b>	JM, PV
<b>Sample ID:</b>	HB13-30	<b>Latitude:</b>	
		<b>Longitude:</b>	

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-30	16:43	25'0"	7'6"	6'6"	7'6"

Depth (inches)	Description	PID
0-6		
6-12	silt with trace sand, greyish brown, poorly sorted, very soft, nonplastic, wet	
12-18		
18-24		
24-30		
30-36	silt with trace sand, greyish brown, poorly sorted, very soft, low plasticity, wet	
36-42		
42-48		
48-56	sandy silt, greyish brown, poorly sorted, very soft, low plasticity, wet	
56-60		
60-62		
62-78	native clay, reddish brown, high plasticity, poorly sorted, firm, wet	
	clay with some silt and trace sand, greyish brown, poorly sorted, medium plasticity, soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** 87% recovery





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-31 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-31	858	28'3"	4'0"	3'5"	7'6"

Depth (inches)	Description	PID
0-12	silt with trace sand, grey brown, poorly sorted, non-plastic, very soft, wet.	
12-24	silt with little sand, grey brown, poorly sorted, non-plastic, very soft, wet	
24-27	clay with trace sand, grey brown, poorly sorted, medium plasticity, soft, wet.	
27-41	clay , red brown, poorly sorted, high plasticity, hard, wet.	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_

**Comments:** 91.6% recovery, bridge interfered with the horizontal accuracy- station is immediately upstream of the dolphin (30ft). Sheen noticed at sediment surface.



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny, 60's **Logged by:** JM, PV  
**Sample ID:** HB13-32 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-32	0927	28'9"	4'6"	3'6"	7'6"

Depth (inches)	Description	PID
0-5	silt with little sand, grey brown, poorly sorted, non-plastic, very soft, wet	
5-13	silt with little sand, grey brown, poorly sorted, non-plastic, soft, wet	
13-18	silt with little sand, grey brown, poorly sorted, low plasticity, soft, wet	
18-26	sandy silt trace organics, grey brown, poorly sorted, low plasticity, soft, wet	
26-38	clay, red brown, poorly sorted, high plasticity, hard, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Recovery 77%



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-33B **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-33B	1109	32'9"	1'6"	12"	7'6"

Depth (inches)	Description	PID
0-1	gravel (angular) and silt, brown, poorly sorted, loose, wet	
1-2	clay with trace sand, grey brown, poorly sorted, medium plasticity, soft, wet	
2-3	sand, brown, poorly sorted, loose, wet	
3-12	clay with trace sand, grey brown, poorly sorted, medium plasticity, soft, wet	
12	wood at very bottom	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 66% recovery on HB13-33B. 33&33A. Poor recovery. Woody Debris.



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-34A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-34A	1031	34'4"	9"	7"	7'6"

Depth (inches)	Description	PID
0-0.5	silt with little sand, grey brown, poorly sorted, non-plastic, very soft, wet	
0.5-7	clay, red brown, poorly sorted, high plasticity, hard, wet	

**Additional Notes:**

Top depth interval: \_\_\_\_\_

Bottom depth interval: \_\_\_\_\_

Sample IDs for analysis: \_\_\_\_\_

Sample IDs on hold: \_\_\_\_\_

Constituents Sampled: \_\_\_\_\_

Photos: \_\_\_\_\_

Comments: Hard refusal at 6" on HB13-34(0%). HB13-34A had 77% recovery



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-35A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-35A	1147	30'6"	1'6"	1'4"	10'0"

Depth (inches)	Description	PID
0-0.5"	gravel and coal and shells	
0.5-3	clay, red brown, poorly sorted, high plasticity, very hard, moist	
3-4	fine to coarse gravel and taconite, medium dense, moist	
4-18	clay, red brown, poorly sorted, high plasticity, very hard, moist	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 88% recovery on HB13-35A.





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-36 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-36	14:06	29'8"			

Depth (inches)	Description	PID
	no recovery with vibracore, tried three locations; grab sample (<1 quart); gravel	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** \_\_\_\_\_



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-37A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-37A	15:09	29'8"	1'6"	6"	7.5'

Depth (inches)	Description	PID
0-2	well-graded sub-angular gravel with silt, grey brown, nonplastic, soft, wet	
2-6	silt with some sand, trace organics, grey brown, poorly graded, nonplastic, very soft, wet	

**Additional Notes:**

Top depth interval: \_\_\_\_\_

Bottom depth interval: \_\_\_\_\_

Sample IDs for analysis: \_\_\_\_\_

Sample IDs on hold: \_\_\_\_\_

Constituents Sampled: \_\_\_\_\_

Photos: \_\_\_\_\_

Comments: Recovery 40%. Core kept at this location. Third attempt had 0% recovery



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-38A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-38A	16:36	17'0"	1'0"	6"	7'6"

Depth (inches)	Description	PID
0-4	sandy silt, grey-brown, poorly sorted, non-plastic, very soft, wet	
4-6	sandy silt and organics, grey-brown, poorly sorted, medium plasticity, very soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 75% recovery



## SAMPLE COLLECTION FIELD LOG

<b>Project Title:</b>	Fraser Shipyards	<b>Sampling Date:</b>	09132013
<b>Project #:</b>	CI001796.0001	<b>Sample Matrix:</b>	Sediment
<b>Field Personnel:</b>	P Viana, J Mayo, S Inman, E Endsley	<b>Sampling Method:</b>	Vibracore
<b>Weather:</b>	Sunny	<b>Logged by:</b>	JM, PV
<b>Sample ID:</b>	HB13-39	<b>Latitude:</b>	
		<b>Longitude:</b>	

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-39	1420	16'9"	5'0"	42"	5'0"

Depth (inches)	Description	PID
0-4	coarse gravel with some silt trace sand some slag, brown, medium dense, wet, well sorted	
4-6	sand with little silt, grey brown, loose, wet, poorly sorted	
6-14	clay with trace sand and organics, grey brown, poorly sorted, high plasticity, soft, wet	
14-21	clay with trace sand, grey brown, poorly sorted, high plasticity, soft, wet	
21-24	clay with trace sand and organics, grey brown, poorly sorted, high plasticity, soft, wet	
24-28	silty sand, grey brown poorly sorted, non-plastic, very soft, wet	
28-34	clay, red brown, poorly sorted, high plasticity, firm, wet	
34-42	sand with organics and trace fine gravel, brown, dense, moist	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_

**Bottom depth interval:** \_\_\_\_\_

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Constituents Sampled:** \_\_\_\_\_

**Photos:** \_\_\_\_\_

**Comments:** sheen observed



**SAMPLE COLLECTION FIELD LOG**

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-40 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-40	1447	18'5"	7'6"	84"	7'6"

Depth (inches)	Description	PID
0-4	sandy silt with trace organics, grey brown, poorly sorted, non-plastic, very soft, wet	
4-10	sandy silt with some gravel and trace organics, grey brown, poorly sorted, non-plastic, very soft, wet	
10-24	silt with some sand, grey brown, poorly sorted, low plasticity, very soft, wet	
24-35	clay with some silt, trace organics, grey brown, poorly sorted, medium plasticity, very soft, wet	
35-36	1" hard asphalt puck with metal ring	
36-40	clay with some silt and little gravel and trace organics, grey brown with black streaks, poorly sorted, medium plasticity, soft, wet, odor	
40-49	clay with little sand and trace organics, grey brown, poorly sorted, medium plasticity, soft, wet	
49-59	clay with trace sand, grey brown, poorly sorted, high plasticity, soft, wet	
59-68	silty sand with trace organics, grey brown, poorly sorted, medium plasticity, soft, wet	
68-86	clay with wood, grey brown, poorly sorted, high plasticity, soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Moved closer to east wall, 93% recovery, asphalt/metal ring at 36", odor under 36"





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-41 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-41A	155	19'6"	3'0"	29"	10'0"

Depth (inches)	Description	PID
0-6		
6-12		
12-18	silt with trace sand, grey-brown, poorly sorted, non-plastic, very soft, wet; 0-11" wood debris; debris (wood? Coal?) and light bulb fragment+B35	
18-26		
26-29	silt with trace sand, grey-brown, poorly sorted, low plasticity, very soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 77% recovery



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-42 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-42	8:58	15'6"	4'6"	3'0"	7'6"

Depth (inches)	Description	PID
0-8	silt with little sand, greenish gray, poorly sorted, non plastic, very soft, wet	
8-10	sub-angular gravel, well sorted, little sand and little silt and organics, grey,	
10-17	clay, with some silt, little sand, grey, very soft, wet, low plasticity	
17-19	sub-angular gravel, well sorted, little sand and little silt and organics, grey,	
19-23	gravel with clay, grey, very soft, wet, low plasticity	
23-33	clay, with some silt, little sand, grey, very soft, wet, low plasticity; wood debris	
33-36	native clay, reddish brown, poorly sorted, high plasticity, firm, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 72% recovery



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-43 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-43	8:36	4'6"	2'0"	2'0"	7'6"

Depth (inches)	Description	PID
0-5	sand with some silt and trace pebbles, brown, poorly sorted, nonplastic, firm, wet	
5-11	clay with little silt, trace sand, organics grey, poorly sorted, high plasticity, soft, wet	
11-23	silty coarse sand with trace gravel, grey, poorly sorted, nonplastic, medium dense, wet	
23-24	clay with trace sand, organics, grey, poorly sorted, high plasticity, firm, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Recovery 100%



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-44 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-44	1400	31'8"	none	none	

Depth (inches)	Description	PID
	Core not collected, no recovery.	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** core not collected, no recovery



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-45 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-45	8:07	14'11"	2'0"	1'9"	10'0"

Depth (inches)	Description	PID
0-6		
6-12	silt with trace sand, greenish gray, poorly sorted, nonplastic, very soft, wet	
12-15		
15-19	silt with some sand and organics (wood chips), greenish grey, poorly sorted, nonplastic, very soft, wet	
19-21	streaks of native clay on tube; silt with some sand, greenish gray, poorly sorted, high plasticity, very soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge 8.78 at 8:11; slight sheen observed on the water





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-46 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-46	10:14	16'10"	none	0'	

Depth (inches)	Description	PID
	gravel and concrete debris found. No recovery. Location abandoned after three attempts.	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Staff gauge 8.78 at 8:11; slight sheen on the water



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-47A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-47A	10:32	10'9"	6'	3'11"	7'6"

Depth (inches)	Description	PID
0-6	silt with some sand, green brown, poorly sorted, non-plastic, very soft, wet; wood debris and odor	
6-12		
12-18	silt with some sand, green brown, poorly sorted, non-plastic, very soft, wet; wood debris at 15", odor, piece of plastic wrapper	
18-24		
24-31	silt with some sand, green brown, poorly sorted, non-plastic, very soft, wet;	
31-36		
36-42	native clay, reddish brown, poorly sorted, firm, wet, high plasticity; rag/debris noted on bottom of core while core was being removed	
42-47		

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Moderate sheen noted when coring; odor when core was opened; 65% recovery



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Partly cloudy **Logged by:** JM, PV  
**Sample ID:** HB13-48B **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-48B	11:41	13'3"	5'0"	3'10"	7'6"

Depth (inches)	Description	PID
0-6	silt with little sand and little gravel, greenish grey, poorly sorted, nonplastic, very soft, wet	
6-12		
12-18	silt with little sand, greenish grey, poorly sorted, nonplastic, very soft, wet; odor; coal (?) fragment; wood chips at 15"	
18-24		
24-30		
30-36	silt with little sand, greenish grey, poorly sorted, nonplastic, very soft, wet; slight odor	
36-42		
42-46	clay with trace sand and organics, green brown, poorly sorted, medium plasticity, soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 76% recovery; corrected water depth; sheen observed while coring



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09112013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-49A **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-49A	9:40	14'2"	3'6"	2'6"	7'6"

Depth (inches)	Description	PID
0-6		
6-12	silt with little sand, grey brown, poorly sorted, very soft, nonplastic, wet	
12-17		
17-23	silt with little sand little gravel and organics, grey brown, poorly sorted, nonplastic, very soft, wet; 19-23" very minor odor	
23-30	silt with trace sand, grey brown, poorly sorted, low plasticity, very soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 100% recovery



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09132013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-50 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-50	07:52	23' 11"	4'0"	3'11"	7'6"

Depth (inches)	Description	PID
0-21	silt, trace sand, grey brown, poorly sorted, low plasticity, very soft, wet	
21-24	sand trace silt, brown, poorly sorted, very loose, moist	
24-32	sandy silt, grey-brown, poorly sorted, medium plasticity, very soft, wet	
32-47	silt little sand, grey brown, poorly sorted, medium plasticity, very soft, wet.	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** Recovery 95.8%





### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Hand core  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-51 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-51	17:45	2'2"	NA	1'3"	NA

Depth (inches)	Description	PID
0-4	sand with little silt, dark brown, poorly sorted, loose, wet	
4-11	clay with trace sand, greenish grey, poorly sorted, high plasticity, soft, wet; wood chip layer at 9"	
11-15	clay with some silt, organics (wood, fibers), brown, poorly sorted, medium plasticity, soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** WDNR handcore, offset from location HB13-02



### SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09102013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Hand core  
**Weather:** Sunny **Logged by:** JM, PV  
**Sample ID:** HB13-52 **Latitude:**                      **Longitude:**                     

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-52	18:00	2'6"	NA	1'5"	NA

Depth (inches)	Description	PID
0-2	sandy silt, grey brown, poorly sorted, non plastic very soft, wet	
2-7	silt with little sand, grey brown, poorly sorted, low plasticity, very soft, wet	
7-9	clay with trace sand, reddish brown, poorly sorted, high plasticity, soft, wet; debris (wood chips and slag(?)) at 9"	
9-17	clay with some organics (peaty), reddish brown, poorly sorted, high plasticity, soft, wet; lots wood debris at 14-17"	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** WDNR hand core; near locations HB13-19 and HB13-21

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.99      **Gauge Reading Time:** 8:48  
**Water Depth ftLWD (calc)** 29.11      **Logged by:** EE, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	845	31.0	30	20	67%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-01	46.74164	-92.09727	571.99		08/18/2014	1903
Depth (inches)		Description				Sketch
0 - 4		Clay w/trace silt, coarse sand, brown, poorly sorted, low plasticity, very soft wet				
4 - 13		clay w/silt and trace sand, 1/2" to 1" diameter clay nodules of red clay throughout interval, wood chips at 11", poorly sorted, medium plasticity, stiff, wet				
13 - 17		Clayey sand, medium, nodules of red clay, poorly sorted, low plasticity, stiff, wet				
17 - 20		fine to medium sand, brown, well sorted, no plasticity, dense, wet				

**Additional Notes:** Recovery changed from 19 to 20 inches after splitting core tube  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observations** Vibracore may have tipped slightly

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.99      **Gauge Reading Time:** 918  
**Water Depth ftLWD (calc)** 28.86      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	920	30.75	24	17	71%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-02	46.74227	-92.09840	572.24		08/18/2014	1315
Depth (inches)		Description				Sketch
0 - 6		Very soft clay with some silt, dark brown, medium plasticity, wet, well sorted				
6 - 14		Clay with trace silt, dark brown, medium plasticity, soft, wet, well sorted				
14 - 19		Reddish brown native clay, high plasticity, wet, medium stiff, well sorted				

**Additional Notes:**

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** One gallon plastic bag - 14 - 19" Native clay

**Picture #s and SWIMS ID:** \_\_\_\_\_

**Observations** Slight sheen, dark clay sticking out bottom of core tube

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.05      **Gauge Reading Time:** 948  
**Water Depth ftLWD (calc)** 27.88      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	945	29.83	60	55	92%	5
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-03	46.74250	-92.09896	573.22		08/18/2014	1346
Depth (inches)		Description				Sketch
0 - 12		Clay with trace silt, trace sand, dark brown, very soft, poorly sorted, low plasticity, wet. Coal at 12 inches.				
12 - 23		Silty clay w/trace sand, brown, very soft, low plasticity, poorly sorted, wet. Stick at 16 inches.				
23 - 30		Clayey sand, brown, poorly sorted, low plasticity.				
30 - 39		Medium - coarse sand, reddish brown, loose, medium sorted, wet.				
39 - 50		Clay, reddish brown, soft, high plasticity, well sorted, wet. Small wood chunks at 49 inches.				
50 - 60		Clay, reddish brown, soft, high plasticity, well sorted, wet, 1/2" to 1" tan clay nodules with gleying, 1/4 to 2" wood chunks.				

**Additional Notes:** 54 - 60" Interval not sampled, Native clay not encountered  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observations** Clay sticking out end of core tube



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.03      **Gauge Reading Time:** 1012  
**Water Depth ftLWD (calc)** 27.57      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1010	29.50	42	35	83%	5
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-04	46.74274	-92.09972	573.53		08/18/2014	1524
Depth (inches)		Description				Sketch
0 - 10		Clay w/fine sand and silt, brown, low plasticity, very soft, wet, well sorted, 0-3"				
10 - 30		Clay with silt, brown, medium plasticity, soft, wet, well sorted				
30 - 37		Native clay, reddish brown, high plasticity, medium stiff, well sorted, wet.				

**Additional Notes:**

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** Did not save native clay for sample

**Picture #s and SWIMS ID:** \_\_\_\_\_

**Observations:** Clay plug on bottom of cor tube, red clay visible on core cather. Supernatent very turbid- grey.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Ponar Grab  
**NOAA Gauge (ft)** 602.95      **Gauge Reading Time:** 1048  
**Water Depth ftLWD (calc)** 29.65      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1100	31.50	0	0	GRAB	10/5/grab
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-05	46.74313	-92.10012	571.45		08/18/2014	1605
Depth (inches)		Description				Sketch
Grab sample		Silty clay, brown, lumps of native clay, nonplastic, very soft, wet, poorly sorted.				

**Additional Notes:** Attempted vibracore with 10' and 5' core tubes, no recovery.  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observations:** Collected grab with Ponar dredge. About 25% full - estimated cut depth-2-inches.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.86      **Gauge Reading Time:** 1124  
**Water Depth ftLWD (calc)** 29.57      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1125	31.33	24	22	92%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-06	46.74283	-92.10017	571.53		08/18/2014	1625
Depth (inches)		Description				Sketch
0 - 3		Clay with trace silt, brown with black organics, well sorted, low plasticity, soft , wet				
3 - 8		Clay with trace silt, brown, well sortyed, low plasticity, soft, wet.				
8 - 15		Clay with trace silt, brown, medium sorted, low plasticity, soft, wet. Woody debris at 10-11", Mussel shell at 13"				
15 - 19		Very fine sand w/some silt, grey brown, medium sorting, nonplastic, dense, wet.				
19 - 22		Silt, grey brown, well sorted, nonplastic, dense, wet.				
22 - 24		Silt, reddish brown, well sorted, nonplastic, very dense, wet.				

**Additional Notes:**

**Sample IDs for analysis:** \_\_\_\_\_

**Sample IDs on hold:** \_\_\_\_\_

**Picture #s and SWIMS ID:** \_\_\_\_\_

**Observation:** Hard release - resistnace to pulliung out tube, clay plug at bottom of tube. Water "clear" above

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.98      **Gauge Reading Time:** 1142  
**Water Depth ftLWD (calc)** 16.20      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1140	18.08	48	39	81%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-07	46.74275	-92.10031	584.90		08/18/2014	1720
Depth (inches)		Description				Sketch
0 - 3		Clay w/some silt and trace fine sand, brown, poorly sorted, low plasticity, very soft, wet.				
3 - 12		Clay w/some silt and trace fine sand, brown, poorly sorted, medium plasticity, soft, wet.				
12 - 25		Silty clay, brown, poorly sorted, medium plasticity, soft, wet. Small black nodules throughout.				
25 - 32		Clay w/trace silt, brown, well sorted, high plasticity, medium stiff, wet.				
32 - 42		Clay w/some sand & silt, reddish brown, poorly sorted, high plasticity, medium stiff, wet. Woody debris throughout				

**Additional Notes:** Clay plug at bottom of core  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observation:** Steep slope, sounding tape bounced from 16 to 18'. Depth rechecked after coring.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.00      **Gauge Reading Time:** 1354  
**Water Depth ftLWD (calc)** 17.36      **Logged by:** EE, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1350	19.25	24	19	79%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-08	46.74246	-92.09976	583.75		08/19/2014	1300
Depth (inches)		Description				Sketch
0 - 9		Clay w/some sand & silt, dark brown, poorly sorted, medium plasticity, soft, wet				
9 - 14		Clay w/silt & trace sand, brown, poorly sorted, medium plasticity, soft, wet.				
14 - 19		Clay w/silt, reddish brown w/smears of red clay, poorly sorted, high plasticity, medium stiff, wet. Minor woody debris (1/4 to 1/2 inch pieces) 18 - 19"				

**Additional Notes:** Recovery changed from 18 to 19 inches after splitting core tube  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observations** Sheen, Red clay visible at core catcher



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment      **Sheet 1 of 2**  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.00      **Gauge Reading Time:** 1418  
**Water Depth ftLWD (calc)** 10.02      **Logged by:** EE, JRG, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1417	11.92	93	82	88%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-09	46.74301	-92.09833	591.08		08/19/2014	1335
Depth (inches)		Description				Sketch
0 - 1		Clay w/silt-tarce sand, brown, poorly sorted, low plasticity, very soft, wet				
1 - 3		Fine sand w/clay and silt, brown, poorly sorted, low plasticity, soft, wet.				
3 - 5		Sandy clay, brown, poorly sorted, low plasticity, soft, wet.				
5 - 6		Fine-medium sand with clay & silt, brown, poorly sorted, low plasticity, soft, wet.				
6 - 10		Clay w/silt and trace sand, brown, poorly sorted, medium plasticity, wet, soft.				
10 - 26		Clay w/silt and trace sand, brown, poorly sorted, medium plasticity, med. 11" - woody debris.				
26 - 38		Sandy clay w/silt, brown, poorly sorted, medium plasticity, soft, wet.				
38 - 51		Clay w/silt and trace fine sand, coarse sand lenses at 48", dark brown, poorly sorted, high plasticity, stiff, wet. Abundant organics - peat and wood chunks.				
51 - 59		Clay w/ silt and trace fine sand with ~1" clay nodules, dark brown, poorly sorted, high plasticity, stiff, wet.				
59 - 60		Layer of coarse wood.				
Continued on Sheet 2 of 2						

**Additional Notes:** Recovery changed from 80 to 82 inches after splitting core tube. Seems like buried wetland  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** (72-82) hold in jelly jar  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observations** Sheen

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment      **Sheet 2 of 2**  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.00      **Gauge Reading Time:** 1418  
**Water Depth ftLWD (calc)** 10.02      **Logged by:** EE, JRG, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1417	11.92	93	82	88%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-09	46.74301	-92.09833	591.08		08/19/2014	1335
Depth (inches)		Description				Sketch
Continued from Sheet 1 of 2						
60 - 67		Sandy clay, brown, poorly sorted, low plasticity, medium stiff, wet. Abundant organic material, peat, wood.				
67 - 70		Clay w/silt, brown, poorly sorted, high plasticity, medium stiff, Wet. Abundant fibrous organic material.				
70 - 71		Coarse sand, light brown, poorly sorted, nonplastic, dense wet.				
71 - 82		Clay w/ silt & trace sand, brown, poorly sorted, high plasticity, medium stiff, wet. Fibrous organics throughout.				

**Additional Notes:** Recovery changed from 80 to 82 inches after splitting core tube. Seems like buried wetland  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** (72-82) hold in jelly jar  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observations** Sheen

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment      **Sheet 1 of 2**  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.90      **Gauge Reading Time:** 1448  
**Water Depth ftLWD (calc)** 14.37      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1447	16.17	120	102	85%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-10	46.74226	-92.09715	586.73		08/20/2014	1635
Depth (inches)		Description				Sketch
0 - 5		Clay w/silt, dark brown, poorly sorted, low plasticity, very soft, wet. Strong manure smell on top layer.				
5 - 14		Clay w/silt and trace sand, brown, medium plasticity, poorly sorted, soft wet. Dark brown clay nodules.				
14 - 25		Clay w/silt, brown, poorly sorted, medium plasticity, soft, wet. Piece of coal.				
25 - 35		Clay w/silt, brown poorly sorted, low plasticity, very soft, wet.				
35 - 36		Layer of debris: chunk of wood, glass, slag. Clay matrix similar to intervals above and below.				
36 - 47		Clay w/silt & trace sand, brown, poorly sorted, medium plasticity, soft, wet. Abundant chunks of debris: wood, slag, fibrous organics, petroleum odor.				
47 - 50		Clay w/sand, brown, poorly sorted, medium plasticity, soft, wet.				
50 - 54		Medium sand w/trace silt, reddish brown, medium sorting, nonplastic, loose, wet.				
54 - 55		Clay w/silt, dark brown, poorly sorted, medium plasticity, soft, wet.				
55 - 59		Clay w/trace silt, dark brown, fibrous organic material, poorly sorted, low plasticity, medium stiff, wet.				
Continued on Sheet 2 of 2						

**Additional Notes:** Recovery changed from 100 to 102 inches after splitting core tube.  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** Not sampled below 66" - firm dense silt  
**Observations** No refusal at 10'. Sheen visible when washing down tube.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment      **Sheet 2 of 2**  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.90      **Gauge Reading Time:** 1448  
**Water Depth ftLWD (calc)** 14.37      **Logged by:** EE, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1447	16.17	120	102	85%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-10	46.74226	-92.09715	586.73		08/20/2014	1635
Depth (inches)		Description				Sketch
Continued from Sheet 1 of 2						
59 - 61		Sand w/trace clay & silt, reddish brown, poorly sorted, nonplastic, medium dense, wet.				
61 - 93		Silt w/trace clay, greyish brown, well sorted, nonplastic, stiff, wet. Nodule of organic debris at 64".				
93 - 102		Silt, light grey-brown, well sorted, nonplastic, very stiff, wet. Nodule of organic debris at 101".				

**Additional Notes:** Recovery changed from 100 to 102 inches after splitting core tube.  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** Not sampled below 66" - firm dense silt  
**Observations** No refusal at 10'. Sheen visible when washing down tube.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.92      **Gauge Reading Time:** 1536  
**Water Depth ftLWD (calc)** 27.51      **Logged by:** EE, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1535	29.33	24	18	75%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-11	46.74107	-92.09635	573.59		08/19/2014	1515
Depth (inches)		Description				Sketch
0 - 5		Sandy clay w/some silt, greyish-brown, poorly sorted, low plasticity, very soft, wet. Slight odor. Wood chucks at 4".				
5 - 9		Clayey sand w/some silt, brown, poorly sorted, low plasticity, soft, wet.				
9 - 13		Clayey sand w/silt, brown w/streaks of reddish-yellow sandy clay, poorly sorted, medium plasticity, medium stiff, wet. Slat at 12", sparse chunks of reddish clay.				
13 - 18		Silty clay, brown w/nodules/smears of reddish clay, poorly sorted, high plasticity, stiff, wet.				
18 - 20		Goopy silty clay w/trace sand, brown w/reddish steaks, poorly sorted, medium plasticity, very soft, very wet. Small 1/4 inch wood chucks.				

**Additional Notes:** Recovery changed from 20 to 18 inches after splitting core tube.  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observations** Seen, clay on outside of tube.



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.60      **Gauge Reading Time:** 1600  
**Water Depth ftLWD (calc)** 27.00      **Logged by:** EE, MS, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1601	29.50	54	43	80%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-12	46.73947	-92.09361	574.10		08/19/2014	1545
Depth (inches)		Description				Sketch
0 - 13		Silty clay, brown, poorly sorted, medium plasticity, very soft, wet. Macroinvertebrate found at 1-2".				
13 - 22		Silty clay w/trace sand, brown, poorly sorted, medium plasticity, soft. Small coal fragment at 15", sticks and debris at 16".				
22 - 26		Silty clay w/trace sand, brown, poorly sorted, medium plasticity, soft wet.				
26 - 32		Silty clay w/trace sand, brown, poorly sorted, medium plasticity, soft, wet. Slag at 30".				
32 - 46		Native red clay, reddish brown, well sorted, high plasticity, stiff, wet.				

**Additional Notes:** Native clay elevation ~ 571 ft MSL (JRG), Sediemnt surface is 27' LWD  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** (32-46) Bagged native clay plug, (0-2) Mayfly [Hexagenia]  
**Picture #s and SWIMS ID:** \_\_\_\_\_  
**Observation:** Sheen upon wash down of core tube. Clay plug at bottom, photo of red clay in hand.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.17      **Gauge Reading Time:** 1630  
**Water Depth ftLWD (calc)** 28.60      **Logged by:** EE, JRG, MS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1631	30.67	48	29	60%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-13	46.73751	-92.08989	572.50		08/19/2014	1650
Depth (inches)		Description				Sketch
0 - 3		Clay reddish-brown, well sorted, high plasticity, stiff, wet. Derbis: ceramic, slag.				
3 - 11		Clay native, reddish brown, well sorted, high plasticity, very stiff, wet.				
11 - 19		Very fine sand, brown, well sorted, no plasticity, very dense, moist. Native material.				
19 - 29		Very fine sand, light brown, well sorted, no plasticity, very dense, moist. Native material.				

**Additional Notes:** Recovery changed from 27 to 29 inches after splitting core tube.  
**Sample IDs for analysis:** (0-6) (6-11)  
**Sample IDs on hold:** (11-29)  
**Picture #s and SWIMS ID:** Unusual red clay over sand, top of core is 28.6' LWD  
**Observations** Hard release, needed to turn on vibracore to unstick tube. Water in tube red clay

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment      **Sheet 1 of 2**  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.08      **Gauge Reading Time:** 1700  
**Water Depth ftLWD (calc)** 3.94      **Logged by:** EE, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1701	5.92	120	111	93%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-14	46.73589	-92.08624	597.16		08/20/2014	1915
Depth (inches)		Description				Sketch
0 - 2		Clayey silt w/trace sand, dark brown, poorly sorted, nonplastic, verysoft, wet				
2 - 4		Fine sand w/trace silt, dark brown, poorly sorted, nonplastic, medium, wet.				
4 - 6		Clay w/silt & trace sand, dark brown, poorly sorted, medium plasticity, soft, very wet. Debris - wood fragments. Sheen & odor, NAPL pooling, photos.				
6 - 11		Silt w/trace sand & clay, brown, well sorted, low plasticity, medium, wet.				
11 - 12		1" derbis layer: coal, glass w/silty clay matrix, brown. Black smears and odor.				
12 - 17		Clay w/trace silt, brown, poorly sorted, low plasticity, very soft, wet.				
17 - 20		Fine sand w/silt & trace clay, dark brown, poorly sorted, no plasticity, medium, wet. 1/4 -1/2" debris fragments and snail shells. Horizontal black smears 18" - 30".				
20 - 31		Silty clay w/trace sand, brown, poorly sorted, medium plasticity, soft, wet.				
31 - 40		Clay w/trace silt, dark brown, well sorted, high plasticity, soft, fibrous organic root like fibers throughout. 36" - 40" Horizontal black smears.				
40 - 44		Clay w/trace silt, slight reddish brown tint, well sorted, medium plasticity, soft, wet.				
Continued on Sheet 2 of 2						

**Additional Notes:** Recovery changed from 109 to 111 inches after splitting core tube.  
Top 6" of core soft and somewhat displaced when tube placed on table

**Sample IDs on hold:** \_\_\_\_\_

**Observation:** Significant sheen rising to surface before, during, and up ten minutes after removal of core tube.  
No refusal at 10'. Photos taken of sheen. 6 -7 Snails floated to surafce when core tube pulled.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2014      **Sample Matrix:** Sediment      **Sheet 2 of 2**  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.08      **Gauge Reading Time:** 1700  
**Water Depth ftLWD (calc)** 3.94      **Logged by:** EE, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (in)	Sediment Recovered (in)	Percent Recovery	CT Length (ft)
08/18/2014	1701	5.92	120	111	93%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)		Date Processed	Time Processed (Military)
HB14-14	46.73589	-92.08624	597.16		08/20/2014	1915
Depth (inches)		Description				Sketch
44 - 48		Clay w/trace silt, reddish brown, dark organic material fragment lenses, poorly sorted, high plasticity, medium, wet.				
48 - 55		Clay w/silt & sand, brown, poorly sorted, high plasticity, medium, wet				
55 - 61		Clay w/silt, reddish brown, poorly sorted, high plasticity, medium, wet. Hoizontal black smear at 59"				
61 - 65		Silty clay, brown, pororly sorted, medium plasticity, medium stiff, wet.				
65 - 75		Clay w/trace silt, reddish brown, dark organic material fragment lenses, poorly sorted, high plasticity, medium, wet.				
75 - 84		Silty clay, brown, poorly sorted, high plasticity, soft, wet.				
84 - 91		Clay w/silt, dark brown, platy texture, poorly sorted, high plasticity, fibrous root like fragments, medium wet, odor.				
91 - 99		Clay w/silt & trace sand, brown, poorly sorted, high plasticity, soft, wet.				
99 - 106		Clay w/trace silt, brown, well sorted, high plasticity, medium stiff, wet.				
106 - 107		Distinct layer of brown slag like material 1/2" diameter @ 106" transition				
107 - 111		Fine sand w/silt, light brown, well sorted, no plasticity, dense, wet.				

**Additional Notes:** Recovery changed from 109 to 111 inches after splitting core tube.  
Top 6" of core soft and somewhat displaced when tube placed on table

**Sample IDs on hold:** \_\_\_\_\_

**Observation:** Significant sheen rising to surface before, during, and up ten minutes after removal of core tube.

No refusal at 10'. Photos taken of sheen. 6 -7 Snails floated to surafce when core tube pulled.

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.71      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 10.31      **Logged by:** CS, MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	8:35	11.92	6.50	4.67	72%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-01	46.73799	-92.09897	590.79	57	06/23/2015	11:10
Depth (inches)		Description				Sketch
0 - 12		Silty-clay w/trace sand, dark brownish grey, organics, medium plasticity, wet, solid waste, woody debris, roots, zebra mussel shells				
12 - 24		Same as above but more consistent, medium-high plasticity, some organics - plant roots				
24 - 36		Same as above - trace sand, medium high plasticity, trace organics				
36 - 48		Similar to above but more sand & more gravel towards bottom of interval				
48 - 57		Gravel & coal slag & fine sand. Red clay at bottom. Some organic material. Bottom change from gravel/sand to silt & red clay.				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-36) (36-48), (48-57)  
**Sample IDs on hold:** None  
**Photos Taken** 5 photos  
**Observations** Hb, Pb, TBT, TOC: all intervals



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.68                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 11.00                                      **Logged by:** CS/MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	9:10	12.58	4.75	3.75	79%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-02	46.73802	-92.09940	590.10	47	06/23/2015	12:00
Depth (inches)		Description				Sketch
0 - 12		Clayey silt w/trace sand, dark brown-grey, low plasticity, wet, gravel & coal slag @ 12", decayed wood. Trace organics.				
12 - 24		Same as above but gravel and wood debris throughout, less sand, coal slag.				
24 - 36		Similar to above but more reddish, more wood debris, trace of gravel near top of interval, less sand, medium plasticity				
36 - 47		More reddish, more clay with fins sand, slag & gravel right above clay, moist, wood debris & roots. Low-medium plasticity, clay beneath is high plasticity. Top silty layer w/clay rich layer at bottom. Clay has fibrous woody/root materials in it.				

**Additional Notes:**  
**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-47)  
**Sample IDs on hold:** None  
**Photos Taken** 6 photos  
**Observations** Hg, TBT, TOC, Pb: all samples

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.62      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 13.24      **Logged by:** CS, MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	9:40	14.75	6.00	5.42	90%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-03	46.73847	-92.09892	587.87	68	06/23/2015	12:50
Depth (inches)		Description				Sketch
0 - 12		0-6" silt with fine sand, dark brownish-grey, low plasticity, soft, wet. Plasticity increases 6-12". No gravel or wood debris, few mussel shells				
12 - 27		Same as above with fine sand and trace of decayed wood, fibrous, drier than above.				
27 - 29		Coarse sand & fine gravel with trace silt, more reddish,				
29 - 32		Silt with gravel and woody debris (knots), medium plasticity, becoming drier at 32" with coarse sand				
32 - 41		red clay inclusions, woody debris smaller than above.				
41 - 54		Clayey silt with sand, drier than above				
54 - 60		Silt w/gravel and coarse sand, transitioning to redder material, trace woody debris				
60 - 66		Transitions to clay w/fine sand, dark brown layer clay 60-61" w/ coarse sand & trace wood, high plasticity. Red clay w/slag & woody debris, sand & gravel very heterogeneous.				
66 - 68		Silt w/gravel & coal slag, some clay old iron bolt and large woody debris, coarse sand. More red than above, low plasticity and more stiff than above				

**Additional Notes:**

**Sample IDs for analysis:** Replicate/split core (0-12), (12-24), (24-36), (36-48), (48-60), (60-68)

**Sample IDs on hold:** \_\_\_\_\_

**Photos Taken** 6 photos

**Observations** Pb, Hg, TBT, TOC

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.74                                  **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 17.61                              **Logged by:** MW, CS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	10:08	19.25	6.00	4.92	82%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-04	46.73877	-92.09938	583.49	59	06/23/2015	13:40
Depth (inches)		Description				Sketch
0 - 3		Silty sand, dark brownish grey, low plasticity, wet				
3 - 36		Silt w/sand, dark brownish gray, more clay than above, medium plasticity, wet, woody debris & fibrous material. Transitioning to more reddish at 19". Isolated (illegible)				
36 - 47		Same as above but drier and less dense, trace roots.				
47 - 53		More sand & gravel & woody debris w/ clay & silt, larger rocks, medium plasticity				
53 - 56		Transition darker into black/dark brown silty clay with trace sand & wood debris. High plasticity				
56 - 59		sand at top to sand & gravel, dark gray to brown. Small piece of red clay at bottom				

**Additional Notes:**

**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-59)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 5 photos  
**Observations** Hb, TBT, Pb, & TOC all samples

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.84                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 14.59                                      **Logged by:** CS, MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	10:35	16.33	6.75	6.50	96%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-05	46.73874	-92.09893	586.51	80	06/23/2015	14:45
Depth (inches)		Description				Sketch
0 - 13		Silt w/fine sand & clay fragments, dark brownish gray, low plasticity, wet, coal slag				
13 - 26		same as 0 to 13" with more gravel and woody debris				
26 - 32		Silt with fine sand, dark brownish grey, drier, slightly more plastic than above, wood fragments, part of a brick. Wood 29-30" more angular gravel, a little more stiff than above				
32 - 36		More silt w/ trace of sand (coarse & fine) more reddish, dark brown-gray, medium plasticity, stiffer, drier, woody debris, tree bark.				
36 - 48		Silt with clay, more reddish, more coal fragments, brick or clay tile, slightly drier and stiffer than above, medium plasticity, woody debris at 48"				
48 - 60		Stiffer than above with more clay, angular wood fragments, drier than above, sandy (fine to coarse) poorly sorted sand. Coal. Med. to high plasticity. Woody debris.				
60 - 69		More granular sand. At 65" similar to above. Wetter gravel/sand layer until 69" then transition. Med-high plasticity. Not as dense as above. Coal and gravel				
69 - 80		Fine dense sand with little silt. Red brown, really dense.				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (49-60), (60-72), (72-80)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 7 photos  
**Observations** Pulled rivet, nut, & slag from dense sand at 72-80"

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Petite Ponar  
**NOAA Gauge (ft)** \_\_\_\_\_ **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** \_\_\_\_\_ **Logged by:** \_\_\_\_\_

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	14:45					
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-G28	46.73909	-92.09935			06/25/2015	10:00
Depth (inches)		Description				Sketch
Ponar Grab		silt w/trace sand, dark brown-grey, loose, non plastic, wet				

**Additional Notes:**

**Sample IDs for analysis:** HB15-G28: Pb, Hg, TBT, TOC  
 Grab sample from Unit 28. Unable to get GPS coordinates near grain elevator. Sample from best of 3 grab attempts 30 - 40 feet from dock wall. Grab 1 = 3rd silo from south = 1/2 full ponar, grab 2 - 7th silo = no recovery, grab 3 7th silo = no recovery. Coordinates estimated from air photo in ArcMap GIS

**Observations**

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# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum:** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft):** 602.72      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc):** 18.05      **Logged by:** MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	11:13	19.67	1.00	0.67	67%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-06	46.73958	-92.09893	583.05	9	06/23/2015	17:00
Depth (inches)		Description				Sketch
0 - 2		Fine gravel & coarse sand with silt				
2 - 9		Fine gravel & coarse sand with more silt than above. Dark brown/gray, low plasticity, not very dense, many granules, odor, couple of tree/plant roots				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-9)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken:** 1 photo  
**Observations:** TBT, TOC, Hg, Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.80                                  **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 8.55                              **Logged by:** CS, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	13:42	10.25	8.50	7.42	87%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-07	46.73796	-92.09606	592.55	91	06/23/2015	17:45
Depth (inches)		Description				Sketch
0 - 19		Organic muck with silt, dark gray, low plasticity, fibric organic matter, soft, wet. Trace of sand below 12", transition at 18-19" to stiffer with sand				
19 - 38		Same as above w/ more woody debris & clay, odor, black, fibrous w/gravel at bottom, no plasticity, soft,				
38 - 53		Soft organic much with more gravel & silt, trace fine sand, drier, low plasticity, woody debris, angular gravel, red clay nodules at 45", odor. Siltier with depth.				
53 - 84		Same as above with woody debris, odor, wood increasing and sand decreasing with depth, clay nodules at 60", increasing silt & plasticity at 72", trace angular gravel & woody debris, odor, moist, ceramic fragment, black, clay nodule at 82"				
84 - 91		Same as above with higher clay content, less woody debris, odor, moist, red clay nodule				

**Additional Notes:**

**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-60), (60-66)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 8 photos  
**Observations** Pb, Hg, TOC, PAHs

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.77                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 7.00                                      **Logged by:** \_\_\_\_\_

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	14:14	8.67	6.50	5.17	80%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-08	46.73826	-92.09631	594.10	66	06/24/2015	8:50
Depth (inches)		Description				Sketch
0 - 3		Silt w/trace sand, dark brown/grey, fine woody debris, low plasticity, very loose				
3 - 6		Clayey silt, dark brown/reddish, low plasticity, loose, trace sand				
6 - 20		Clayey silt, , dark grey, increasing clay with depth, low plasticity, loose, wet				
20 - 24		Clayey silt, dark gray/brown, organics, low plasticity, slight petroleum odor				
24 - 38		Clayey silt, dark gray brown, more clay than previous, medium plasticity, medium density, wet, trace sand, very slight petroleum odor				
38 - 52		Grey brown/red clayey silt w/some sand, less organics than above, medium plasticity, medium density, moist				
52 - 59		Grey brown to reddish sandy silt w/clay inclusions, little gravel, dense, moist, medium plasticity, slight pet odor				
59 - 66		Dark brown sandy silt, some organics, medium plasticity, very dense, moist, no pet odor				

**Additional Notes:**  
**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-60), (60-66)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 6 photos  
**Observations** Pb, Hg, TOC, PAH

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.62                                  **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 13.65                              **Logged by:** MW/JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	14:43	15.17	1.00	1.08	108%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-09	46.73887	-92.09619	587.45	17	06/24/2015	10:45
Depth (inches)		Description				Sketch
0 - 8		Dark brown/grey silt w/trace sand, little organics & wood, low plasticity, very slight pet odor				
8 - 17		Dark brown clayey silt, low plasticity, trace sand, loose wet, woody debris, reddish brown clay at very bottom or core. Very slight petroleum odor				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 2 photos  
**Observations** Pb, Hg

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.50                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 1.18                                      **Logged by:** JS/MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	15:13	2.58	2.00	1.50	75%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-10	46.73937	-92.09544	599.92	19	06/24/2015	10:10
Depth (inches)		Description				Sketch
0 - 12		Reddish brown clay with some sand & gravel, coarse gravel at surface, very dense, high plasticity				
12 - 19		Reddish brown clay, very dense, high plasticity, trace woody material				

**Additional Notes:**  
**Sample IDs for analysis:** (0-12)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 3 photos  
**Observations** Pb, Hg



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.65                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 13.37                                      **Logged by:** MW/JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	15:43	14.92	3.00	2.25	75%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-11	46.73972	-92.09604	587.73	28	06/24/2015	10:20
Depth (inches)		Description				Sketch
0 - 4		Dark brown grey silt w/ trace sand, low density, low plasticity				
4 - 8		Dark brown clayey silt w/trace sand, medium plasticity, medium dense, very slight pet odor				
8 - 9		Reddish brown clayey sand, low plasticity, medium dense				
9 - 19		Dark brown silty clay w/trace sand, dense, medium plasticity, slight petroleum odor				
19 - 23		Silty clay w/sand reddish brown trace woody material				
23 - 28		Silty clay dark brown, dense, medium plasticity, petroleum odor				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-28)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 3 photos  
**Observations** Pb, Hg

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.74                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 10.44                                      **Logged by:** MW/JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	16:16	12.08	2.75	2.33	85%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-12	46.73414	-92.08471	590.66	30	06/24/2015	10:55
Depth (inches)		Description				Sketch
0 - 8		Dark brown grey silt w/trace sand, woody material deeper, low density, low plasticity, wet				
8 - 30		Dark brown clayey silt w/trace sand, low plasticity, low density, slight petroleum odor, increasing density with depth				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-30)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 4 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.80                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 11.30                                      **Logged by:** MW/JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/23/2015	16:57	13.00	5.50	5.00	91%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-13	46.73414	-92.08493	589.80	64	06/24/2015	11:15
Depth (inches)		Description				Sketch
0 - 9		Dark brown grey silt w/trace sand, loose, low plasticity, low density, some woody material				
9 - 30		Dark brown clayey silt w/trace sand, woody debris, loose, low density & low plasticity				
30 - 34		Medium coarse sand & gravel, brown				
34 -52		Woody debris, dark brown				
52 - 54		Dark brown silty clay w/trace sand, medium density, medium plasticity				
54 - 64		Dark brown silty clay , medium density & medium plasticity				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-60), (60-64)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 6 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.77                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 14.91                                      **Logged by:** J. Killian

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	7:59	16.58	4.00	2.58	65%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-14	46.73435	-92.08508	586.19	35	06/24/2015	12:30
Depth (inches)		Description				Sketch
0 - 12		Dark brown/gray (lighter w/depth), low plasticity, loose, wet, silt with trace wood				
12 - 15		Silt w/ sand, dark brown/gray, mixed with woody fiber, low plasticity, loose				
15 - 24		Clay w/silt, woody material, dark brown/gray, chunks of wood				
24 - 28		Wet, fine pebbles with silt, alluvial				
28 - 35		Silty clay, dense, high plasticity, some varves of red clay, moist, some traces of small wood fibers				

**Additional Notes:**  
**Sample IDs for analysis:** (0-12), (12-24), (24-28), (28-35)  
**Sample IDs on hold:** Note: Segmentaion based on lithology at 24-28 and > 28"  
**Photos Taken** 3 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.71                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 8.22                                      **Logged by:** MW/JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	8:42	9.83	1.50	1.50	100%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-15	46.73421	-92.08538	592.88	19	06/24/2015	13:25
Depth (inches)		Description				Sketch
0 - 3		Dark brown grey silt w/sand & gravel, loose, wet				
3 - 19		Sandy clay w/gravel, dark brown, medium dense, medium plasticity, no odor, more sand & gravel with depth				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** Replicate/split core (0-12), (12-19)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 1 photo  
**Observations** Pb



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum:** IGLD85      **Sampling Method:** Vibracore  
**NOAA Gauge (ft):** 602.91      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc):** 10.77      **Logged by:** JS/MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	9:16	12.58	1.75	1.42	81%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-16	46.73473	-92.08539	590.33	19	06/24/2015	13:40
Depth (inches)		Description				Sketch
0 - 12		Silt, dark brown, trace sand, little woody material, loose, low plasticity				
12 - 24		Red clay, very dense, high plasticity				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-19)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken:** 1 photo  
**Observations:** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.81                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 14.13                                      **Logged by:** MW/JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	9:48	15.83	4.75	4.33	91%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-17	46.73488	-92.08591	586.98	54	06/24/2015	14:00
Depth (inches)		Description				Sketch
0 - 14		Silt, dark brown w/ little sand, loose				
14 - 34		Silty clay w/some sand & gravel, brown to reddish brown, medium density, medium plasticity				
34 - 54		Red clay & brown silty clay lenses from 37-39" & 43-45"				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-54)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 6 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.94                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 14.99                                      **Logged by:** JS/MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	10:25	16.83	2.25	1.75	78%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-18	46.73488	-92.08612	586.11	24	06/24/2015	14:25
Depth (inches)		Description				Sketch
0 - 24		Dark brown silt w/ little sand and some clay, loose to medium density, low plasticity, little wood				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 4 photos  
**Observations** Pb, TBT

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 603.58                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 13.60                                      **Logged by:** \_\_\_\_\_

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	11:02	16.08	2.75	2.58	94%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-19	46.73514	-92.08637	587.50	32	06/24/2015	14:45
Depth (inches)		Description				Sketch
0 - 8		Silt, dark brown, little sand				
8 - 16		Red clay, very dense, high plasticity				
16 - 32		Sandy clay, reddish brown, medium grab? [illegible] little silt				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-32)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 3 photos  
**Observations** Pb, TBT

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Petite Ponar  
**NOAA Gauge (ft)** 602.90                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 19.12                                      **Logged by:** \_\_\_\_\_

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	14:10	20.92	3.00	2.25	75%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-20	46.73570	-92.08631	581.98	28	06/24/2015	17:45
Depth (inches)		Description				Sketch
0 - 14		Brownish grey silt, trace sand, loose, wet, low plasticity				
14 -24		dark brownish silt w/sand (trace), woody material, medium density, medium plasticity, wet				
24 - 28		Very dense red clay, high plasticity				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-28)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 3 photos  
**Observations** \_\_\_\_\_



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Ponar  
**NOAA Gauge (ft)** N/A      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** \_\_\_\_\_      **Logged by:** JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/29/2015	15:02	N/A	0.00	0.00		N/A
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-21G	46.73721	-92.09037	NA	NA	06/29/2015	15:02
Depth (inches)		Description				Sketch
Ponar grab		Soft clay with silt, brown, loose with red clay nodules.				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** HB15-21G  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** None  
**Observations** 2 grab attempts at location 21, grab 1 ~25% full, grab 2 ~ 75% fi

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Petite Ponar  
**NOAA Gauge (ft)** N/A                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** N/A                                      **Logged by:** JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/29/2015	15:16	N/A	N/A	N/A	N/A	N/A
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-22G	46.73721	-92.09018	N/A	N/A	06/29/2015	15:16
Depth (inches)		Description				Sketch
Ponar Grab		Loose gravelly clay with trace of silt & clay nodules. Lots of debris metal, washer, taconite, nails, welding rod, slag. Sheen and small NAPL specks, black.				

**Additional Notes:**  
**Sample IDs for analysis:** HB15-22G  
**Sample IDs on hold:** 4 grab attempts at location 22. Grab 1 - 5 % full, Grab 2 - 0% open, Grab 3 - 1% full gravel open, Grab 4 - 20% full w/trace of sheen. No photos taken  
**Photos Taken**  
**Observations** Pb, TOC, PAH

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.84                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 10.26                                      **Logged by:** JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2014	8:03	12.00	5.00	4.58	92%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-23	46.73684	-92.09078	590.84	56	06/25/2015	12:30
Depth (inches)		Description				Sketch
0 - 8		Dark brown silt, trace sand, low density, low plasticity, wet				
8 - 26		Dark brown silt w/ sand & gravel, low density, low plasticity, wet				
26 -33		Dark brown silty clay, low density, low plasticity, wet				
33 - 36		Red/brown silty clay w/ some sand & gravel, medium density, medium plasticity				
36 - 39		Dark brown silty clay, low density, low plasticity, wet				
39 - 47		Silty clay, red/brown w/sand & gravel, medium density, medium plasticity, moist (rivet at 41')				
47 - 56		Red clay, very dense, high plasticity, moist (nail at 50")				

**Additional Notes:**

**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-56)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 5 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Vibracore / Ponar  
**NOAA Gauge (ft)** \_\_\_\_\_ **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** \_\_\_\_\_ **Logged by:** \_\_\_\_\_

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
N/A					#DIV/0!	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-24						
Depth (inches)		Description				Sketch
NO SAMPLE						

**Additional Notes:**

**Sample IDs for analysis:** Poling results 6/25: Front of boat hard bottom no soft sediment, \_\_\_\_\_  
**Sample IDs on hold:** side of boat - hard no soft sediment. No recovery by ponar on \_\_\_\_\_  
 6/29 \_\_\_\_\_  
**Photos Taken** \_\_\_\_\_  
**Observations** \_\_\_\_\_

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.82                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 14.61                                      **Logged by:** JS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	14:48	16.33	7.50	7.25	97%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-25	46.73532	-92.08664	586.49	88	06/24/2015	16:40
Depth (inches)		Description				Sketch
0 - 12		Silt, dark brown, little sand, 1" medium to coarse sand seam at 12", wet				
12 - 23		Clayey silt, dark brown, little sand, medium plasticity, medium density, moist				
23 - 37		Sandy clay, dark brown, low plasticity, medium density, moist, possible coal fragments				
37 - 64		Silty clay, dark brown, little to no sand, medium plasticity, dense				
64 - 78		Silty clay, reddish brown, little to no sand, medium plasticity, medium density				
78 - 88		Silty clay, red-brown, very little sand, very dense, high plasticity, moist				

**Additional Notes:**  
**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-60), (60-72), (72-88)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 7 photos (whiteboard in photos incorrectly labeled HB15-21)  
**Observations** Pb



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.67                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 27.10                                      **Logged by:** MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	15:22	28.67	5.00	3.67	73%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-26	46.73570	-92.08687	574.00	46	06/25/2015	8:00
Depth (inches)		Description				Sketch
0 - 10		Dark brown/grey silt, loose, wet, low plasticity, 1/2" layer of fibrous organic material at bottom				
10 - 16		Dark brown silty, loose wet, medium plasticity				
16 - 27		Sandy silt, dark brown, w/some woody material,, clay increasing with depth, medium plasticity, wet				
27 - 32		Silty clay light sand, reddish brown, high to medium plasticity				
32 - 46		Clay, red, high density, high plasticity, moist				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-46)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 5 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.82                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 26.28                                      **Logged by:** MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	16:03	28.00	6.75	5.92	88%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-27	46.73655	-92.08831	574.82	71	06/25/2015	10:45
Depth (inches)		Description				Sketch
0 - 1		Brown silt, no plasticity, loose, wet				
1 - 5		Reddish clay plug, very dense high plasticity, moist				
5 - 28		Dark brown-grey silt w/clay & trace sand, woody material, interspersed fine ~` 0.25" sandy lenses				
28 - 38		Dark brown-grey silt w/clay & trace sand, woody material, clay inclusions (>2"). Density & clay increasing w/depth				
38		Fine slag sand layer < 0.25"				
38 - 56		Dark brown-grey silt w/clay & trace sand, large red clay inclusion (4"x 2") at base of layer. More dense - increasing w/depth				
56 - 71		Fine sand w/trace clay, grey-brown, dense, low plasticity				

**Additional Notes:**

**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-60), (60-71)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 6 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.74                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 19.86                                      **Logged by:** MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	16:49	21.50	3.50	2.75	79%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-28	46.73675	-92.08922	581.24	30	06/25/2015	9:30
Depth (inches)		Description				Sketch
0 - 2		Dark brown/black organic silty clay w/wood debris, medium plasticity, medium density, wet				
2 - 12		Silty clay, reddish-brown, high plasticity, medium density, moist. Imbedded layers blackish with silty clay & organics (fibrous woody material)				
12 - 13		Sandy clay, reddish, medium plasticity, high density, moist				
13 - 17		Silty clay, reddish-brown, high plasticity, medium density, moist. Imbedded layers blackish with silty clay & organics (fibrous woody material)				
17 -23		Sandy clay, reddish, medium plasticity, high density, moist, woody material				
23 - 30		<u>No description recorded</u> - material in photo IMG_0456 appears to be similar and more gray				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-30)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 3 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.79                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 18.56                                      **Logged by:** MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	10:36	20.25	4.50	4.17	93%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-30	46.73806	-92.09147	582.54	50	06/25/2015	13:15
Depth (inches)		Description				Sketch
0 - 3		Rock				
3 - 18		Silty clay w/little sand & gravel, medium density, high plasticity, wet				
18 - 37		Clay, reddish brown w/little gravel, medium density, high plasticity, wet				
37 - 50		Clay, red, dense, high plasticity, very moist				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 4 photos  
**Observations** \_\_\_\_\_

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.77                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 17.16                                      **Logged by:** MW / JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	13:05	18.83	2.50	1.58	63%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-31	46.73855	-92.09248	583.94	20	06/26/2015	11:30
Depth (inches)		Description				Sketch
0 - 14		Dark brown clay w/trace silt, medium density, high plasticity, moist, wood fragments				
14 - 20		Dark grey clay, high plasticity, med.-high density, moist, shell fragments, woody debris				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-20)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 2 photos  
**Observations** Pb



# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.78                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 27.32                                      **Logged by:** MW, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	13:42	29.00	3.00	2.08	69%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-32	46.73960	-92.09326	573.78	25	06/26/2015	11:15
Depth (inches)		Description				Sketch
0 - 5		Grey silt w/trace sand, dark brown, loose, no plasticity, wet				
5 - 11		Silty clay w/trace sand, dark brown, loose, low plasticity, wet, wood fragments				
11 - 26		Silty clay dark brown, medium plasticity, moist, low-med. dense, fibrous woody material, 2+ inch red clay nodules				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-26)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 2 photos  
**Observations** Pb, Hg

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.85                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 19.75                                      **Logged by:** MW, CS

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	15:00	21.50	3.50	3.25	93%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-33	46.73959	-92.09453	581.35	39	06/26/2015	10:30
Depth (inches)		Description				Sketch
0 - 6		Silt w/trace sand, dark brown, low plasticity, loose, wet, trace gravel & slag				
6 - 22		Silty clay w/trace gravel, dark brown, loose, low plasticity, wet, some woody material				
22 - 39		Clay, red, dense, high plasticity, moist, some woody material (more than above)				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-12), (12-24), (24-39)  
**Samples:** Pb, Hg  
**Photos Taken** 3 photos  
**Observations** Unit 16 A

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.80                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 25.06                                      **Logged by:** \_\_\_\_\_

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	14:18	26.75	3.00	2.92	97%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-34	46.74009	-92.09396	576.05	32	06/26/2015	10:45
Depth (inches)		Description				Sketch
0 - 6		Silt w/trace sand, grey brown, low plasticity, loose, wet				
6 - 16		Clayey silt w/trace sand, grey brown, low plasticity, loose, wet, red clay nodule at 10"				
16 - 20		Medium sand, brown, no plasticity, medium dense, moist				
20 - 32		Silty clay, grey, low plasticity, loose, wet, wood fragments/detritus, increasing sand w/depth				

**Additional Notes:**  
**Sample IDs for analysis:** 0-12), (12-24), (24-32)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 3 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.86                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 28.40                                      **Logged by:** MW, JRG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	15:34	30.17	7.00	6.00	86%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-35	46.74276	-92.09881	572.70	72	06/26/2015	9:10
Depth (inches)		Description				Sketch
0 - 8		Silt w/trace sand, dark brown, loose, low plasticity, wet				
8 - 29		Silty clay w/trace sand, dark brown, medium, medium plasticity, wet, wood fragments				
29 - 33		Clay w/sand, brown, loose, medium plasticity, wet				
33 - 38		Medium sand w/clay & coarse sand, dark brown, no plasticity, medium dense, moist				
38 - 68		Medium sand w/some clay, brown, no plasticity, dense, moist				
68 - 70		Coarse sand w/gravel & clay, brown, clay nodules, no plasticity, dense, moist				
70 - 72		Clay w/trace silt, grey-brown, high plasticity, medium dense, moist				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 6 photos  
**Observations** TBT, TOC





# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.86                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 17.82                                      **Logged by:** MW, JG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	16:17	19.58	8.50	6.17	73%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-37	46.73807	-92.08989	583.28	74	06/26/2015	9:45
Depth (inches)		Description				Sketch
0 - 3		Silt w/trace sand, dark brown-grey, wood fragments, low plasticity, loose, wet				
3 - 4		Sandy silt, dark brown, loose, no plasticity, wet				
4 - 14		Sandy silt w/clay, dark brown, wood debris, loose, low plasticity, wet				
14 - 40		Silty clay, dark brown, medium dense, wood fragments, low plasticity, wet, fine (< 1/2") sand lenses throughout, red clay nodules				
40 - 41		Coarse woody plant detritus				
41 - 48		Fine sand w/trace fines, reddish brown, medium dense, no plasticity, moist. Thin organic lenses throughout.				
48 - 51		Red native clay, high plasticity, high density, moist				
51 - 64		Fine sand w/trace fines, reddish brown, high density, no plasticity				
64 - 74		Red native clay, high density, high plasticity, moist				

**Additional Notes:**

**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-60), (60-74)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 6 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Vibracore  
**NOAA Gauge (ft)** 602.80                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 5.22                                      **Logged by:** MW, JG

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/25/2015	16:49	6.92	8.50	8.00	94%	10
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-38	46.73799	-92.08936	595.88	96	06/26/2015	8:25
Depth (inches)		Description				Sketch
0 - 3		Silty clay w/some sand, dark brown, medium plasticity, medium loose, wet				
3 - 9		Silty clay w/some sand, dark brown, medium plasticity, medium density, wet, Red clay nodules (0.25 to 1") throughout. Snails & slag.\				
9 - 24		Silty clay with some sand, dark brown, medium plasticity, medium dense, wet. Trace wood.				
24 - 39		Silty clay w/some sand, dark brown-grey, medium plasticity, medium density, wet. Slag & gravel.				
39 - 66		Silty sand w/clay, dark brown-grey, medium plasticity, medium density, slag & gravel, wet				
66 - 83		Sandy clay w/ silt, dark brown-grey, three clay lenses (1-1.5"), medium high density, medium plasticity, moist				
83 - 89		Fine sand w/red clay, high plasticity, dense, moist				
89 - 96		Native red clay, high plasticity, dense, moist				

**Additional Notes:**

**Sample IDs for analysis:** (0-12), (12-24), (24-36), (36-48), (48-60), (60-72), (72-84), (84)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 8 photos  
**Observations** Pb

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015                      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85                                      **Sampling Method:** Hand Core  
**NOAA Gauge (ft)** 602.78                                      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 2.32                                      **Logged by:** MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	16:52	4.00	1.00	0.50	50%	4
Sample Location ID	Latitude (Y)	Longitude (X)	0.5	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-HC20A	46.74124	-92.09428	598.78	Bagged	06/25/2015	10:00
Depth (inches)		Description				Sketch
Hand core extracted from tube into plastic bag on boat		Silt w/coarse sand & woody material, dark brown-grey, loose, low plasticity, wet				

**Additional Notes:**

**Sample IDs for analysis:** HB15-HC20A, 1 photo of sample in bag  
  
DNR hand core 1 of 2 in Unit 20, grainy stiff resistance after 6 to 12-in push. Coordinates in log are incorrect, adjusted coordinates based on HC20B since sample taken on opposite side of boat with anchor adjustment.

**Observations**

\_\_\_\_\_

# SEDIMENT SAMPLE FIELD LOG

**Project Title:** Howards Bay 2015      **Sample Matrix:** Sediment  
**Vertical Datum** IGLD85      **Sampling Method:** Hand Core  
**NOAA Gauge (ft)** 602.81      **Gauge Reading Time:** \_\_\_\_\_  
**Water Depth ftLWD (calc)** 2.29      **Logged by:** MW

Date Collected	Time Collected (military)	Water Depth (ft)	Core Penetration (ft)	Sediment Recovered (ft)	Percent Recovery	CT Length (ft)
06/24/2015	17:15	4.00	1.50	1.00	67%	3
Sample Location ID	Latitude (Y)	Longitude (X)	Sediment Surface Elevation (calc)	Measured Sediment @ Processing (in)	Date Processed	Time Processed (Military)
HB15-20B	46.74127	-92.09432	598.81	12	06/25/2015	10:15
Depth (inches)		Description				Sketch
0 - 1		Grey silt w/sand, loose, no plasticity, wet				
1 - 12		Grey silt w/ clay & trace gravel, trace sand, dark brown, lots of woody material, medium plasticity, loose, wet				

**Additional Notes:** \_\_\_\_\_  
**Sample IDs for analysis:** (0-6), (6-12)  
**Sample IDs on hold:** \_\_\_\_\_  
**Photos Taken** 2 photos, "Top" is labeled incorrectly on white board in 6-12" phot  
**Observations** Pb, Second hand core attempt from Unit 20

# APPENDIX B

Wisconsin Department of Natural Resources Communications



**Site-Specific Residual Contamination Levels (RCLs)  
for Dredged Material from Howards Bay  
Proposed for Placement at the Closed Wisconsin  
Point Landfill in Superior, Wisconsin**





**Date:** September 27, 2016 - Final Draft

**To:** Chris Saari and John Morris

**From:** Joe Graham

**Subject:** Site-Specific Residual Contamination Levels (RCLs) for Dredged Material from Howards Bay Proposed for Placement at the Closed Wisconsin Point Landfill in Superior, Wisconsin.

**Purpose:** The purpose of this memorandum is to identify site-specific direct contact residual contamination levels (RCLs) for parameters that may be present in dredged material from Howards Bay proposed to be beneficially used to improve the cover layer at the closed Wisconsin Point landfill. We request review and approval of these RCLs so that they may be used as criteria to evaluate analytical data from Howards Bay and determine the acceptability of the material for soil cover at this closed municipal landfill which is desired to be opened to the public for limited recreational use. The Department has approved recreational uses at locations with similar residual contamination including other closed landfills and across hundreds of miles of former railroad grades that have been converted to recreational trails under the “rails-to-trails” program.

The direct contact RCLs will be used along with considerations for groundwater protection to categorize Howards Bay material into volumes that are either i) acceptable for placement in the surface cover layer, ii) acceptable for subsurface placement, or iii) are not acceptable for placement at the Wisconsin Point landfill. Based on preliminary information provided by USACE, the levels of contaminants present in the dredge material are not expected to be a concern for groundwater quality, though project specific information on leaching characteristics may still be needed. Approval of the RCLs for this location should consider that the leaching potential of this material will likely have been mitigated by two factors: a) the amount of time the contaminants have been present under water in saturated sediment media and, more importantly, b) the addition of solidification and stabilization (S/S) additives as part of post-dredge sediment processing, which will decrease the effective permeability of the dredged material mass (or form) and reduce contaminant solubility through encapsulation and chemical fixation.. The justification for use of site-specific risk-based RCLs at the Wisconsin Point landfill is provided below.

**Background/Project Description:** The City of Superior and Wisconsin Department of Natural Resources are partnering with Fraser Shipyards, Inc., U.S. EPA, and the Corps on a dredging project in Howards Bay. This collaborative effort aims to meet both environmental clean-up and maritime navigation dredging needs. A disposal location is needed for a significant volume of dredge material that will be generated by the project. The City of Superior has offered use of the closed Wisconsin Point Landfill (License No. 00012) for placement provided this will allow light recreational uses consistent with the management plan for this area. The existing cover layer at the Wisconsin Point landfill is also in need of some maintenance to address areas of poor drainage due to settling of the waste mass as well as patches of bare soil. Amendment of the landfill cover layer with material of acceptable quality could provide a greater separation from the waste mass, improve drainage and help sustain adequate vegetative cover to allow light recreational uses. The Waste and Materials Management (WMM) Program has previously

approved a similar proposal for use of contaminated soil excavated from a cleanup site to enhance the cover of the closed City of Ashland Landfill (License #00177).

Use of the Wisconsin Point landfill location for placement of Howards Bay material will also contribute significantly as cost share to match federal dollars for project implementation. The use of dredge material from the Howards Bay project in the cover layer of the landfill presents a “win-win situation” that would correct an existing problem, open opportunities for recreation, and provide much needed in-kind credit to meet financial obligations for a large dredging project.

**Waiver of Fees:** If a review fee is applicable under ch. NR 749, Wis. Adm. Code, we request consideration be given to waiving the \$750 review fee due the level of participation and expenditures by state and federal parties on this project. The WMM Program has preliminarily indicated a waiver may be granted for fee(s) associated with review of the landfill plan modification.

**Site Description:** Wisconsin Point, in Superior Wisconsin, is part of a large bay mouth bar that separates Superior and Allouez Bays from Lake Superior. Wisconsin Point is largely undeveloped with the exceptions of an abandoned coast guard station, navigational structures at the Superior Entry and the Moccasin Mike municipal landfill. Wisconsin Point also provides habitat for several rare species and plant communities and contains important geological, scenic and cultural resources. The site also provides opportunities for public use, including hiking, beach use, wildlife viewing and hunting in an area of about 2,300 acres which are managed as the Wisconsin Point Management Area (WPMA) (NWRPC 2012).

The Wisconsin Point landfill is located at the base of Wisconsin Point and owned by the City of Superior. The landfill area is approximately 23.1 acres in size (SEH 1995). The landfill is roughly triangular in shape and bounded to the south by a coastal wetland complex, to the east by Lake Superior, and by Wisconsin Point road to the west. A small parking lot is immediately to the north and provides public beach access. The site was operated as a landfill from about 1950 until 1976. During its operation the landfill received various solid and liquid wastes including municipal, industrial, and commercial wastes, refinery sludge, bilge tank water, oil, tank bottoms, car bodies, brush, drums, and fiberboard (SEH 1995). The landfill is closed and has been capped with clay. Land development, agricultural uses and other land-disturbing activities are prohibited on this site; however, limited, low impact uses may be allowable, provided the cap material is not disturbed (NWRPC 2012).

During the public participation process for the Wisconsin Point management plan the public expressed the importance of identifying safe reuse opportunities for the closed landfill. The WPMA plan identifies the management focus for this area as low-impact light recreation that is compatible with the closed landfill. Desired development activities for the closed landfill include increased footpath access, unpaved paths or trails, pet friendly activities such as a fenced off-leash play area, improved public parking and access.

**Chemical Parameters of Potential Concern:**

Multiple and extensive assessments of sediment quality have been conducted in Howards Bay since the mid 1990's with the most recent surveys being done in 2007, 2010, 2013, 2014, 2015, and 2016. The number of chemical parameters sampled during these assessments has varied from study to study and has been refined over time to focus on a subset of parameters potentially present. The subset of compounds includes a few metals and polycyclic aromatic hydrocarbons (PAHs) which are listed in Table 1.

**Current and Future Land Use:**

The location is currently maintained as a closed landfill. Current access to the landfill is restricted by a fence along three sides with a lockable gate off Wisconsin Point Road. In order to protect the cap, vegetation is mowed to maintain the cover in grass and prevent the establishment of trees. There are monitoring wells on the landfill which are sampled periodically. A portion of the landfill has been used recently for the stockpiling of clay to be used as capping material at the nearby Moccasin Mike municipal landfill (SEH 2013). Future use of the Wisconsin Point landfill is expected to be low impact-light recreational uses such as walking paths or an off-leash dog exercise area. Fires are prohibited due to potential methane production in the waste mass, making the landfill unsuitable for picnic areas or shelters. In order to maintain the integrity of the vegetative cover, sports fields and children's play areas are not desired uses as they could result in disturbance of the vegetated soil cover. Future development of the location as a dog park will require extra diligence in monitoring the vegetative cover and more frequent maintenance depending on the amount of disturbance by dogs.

**Site-Specific Considerations:**

- The location is subject to long cold winters with the number of frost free days affected by its proximity to Lake Superior. The location is assumed to be frozen or snow covered about 5 months per year.
- Wisconsin Point is unique as an urban park space in that it is not proximal to residential areas and access to the site requires traveling several miles along busy roads. There are no sidewalks or recreation trails leading to the landfill.
- Studies on the specific number of trips or amount of time people spend at Wisconsin Point are not available. The City of Superior estimates that about 250 vehicles per day use Wisconsin Point Road.
- Recreational use of the closed landfill area is not expected to be as popular as other areas of Wisconsin Point such as the beaches or beach access points.
- As a conservative measure it is assumed that the material would be placed across the entire 23.1 acre footprint, though the actual area will likely be lower (e.g. 15 to 20 acres) depending on site topography and condition of the soil cover.

### Approach for Proposed Soil Criteria:

Site-specific exposure parameters were used to determine RCLs generally following the procedures in ch. NR 720, Wis. Adm. Code, and technical guide PUB-RR-890 (WDNR 2014). More specifically, U.S. EPA's Regional Screening Level (RSL) web calculator for a recreational scenario was used (accessed at [http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)) along with the exposure factor inputs identified below.

### Recreational Exposure Scenario for Wisconsin Point Landfill – Exposure Factor Inputs:

Age Segment (yr)	Adherence Factor (AF) (mg/cm <sup>2</sup> )	Body Weight (BW) (kg)	Exposure Duration (ED) (yr)	Exposure Frequency* (EF) (day/yr)	Exposure Time* (ET) (hr/event)	Intake Rate (IRS) (mg/day)	Skin Surface Area (SA) (cm <sup>2</sup> /day)
0 - 2	0.2	15	2	10	1	200	2,800
2 - 6	0.2	15	4	10	1	200	2,800
6 - 16	0.07	70	10	20	1	100	5,700
16 - 30	0.07	70	14	20	1	100	5,700

Notes: Default values from EPA Calculator or ch. NR 720, Wis. Adm. Code, for non-industrial uses, except values for Exposure Frequency and Exposure Time which are explained below. Additional input assumptions include a vegetative cover fraction of 0.9, exposure area of 23.1 acres, a volatilization factor exposure time (T) of roughly  $9.5 \times 10^8$  seconds, and climatic conditions for Minneapolis, MN.

### Explanation of Site-Specific Exposure Factor Inputs:

**Exposure Frequency:** The estimated exposure frequency was determined to be 20 days per year for adolescents and adults based on City of Superior knowledge of the expected user of this location and the amount of time the location is expected to be frozen or snow covered. The exposure frequency for small children ages 0 to 6 years was assumed to be one-half that of adults. Use of a lower exposure frequency for small children is reasonable based on the development of the location for recreational trails or as a dog walking area. The construction of playgrounds, picnic areas, or athletic fields would not be allowed at this location. Small children are likely to be pushed in strollers or carried by adults during some if not all of the time at the landfill. In addition, not all adults have children and those with small children are not expected to make as many visits to the site. A survey of dog park users in a suburb of Atlanta, Georgia found that only 15% of users of that dog park had children.

**Exposure Time:** The exposure time of 1 hour per visit is believed to be a conservative value for low-impact recreational use of this site (walking paths and/or dog exercise area). The aforementioned Atlanta survey found that users stay on average 35 to 45 minutes per visit, so a 1-hour exposure time would be a realistic model input. Based on the triangular configuration of the property the length of walking paths on or across the landfill would be limited (Figure 1). For example the distance from the gate to the beach is 650 to 700 feet. At a walking rate of 3 mph a round trip to the beach and back would take just over 5 minutes. If a winding path were constructed over the surface of the landfill its length would likely be limited to less than a mile based on the site configuration. Even with a path length of 5,280 feet it would take 20 minutes to walk the trail one time at a pace of 3 mph.

### **Cumulative Risks:**

Per ch. NR 720, Wis. Admin. Code, the cumulative excess cancer risk will not exceed  $1 \times 10^{-5}$  and the hazard index for non-carcinogens shall not exceed one.

### **Proposed Placement Criteria for the Wisconsin Point Landfill:**

The following criteria are proposed for placement of Howards Bay dredge material at the Wisconsin Point Landfill:

- 1) Material from dredge management units in which the average value for each contaminant does not exceed the Placement Criteria values in Table 1 is acceptable for surface cover soil at the Wisconsin Point Landfill. Efforts shall be made, to the maximum extent practicable, to place materials from dredge management units with the lowest concentrations higher in the surface cover profile.
- 2) Material from dredge management units in which the average value of each contaminant does not exceed ten times the Placement Criteria values in Table 1 is acceptable for subsurface placement at the Wisconsin Point Landfill, provided it is overlain by a minimum of 24 inches of soil or dredged material meeting the Table 1 Placement Criteria. Efforts shall be made, to the maximum extent practicable, to place materials from dredge management units with the highest concentrations first, and then place material from dredge prisms with lesser concentrations in successive lifts on top of that first lift.
- 3) Material from dredge management units in which the average value of any contaminant exceeds ten times the Placement Criteria values in Table 1 is not acceptable for placement at the Wisconsin Point Landfill.

It should be noted that the RCLs in Table 1 are still believed to be conservative and that consideration for higher levels that would still be protective could be considered for this proposal. As noted above, dredged sediments will be treated with S/S additives as part of standard dredged material handling procedures. Research has shown that treatment with S/S additives reduces the exposure potential of contaminants by encapsulation and chemical fixation of contaminant particles, reducing the permeability of the overall dredged material form and thereby limiting the potential for leaching to groundwater. These same processes serve to limit the availability of contaminants via the direct contact pathway.

Furthermore, per discussions with Wisconsin Department of Health Services staff, ongoing research into the overall toxicity of PAHs suggests that some current exposure assumptions might be overly conservative. For instance, PAHs rarely occur as individual compounds at environmental contamination sites, so it might be more realistic to evaluate potential PAH exposure as mixtures (i.e., cumulative rather than individual risk), with a concurrent adjustment of the target cancer risk from  $10^{-6}$  to  $10^{-5}$ .

These mitigative factors suggest that the exposure assumptions used to generate the values in Table 1 are more conservative than would be warranted by actual conditions following dredged material placement. However, due to the lack of specific post-S/S treatment data (e.g., individual parameter analyses or Synthetic Precipitation Leaching Procedure testing) to evaluate the potential risk via the direct contact and groundwater pathways, respectively, the calculations relied upon the more conservative assumptions.



**Table 1:** Recommended Site-Specific RCLs - Placement Criteria for Wisconsin Point Landfill

Chemical	CAS Number	Dataset Max	Screening Level	Basis	NI DC	Placement Criteria
Lead	7439-92-1	2,700	400	nc	400	400
Mercury (elemental)	7439-97-6	9.0	3.13	Ssat	3.13	3.13
Acenaphthene	83-32-9	1.90	100,000	max	3,440	3,440
Acenaphthylene	208-96-8	0.360	--	--	--	--
Anthracene	120-12-7	3.30	100,000	max	17,200	17,200
Benz[a]anthracene	56-55-3	6.30	4.53	ca	0.147	4.53
Benzo[a]pyrene	50-32-8	5.30	0.453	ca	0.015	0.453
Benzo[b]fluoranthene	205-99-2	7.8	4.53	ca	0.148	4.53
Benzo[g,h,i]perylene	191-24-2	2.7	--	--	--	--
Benzo[k]fluoranthene	207-08-9	2.80	45.3	ca	1.48	45.3
Chrysene	218-01-9	6.70	453	ca	14.8	14.8
Dibenz[a,h]anthracene	53-70-3	0.640	0.453	ca	0.015	0.453
Fluoranthene	206-44-0	9.1	80,300	ca	2,290	2,290
Fluorene	86-73-7	2.0	80,300	nc	2,290	2,290
Indeno[1,2,3-cd]pyrene	193-39-5	2.5	4.53	ca	0.148	4.53
1-Methylnaphthalene	90-12-0	0.42	41,300	Ssat	15.6	15.6
2-Methylnaphthalene	91-57-6	1.2	803,000	nc	229	229
Naphthalene	91-20-3	4.3	1,270	ca	5.15	5.15
Perylene	198-55-0	0.66	--	--	--	--
Phenanthrene	85-01-8	9.8	--	--	--	--
Pyrene	129-00-0	9.0	60,200	nc	1,720	1,720
Thallium (Soluble Salts)	7440-28-0	5.9	27.4	nc	0.782	27.4
Tributyltin Compounds	NA	13.0	642	nc	--	642

**Notes:**

All values in milligrams per kilogram (mg/Kg)

-- = Value not available

Dataset Max = maximum value of that compound contained in comprehensive project sampling database

Abbreviations for *Basis* as follows: non-carcinogen (nc), carcinogen (ca), soil saturation level (Ssat), ceiling level (max)

NI DC = non-industrial direct contact RCL from DNR web calculator spreadsheet

With the exceptions of mercury and lead, the screening levels exceed default nonindustrial direct contact levels.

**References:**

Matisoff, D. and D. Noonan, *Managing contested greenspace: neighborhood commons and the rise of dog parks*, International Journal of the Commons, Vol. 6, no 1, February 2012, pp. 28 - 51  
NR 720 - Chapter NR 720, Wisconsin Administrative Code, Soil Cleanup Standards.

NWRPC 2012 – Wisconsin Point Area Management Plan, Northwest Regional Planning Commission, Coastal Program Grant # NA09NOS4190107, August 2012.

SEH 1995 – Wisconsin Point Landfill Environmental Contamination Assessment Report, Short Elliot Hendrickson, Inc., SEH No. SUPER9401.23, July 1995

SEH 2013 - City of Superior -Wisconsin Point Landfill, License No. 00012 Closure Plan Modification Request, Short Elliot Hendrickson, SEH No. A-SUPER0505.00 14.00, February 2013

USEPA 2016 - U.S. EPA's Regional Screening Level (RSL) Web Calculator, Accessed 24 August 2016 at; [http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

WDNR 2014 - Soil Residual Contaminant Level Determinations Using the U.S. EPA Regional Screening Level Web Calculator, PUB-RR-890, January 2014

WDNR 2016 - RR Program RCL Spreadsheet Update, DNR-RR-052d, June 2016

**Figure 1: Wisconsin Point Landfill, USACE November 2015 Topographical Survey**

**Revisions to September 27, 2016  
Memorandum with Subject Line, “Site-  
Specific Residual Contamination Levels for  
Dredge Material Proposed for Placement at  
the Closed Wisconsin Point Landfill in  
Superior, Wisconsin**



**Date:** April 19, 2017

**To:** Chris Saari and John Morris

**From:** Joe Graham

**Subject:** Revisions to September 27, 2016 Memorandum with Subject Line, “Site-Specific Residual Contamination Levels for Dredge Material Proposed for Placement at the Closed Wisconsin Point Landfill in Superior, Wisconsin.

**Purpose:** The purpose of this memorandum is to revise the site-specific direct contact residual contamination levels (RCLs) for dredged material proposed to be used to improve the cover layer at the closed Wisconsin Point Landfill. Revised RCLs are warranted based on (i) public feedback on the proposal, (ii) EPA’s updated toxicity values for some chemicals (e.g. benzo[a]pyrene), (iii) WDHS’ recommendation to use the default exposure values on the U.S. EPA RSL website instead of NR 720 defaults when calculating RCLs, and (iv) publication DNR-RR-052e, “RR Program’s RCL Spreadsheet Update March 2017”. The contents of the September 27, 2016 memorandum are incorporated by reference except the following revisions are being made.

**Approach for Proposed Soil Criteria:**

Site-specific exposure parameters were used to determine RCLs generally following the procedures in ch. NR 720, Wis. Adm. Code, technical guide PUB-RR-890 (WDNR 2014), and the DNR publication titled *RR Program’s RCL Spreadsheet Update March 2017* (DNR-RR-052e). More specifically, U.S. EPA’s Regional Screening Level (RSL) web calculator for a recreational scenario was used (accessed April 17, 2017 at [http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)) along with the exposure factor inputs identified below.

**Recreational Exposure Scenario for Wisconsin Point Landfill – Exposure Factor Inputs:**

Age Segment (yr)	Adherence Factor (AF) (mg/cm <sup>2</sup> )	Body Weight (BW) (kg)	Exposure Duration (ED) (yr)	Exposure Frequency* (EF) (day/yr)	Exposure Time* (ET) (hr/event)	Intake Rate (IRS) (mg/day)	Skin Surface Area (SA) (cm <sup>2</sup> /day)
<b>0 - 2</b>	0.2	15	2	<i>90</i>	<i>4</i>	200	<i>2,373</i>
<b>2 - 6</b>	0.2	15	4	<i>90</i>	<i>4</i>	200	<i>2,373</i>
<b>6 - 16</b>	0.07	<i>80</i>	10	<i>90</i>	<i>4</i>	100	<i>6,032</i>
<b>16 - 30</b>	0.07	<i>80</i>	<i>10</i>	<i>90</i>	<i>4</i>	100	<i>6,032</i>

Notes: Default values from EPA Calculator, for recreational exposures, except values for Exposure Frequency and Exposure Time which are explained below. Additional input assumptions include a vegetative cover fraction of 0.9, exposure area of 23.1 acres, and climatic conditions for Minneapolis, MN. Changes from the September 27, 2016 memo are indicated with *red italicized text*.

### **Explanation of Site-Specific Exposure Factor Inputs:**

**Exposure Frequency:** The estimated exposure frequency was increased from 20 to 90 days per year based on public interest in recreational uses beyond those identified in the Wisconsin Point Management plan. The exposure frequency of 90 days per year represents 3 visits to the site per week and assumes the site is not frozen or snow covered 30 weeks per year. Small children are assumed to have the same exposure as adults even though they are more likely to be pushed in strollers or carried by adults. The exposure frequency of 90 days per year is believed to be conservative for the closed landfill given that there are more appealing locations for recreation nearby on Wisconsin Point (e.g. beach access points, etc.).

**Exposure Time:** The estimated exposure time was increased from 1 to 4 hours in consideration that benches and open-sided shelters may be constructed on the placed material. This exposure time is conservative in the level of protection for direct contact based on expected uses of the site.

### **Proposed Placement Criteria for the Wisconsin Point Landfill:**

The following criteria are proposed for placement of Howards Bay dredge material at the Wisconsin Point Landfill:

- 1) Material from dredge management units in which the average value for each contaminant does not exceed the Placement Criteria values in Table 1 (April 18, 2017 revision) is acceptable for surface cover soil at the Wisconsin Point Landfill. Efforts shall be made, to the maximum extent practicable, to place materials from dredge management units with the lowest concentrations higher in the surface cover profile.
- 2) Material from dredge management units in which the average value of each contaminant does not exceed **five** times the Placement Criteria values in Table 1 (April 18, 2017 revision) is acceptable for subsurface placement at the Wisconsin Point Landfill, provided it is overlain by a minimum of 24 inches of soil or dredged material meeting the Placement Criteria in Table 1 (April 18, 2017 revision). Efforts shall be made, to the maximum extent practicable, to place materials from dredge management units with the highest concentrations first, and then place material from dredge prisms with lesser concentrations in successive lifts on top of that first lift.
- 3) Material from dredge management units in which the average value of any contaminant exceeds **five** times the Placement Criteria values in Table 1 (April 18, 2017 revision) is not acceptable for placement at the Wisconsin Point Landfill.
- 4) In accordance with ch. NR 720, Wis. Admin. Code, the cumulative excess cancer risk shall not exceed  $1 \times 10^{-5}$  and the hazard index for non-carcinogens shall not exceed one in the surface cover layer.



**Table 1 (April 18, 2017 Revision): Recommended Wisconsin Point Landfill Placement Criteria in mg/kg**

Chemical	CAS Number	EPA Calculator Site-Specific Screening Level (90 days – 4hrs.)	Basis	NI DC (March 2017)	IND DC (March 2017)	Dataset Max	Criteria Basis	Placement Criteria
Lead and Compounds	7439-92-1	400	nc	400	800	2,700	NI DC	<b>400</b>
Mercury (elemental)	7439-97-6	3.13	Ssat	3.13	3.13	9	NI DC	<b>3.13</b>
Acenaphthene	83-32-9	13,900	nc	3,590	45,200	1.9	NI DC	<b>3,590</b>
Acenaphthylene	208-96-8	--	--	--	--	0.36	--	--
Anthracene	120-12-7	69,700	nc	17,900	100,000	3.3	NI DC	<b>17,900</b>
Benz[a]anthracene	56-55-3	4.44	ca	1.14	20.8	6.3	Site-Specific	<b>4.44</b>
Benzo(j)fluoranthene	205-82-3	1.65	ca	0.424	1.76		Site-Specific	<b>1.65</b>
Benzo[a]pyrene	50-32-8	0.447	ca	0.115	2.11	5.3	Site-Specific	<b>0.447</b>
Benzo[b]fluoranthene	205-99-2	4.47	ca	1.15	21.1	7.8	Site-Specific	<b>4.47</b>
Benzo[g,h,i]perylene	191-24-2	--	--	--	--	2.7	--	--
Benzo[k]fluoranthene	207-08-9	44.7	ca	11.5	211	2.8	NI DC	<b>11.5</b>
Chrysene	218-01-9	447	ca	115	2,110	6.7	NI DC	<b>115</b>
Dibenz[a,h]anthracene	53-70-3	0.447	ca	0.115	2.11	0.64	Site-Specific	<b>0.447</b>
Fluoranthene	206-44-0	9,300	nc	2,390	30,100	9.1	NI DC	<b>2,390</b>
Fluorene	86-73-7	9,300	nc	2,390	30,100	2	NI DC	<b>2,390</b>
Indeno[1,2,3-cd]pyrene	193-39-5	4.47	ca	1.15	21.1	2.5	Site-Specific	<b>4.47</b>
Methylnaphthalene, 1-	90-12-0	68.3	ca	17.6	72.7	0.42	NI DC	<b>17.6</b>
Methylnaphthalene, 2-	91-57-6	930	nc	239	3,010	1.2	NI DC	<b>239</b>
Naphthalene	91-20-3	47.6	ca*	5.52	24.1	4.3	NI DC	<b>5.52</b>
Perylene	198-55-0	--	--	--	--	0.66	--	--
Phenanthrene	85-01-8	--	--	--	--	9.8	--	--
Pyrene	129-00-0	6,970	nc	1,790	22,600	9	NI DC	<b>1,790</b>
Thallium (Soluble Salts)	7440-28-0	3.04	nc	0.782	10.2	5.9	Site-Specific	<b>3.04</b>
Tributyltin Compounds	NA	73.7	nc	--	--	13	Site-Specific	<b>73.7</b>

All values in milligrams per kilogram (mg/Kg)

-- = Value not available

Dataset Max = maximum value of that compound contained in comprehensive project sampling database

Abbreviations for *Basis* as follows: non-carcinogen (nc), carcinogen (ca), soil saturation level (Ssat), ceiling level (max)

NI DC = non-industrial direct contact RCL from DNR web calculator spreadsheet (350 days – 24 hrs.)

IND DC = industrial direct contact from DNR web calculator spreadsheet (250 days – 8 hrs.)

# Summary of 2017 Howards Bay Sediment Sampling and Contract Laboratory Results



DATE: July 20, 2017 FILE REF: Howard Bay

TO: Howards Bay Project Team (Design Team and Partners)

FROM: Joe Graham, WDNR

SUBJECT: Summary of 2017 Howards Bay Sediment Sampling and Contract Laboratory Results

The purpose of this memo is to summarize the 2017 sediment investigation efforts in Howards Bay and provide results from the WDNR contract laboratory. A preliminary assessment of how the results may affect dredge cut lines and disposal determinations is also included along with other observations.

### OVERVIEW

Sediment samples were collected in Howards Bay by USEPA and WDNR from the R/V Mudpuppy II June 19 through 22, 2017. Bill Murray was the lead EPA scientist. Joe Graham of WDNR determined sampling intervals, labeled sample bottles and coordinated with the laboratory. The sampling vessel was operated by Captain Joe Bonem and crew from Cetacean Marine who also collected and processed samples. Water depth was measured using a sounding lead and used along with water level readings from the NOAA gauge at the USACE vessel yard to determine the sediment surface elevation and sample intervals. Samples were collected using a vibracore and four-inch diameter polycarbonate tubes from all but one location where a surface grab was taken. Over the three and a half day mobilization samples were collected at 31 of the 38 planned locations identified in the QAPP. Sediment was collected and processed or packaged for multiple objectives including USACE treatability testing, WDNR samples to fill data gaps for disposal determinations, WDNR samples to confirm the cut depth for dredge prisms, and samples for stable mercury isotope analysis by USEPA & USGS researchers.

Sample coordinates and field data are in Tables 1 & 2. Analytical results for bulk sediment are summarized in Tables 3a and 3b. Results of SPLP and TCLP analyses are in tables 4 and 5, respectively. The original laboratory reports and electronic data deliverable (EDD) files will be sent to the project team in a separate e-mail. Table 6 contains recommendations for changes to dredge cut elevations at the locations sampled.



## SUMMARY OF FIELD EFFORTS

Deviations from the QAPP: Sample collection and processing was done according to the project QAPP with a few minor deviations. First, cores were not attempted to refusal at all locations. Instead attempts were made to achieve the target depths for sampling intervals in an effort to speed processing and save longer core tubes for where they were needed. Second, samples collected for disposal data gaps or confirming dredge prisms were mixed by hand instead of using a drill and mixing paddle. And finally samples for stable isotope analysis were capped and picked up at the dock by the USEPA Duluth lab. As a result WDNR was not able to subsample these same cores for total mercury as intended.

All locations sampled were within the footprint of the planned dredge management unit (DMU) except location HB17-12 where the sample vessel experienced satellite geometry issues near the bridge. As a result location HB17-12 is about 4 feet beyond the dredge contour limits for unit FC-14, though results from this location are close enough that they can be considered representative of material to be removed from proximal areas in in FC-14.

Abandoned Locations: Seven of the 38 planned locations were not sampled for several reasons. Two locations (HB17-13 & 15) were not collected since one core was successfully obtained from another location in the same dredge management unit (DMU). A field call was made to only attempt a second core in these DMUs (FC-15 & FC-16) if there was time after attempting all other locations. Locations HB17-27 and 28 were abandoned due to their close proximity to treatability sample locations. Locations HB17-32, 33, and 34 were not sampled due to wind conditions on the last day and expiration of time for mobilization.

USACE Treatability Samples: Sediment was collected from 8 locations (HB17-01 to HB17-08) for bench testing by USACE contractors to evaluate geotechnical characteristics and evaluate stabilization additives. Two five-gallon buckets were filled at each location by taking multiple cores, or grabs in the case of HB17-01, until sufficient volume was obtained. Details on core penetration and sediment recovery for each attempt were recorded in separate field logs by Murray and Graham. Samples were not mixed in the field. Buckets were labeled and the lids were attached. Graham maintained custody of the buckets after each day of sampling. Graham delivered the buckets to Al Mozol at the USACE vessel yard in Duluth, MN in the mornings of June 20 and 21, 2017. Mozol shipped the buckets to the contract lab via UPS Freight. Chemistry samples were also collected to fill disposal gaps and/or to confirm dredge prism at all the treatability sample locations except two. Chemistry was not sampled at HB17-01 since

this is a tributyltin DMU (OC-17) or at HB17-05 (FP-2) which missed reaching the dredge cut elevation by 3.5 inches. Analytical results are summarized in Table 3.

Disposal Gaps and Dredge Cut Confirmation: Samples were collected for analysis from 26 locations spread across 21 DMUs. A total of 50 samples were collected and analyzed to aid disposal determinations and/or confirm dredge cut elevations. Samples to confirm the dredge prism were generally collected where at least 1 foot of sediment was recovered below the elevation of the cut line. Photographs of native red clay material from the bottom of core HB17-17 are attached. Native red clay intervals were excluded from sampling. For the disposal gaps 18 samples were collected for Polycyclic Aromatic Hydrocarbons (PAHs) and Total Organic Carbon (TOC) from intervals representative of the material to be dredged (i.e. above the cut elevation). In addition, 5 samples were taken for VOCs, 8 samples for SPLP extraction and 4 samples for TCLP extraction. SPLP and TCLP extractions were analyzed for RCRA metals and PAHs. Thallium was only reported above detection levels in one of thirteen samples with a maximum detection of 0.83 mg/kg. Lead and mercury samples were collected for both disposal gaps and to confirm dredge prisms. A total of 45 samples were analyzed for lead with a maximum detection of 333 mg/kg in unit FS-1. Thirty-eight samples were analyzed for mercury with a maximum detection of 1.7 mg/kg in unit CS-1. Detailed analytical results are presented in Table 3 and a preliminary assessment of the results is provided below.

Stable Mercury Isotope Samples: A total of four cores were collected for stable mercury isotope profiles. One core was taken from Hughitt Slip at location HB17-38 (HS-1). In Cummings Slip two cores were collected at HB17-36 (CS-1) and one core at HB17-37 (CS-2). Cores were advanced to refusal capped, taped, and labeled. All four cores were handed off to Greg Peterson of the EPA Duluth Lab at 12:25 PM on June 22, 2017 when the Mudpuppy docked for lunch. Additional core caps were later picked up by the EPA lab for segmenting the cores being shared with USGS researchers.

### PRELIMINARY ASSESSMENT OF RESULTS

Data Gaps for Disposal: A preliminary screening of results was done by comparing analytical results to the proposed placement criteria for the Wisconsin Point landfill (see April 19, 2017 WDNR memorandum). A total of 45 samples were analyzed for lead with detections ranging from 2 to 333 mg/kg. No lead results exceeded the 400 mg/kg placement criteria for Wisconsin Point. Thirty-eight samples were analyzed for mercury with a maximum detection of 1.7 mg/kg which is below the placement criteria of 3.13 mg/kg. The maximum detection of thallium of 0.83 mg/kg is well below the

placement criteria of 3.04 mg/kg. The results for lead, mercury, and thallium suggest that concentrations of these metals at the locations and depth intervals sampled are suitable for placement in the surface cover layer at the Wisconsin Point Landfill.

A total of 18 samples were analyzed for TOC and PAHs with quantification of 18 individual PAH compounds. TOC levels ranged from 1.25 to 16.8 percent. Total PAH levels (sum of 18 compounds) ranged from 1,105 to 57,311 ug/kg with the maximum detection being found in sample HB17-21(0-20) located in unit FS-1. Benzo(a)pyrene (BaP) levels exceed the criteria for surface placement in samples from units CS-1, CS-2, CS-5, FS-1, and HS-1. The surface placement criteria for Benzo(b)fluoranthene and Dibenzo(a,h)anthracene were also exceeded at location HB17-20 in unit FS-1. The criteria for surface placement for all other PAH compounds was met at all other locations and intervals sampled. The acceptance criteria of 5 times the surface criteria was exceeded for BaP in sample HB17-21 (0-20) and its duplicate HB17-21(0-20)DUP from unit FS-1. This indicates that material from location HB17-21 is not suitable for placement at the Wisconsin Point landfill.

The results from SPLP and TCLP analyses show that levels of arsenic, barium, cadmium, chromium, selenium, silver, lead, mercury, and PAHs leached from the material tested are negligible with levels reported below Wisconsin groundwater quality standards and the thresholds for hazardous waste characteristics.

WDNR recommends that the design team revisit the placement criteria evaluation to incorporate data from this study into unit averages and determinations for material placement/disposal. Consideration should be given to subdividing DMUs where practical to segregate areas that may not meet Wisconsin Point placement criteria (i.e. surface or burial layers). The revised evaluations should be distributed to the project team for review and comment prior to the next design submittal package. In addition, WDNR recommends that the contents of treatability bucket HB17-02 be analyzed for total mercury since this sample is representative of the depth interval where the extraordinary detection of 58 mg/kg mercury was found in sample HB 10-1-16 (12-31) from the 2010 study. These data will help determine if the 58 mg/kg result is an outlier and if some, if not all, of the material in unit HS-3 is suitable for surface placement at the Wisconsin Point landfill.

Dredge Prisms: Analytical results for all sample intervals were compared to the cleanup goals for lead (83 mg/kg) and mercury (0.64 mg/kg). It should be noted that samples were not collected for tributyltin (TBT) during this study and dredge prisms cannot be confirmed or refined for units where this parameter



is driving remediation. The elevation of contamination was calculated by subtracting the bottom depth of the lowest interval in a core that exceeded cleanup goals from the sediment surface elevation. The depth of the proposed dredge prism was determined using the elevations for planned locations provided by the design team or interpolated where necessary using the shape files of the dredge contours provided with the 65% design plans. The difference in elevation between the contaminated intervals and the proposed dredge cut were used along with the presence of red clay to make recommendations for revisions to the dredge cut elevation for each location sampled.

WDNR's recommendations and suggested cut elevations for dredge prisms in the vicinity of the locations sampled are in Table 6. These changes are recommended on a location-by-location basis and not necessarily intended to extend over an entire DMU, unless warranted. Of the 28 locations where data was collected changes are recommended in 12 locations (7 deeper and 5 shallower). These suggested changes are based on confirmation of contamination levels and we request that the design team consider these when making revisions to the dredge prisms for calculating dredge volumes. The revised dredge prisms and a table summarizing changes in dredge volumes should be distributed to the project team for review and comment prior to the next design submittal package.

#### OTHER OBSERVATIONS

Core samples were collected from location HB17-07 for treatability testing by the USACE contractor. This location is adjacent to the steel sheet pile (SSP) wall that was installed in 2016 after the filling of the Baxter Avenue slip and embayment. The measured water depth at location HB17-07 was 14.6 feet, relative to the low water datum (LWD) for Lake Superior of 601.1 feet (IGLD85). Based on this depth measurement and water level the sediment surface elevation at HB17-07 is calculated to be 586.5 feet. A total of 5 cores were collected for treatability testing at HB17-07 using 5 foot core tubes to the target depth (i.e. not to refusal). Refusal was not obtained in any of the 5 cores and sediment recovery ranged from 31 to 46 inches. All 5 treatability cores contained a layer of sand approximately 3 feet thick on top of silty clay. A sixth core was collected from this location for chemistry using an 8 foot long core tube (no refusal) and recovered 58 inches of sediment. The top 36 inches of this core was pure sand with little to no fines. The material below the sand from 36 to 58 inches transitioned from a soft silty-clay to dense brown clay at the bottom. Photographs showing the sediment profile at HB17-07 are attached.

Location HB17-07 is within thirteen feet of the targeted sample location, which was selected to reaffirm conditions found at location HB13-25 during 2013 sampling efforts. A copy of the boring log from

HB13-25 is attached. The top layer of sediment at HB13-25 was described in the log as 0 to 36 inches of silt with little sand, grey brown, poorly sorted, medium plasticity, very soft, wet. Photographs of the core sample from HB13-25 are attached. The calculated sediment surface elevation at location HB13-25 was 584.73 feet and the water depth relative to LWD was 16.37 feet (WDNR 2013 Field Report, March 2014). The sediment surface elevation increased between 2013 and 2017 by about 1.8 feet.

The presence of several feet of sand over soft silty material in the 2017 core samples and measured increase in the sediment surface elevation indicates that deposition of sand occurred in this area sometime between the 2013 and 2017 measurements. There is minimal unidirectional flow in Howards Bay and upstream sources of sediment are not expected to be significant at this location along the SSP wall. The majority of fill material in the Baxter Avenue slip and embayment consisted of sand and was placed prior to the installation of the SSP wall. Given the absence of upstream sediment sources and that the Baxter slip and embayment was largely filled before the SSP wall was installed, it is most likely that the sand found in the top layer of sediment at HB17-07 is fugitive material from the discharge of fill into the embayment.

## LIST OF ATTACHMENTS

- Tables
- Figures
- Photos
- Map, core log, and photographs Referenced in other observations section
- Laboratory Reports
- Quality Assurance Project Plan (QAPP)

## TABLES

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Table 1: Coordinates and Field Notes for 2017 Howards Bay Sediment Sampling Locations

Location	Unit	Latitude (DD)	Longitude (DD)	Notes
HB17-04	HS-1	46.73819535	-92.09920277	Treatability sample from cores 1 & 2 of 3 (2, 5-gallon buckets). Chemistry samples from core 3 of 3, Pb & Hg. Brown clayey silt, sheen on water when tube pulled.
HB17-02	HS-3	46.74072702	-92.09902402	Treatability sample composited from 9 of 9 cores. Chemistry from core 9, Pb & Hg. Core tube tipped on core 9, depth of penetration undetermined.
HB17-03	CS-4	46.73915858	-92.09635503	Treatability sample from 7 of 7 cores. Odor in core 2 and 4. Chemistry from core 1, Pb & Hg. This location not attempted to refusal.
HB17-06	FC-2	46.73623177	-92.08778007	Treatability sample from 4 of 5 core attempts . Attempt 4 of 5 washed out - no sediment recovery. Dense red clay at bottom of cores 1, 2, & 3. Red clay discarded from core 2 & 3. Chemistry @ 18:30 from Core 2 (53-60), 5-inches of red clay at bottom not included in chemistry sample (60 -65) Pb & Hg.
HB17-01	OC-17	46.74202735	-92.09887555	Water depth at original location below cut line, moved up slope to 576' line - area with steeper slope. Grab samples taken instead of cores. Treatability sample composite of 11 grabs. No chemistry this location.
HB17-07	OC-11	46.73923552	-92.09382174	Treatability sample from 5 of 5 cores. No refusal at 5 feet. Next to Baxter dock wall. About 2 feet more sediment here than 2013 bathymetry. Top layer (about 3 ft.) is sand and bottom (12") is silty clay. Chemistry from (46-58) Pb & Hg.
HB17-08	FS-1	46.73662536	-92.09087463	Treatability sample from 10 of 10 cores, kept material above depth of 31". Chemistry from core 1 of 10, Pb & Hg.
HB17-05	FP-2	46.73466651	-92.08560797	Treatability sample from 6 of 6 cores. Oil sheen on core 4. No chemistry this location.
HB17-12	FC-14	46.74194942	-92.09837677	Satellite geometry issues near bridge. Chemistry PAH & TOC.
HB17-14	FC-15	46.74248446	-92.09896438	Soft brown silty clay w/sand. Chemistry PAH & TOC.
HB17-16	FC-16	46.74278768	-92.09881101	Top soft wet silt w/sand, bottom medium grey brown clay. Chemistry PAH & TOC.
HB17-20	OC-16	46.74304732	-92.09834149	Chemistry PAH, TOC, SPLP metals & PAHs
HB17-19	OC-12	46.73987363	-92.09339262	Soft brown silty clay w/sand. Chemistry dredge cut (0-42) PAH, TOC, Pb, Hg, & Th. Lead (42-54), (54-66), (66-78), (78-90), (90-102), (102-104)
HB17-17	OC-3	46.73572898	-92.08630865	Soft brown silty clay, 10-inch dense red clay plug at bottom (16-26). Photos of taken before and after splitting open red clay plug. Chemistry PAH, TOC, Pb, Th, Hg
HB17-10	FC-1	46.73548656	-92.08665908	Top 0 to 44 inches not sampled (SND material 577.21 to 573.6 ft MSL). Chemistry sample 44-86" (573.6 to 570.3), brown silty clay w/sand and oily odor. PAH, TOC, Pb, Hg, Th, SPLP metals & PAHs
HB17-11	FC-3	46.73656813	-92.08829658	Top 0 - 17 inches not sampled (SND material 575.01 to 573.6 ft MSL). Chemistry sample 17 - 51" (573.6 to 570.76). Silty clay w/ fine sand, oily-diesel smell. Dense fine sand at bottom.

Table 1: Coordinates and Field Notes for 2017 Howards Bay Sediment Sampling Locations

Location	Unit	Latitude (DD)	Longitude (DD)	Notes
HB17-18	OC-7	46.73665211	-92.08911212	Location close to wall making it difficult to anchor. Offset 35 ft. to midpoint of 582' depth. Core split lengthwise. Samples collected (0-12) PAH, TOC, Pb, Hg, Th, soft brown silt, (12-24) Pb, medium silty clay, (24-47) discarded dense sand at bottom of catcher.
HB17-23	FS-1	46.73706225	-92.09048837	Very soft silt w/clay, visible sheen and oil odor, bottom 5" is red clay. Sample (0-30) PAH, TOC, Pb, Hg, Th, SPLP. (30-35) not sampled-dense native red clay
HB17-38	HS-1	46.73796338	-92.09898675	Core collected and for pick up by EPA Duluth lab for mercury isotope analysis.
HB17-28	HS-1	46.73844312	-92.09915832	Top 0 - 63 inches sampled for PAH and TOC, dredge cut 587.2 to 581.95. Black-grey silty clay. All other intervals sampled for Pb & Hg. Slag at 84". Dense fine sand 84 - 115. Bottom 99-115" not sampled.
HB17-36	CS-1	46.7379371	-92.09608213	Boat tied at planned location, off-set to south. Oil sheen observed when positioning boat and on core 2 of 2. Collected 2 cores for pick up by EPA Duluth lab for mercury isotope analysis.
HB17-37	CS-2	46.738282	-92.09630448	Core collected and for pick up by EPA Duluth lab for mercury isotope analysis.
HB17-09	CS-5	46.73973642	-92.09602965	Chemistry (0-30) dredge cut plus 6 inches (587.7 to 585.2): PAH, TOC, Pb, Hg, Th. Duplicate sample collected same parameters.
HB17-24	CS-1	46.73806611	-92.0961488	Chemistry dredge cut (0-80) PAH, TOC, Pb, Hg, Th, SPLP, TCLP, VOCs
HB17-25	CS-2	46.73851609	-92.09620687	Chemistry dredge cut (0-30) PAH, TOC, Pb, Hg, Th, SPLP, TCLP, VOCs. Soft dark grey silty clay with red clay smears outside tube.
HB17-21	FS-1	46.73627144	-92.09131455	0 to 20 soft dark grey silty clay with sand, 20 - 37 dense red clay. Bottom 17" is dense red clay plug. Sample (0-20) PAH, TOC, Pb, Hg, Th, SPLP, TCLP, VOC. Duplicate (0-20) PAH, TOC, Pb, Hg, Th, VOC
HB17-22	FS-1	46.73678161	-92.09082058	Dredge cut (0 -33) soft grey silty clay ,sampled for PAH, TOC, VOC, Pb, Hg, Th. All other intervals samples for Pb & HG. (33-45) grey silty clay with little sand, (45-58) light grey brown silty clay.
HB17-35	OC-8	46.73720657	-92.09028572	Brown silty clay with red clay nodules, red clay at bottom of tube. Sample collected 0 to 17 inches, Pb & Hg
HB17-26	FP-2	46.73496875	-92.08591276	All material recovered from 2 - 50 inches is below dredge cut of 585'. All intervals sampled for Pb & Hg. (0-12) silty clay, (12-24) silty clay with sand and gravel, (24-36) soft brown clay w/wood, (36-50) red brown clay, medium dense. Duplicate sample collected from (0-12) for Pb & Hg.
HB17-31	FP-2	46.73439873	-92.08549379	Dredge cut top 28 inches (584.5'). All intervals sampled fro Pb & Hg. (0-28) soft silty clay w/sand and woody fibers, (28-40) silty sand w/coarse sand, (40-50) silty sand transitioning to fine sand
HB17-30	FP-2	46.73543953	-92.08612201	Core tube tipped during vibracore. Not reattempted due to increasing wind and scow being moved by Fraser tug. Core is 26 inches above dredge elevation. Brown silty clay w/sand. Sample collected (0-22) for Pb & Hg.



Table 2: Sample Collection Data

Location	RD Unit ID	Date Collected	Time	NOAA Gauge (ftMSL)	Water Depth (ft)	Sediment Surface Elevation	Penetration (ft)	Sediment Recovered (in)	Sediment Recovered (ft)	Percent Recovery	Core Tube Length (ft)	Chemistry Sample Interval(s)
HB17-04	HS-1	06/19/2017	13:30	602.835	14.92	587.92	8.5	92	7.67	90%	10	(72 - 84), (84 - 92)
HB17-02	HS-3	06/19/2017	16:00	602.756	21.92	580.84	Unknown	11	0.92	NA	5	(0 - 11)
HB17-03	CS-4	06/19/2017	16:40	602.894	8.58	594.31	4.5	49	4.08	91%	5	(36 - 49)
HB17-06	FC-2	06/19/2017	18:11	602.969	28.5	574.47	6.5	65	5.42	83%	10	(53 - 60)
HB17-01	OC-17	06/20/2017	9:45	602.956	25.75	577.21	0.333	4	0.33	100%	GRAB	NA
HB17-07	OC-11	06/20/2017	11:40	602.92	16.42	586.5	8	58	4.83	60%	8	(46 - 58)
HB17-08	FS-1	06/20/2017	14:25	602.851	13.75	589.1	4.25	41	3.42	80%	5	(24 - 36), (36 - 41)
HB17-05	FP-2	06/20/2017	16:20	603.012	17.25	585.76	5	48	4.00	80%		NA
HB17-12	FC-14	06/21/2017	8:27	602.927	29.17	573.76	4	41	3.42	85%	5	(0 - 31)
HB17-14	FC-15	06/21/2017	9:10	602.923	29.42	573.5	5	51	4.25	85%	5	(0 - 26)
HB17-16	FC-16	06/21/2017	9:40	602.972	30.08	572.89	6	63	5.25	88%	10	(0 - 63)
HB17-20	OC-16	06/21/2017	10:45	603.077	10.33	592.75	3.5	37	3.08	88%	5	(0 - 16)
HB17-19	OC-12	06/21/2017	11:30	602.927	24	578.93	10	112	9.33	93%	10	(0 - 42), (42 - 54), (54 - 66), (66 - 78), (78 - 90), (90 - 102), (102 - 104)
HB17-17	OC-3	06/21/2017	14:10	603.068	18.58	584.49	2.75	26	2.17	79%	5	(0 - 16)
HB17-10	FC-1	06/21/2017	14:45	603.123	25.92	577.2	7	86	7.17	102%	10	(44 - 86)
HB17-11	FC-3	06/21/2017	15:30	603.179	28.17	575.01	5	51	4.25	85%	10	(17 - 51)
HB17-18	OC-7	06/21/2017	16:30	603.182	21.67	581.51	4.25	47	3.92	92%	5	(0 - 12), (12-24)
HB17-23	FS-1	06/21/2017	17:30	603.245	13.75	589.5	4	35	2.92	73%	10	(0 - 30)
HB17-38	HS-1	06/22/2017	8:10	603.084	11.33	591.75	5	45	3.75	75%	10	USGS-EPA

Table 2: Sample Collection Data

Location	RD Unit ID	Date Collected	Time	NOAA Gauge (ftMSL)	Water Depth (ft)	Sediment Surface Elevation	Penetration (ft)	Sediment Recovered (in)	Sediment Recovered (ft)	Percent Recovery	Core Tube Length (ft)	Chemistry Sample Interval(s)
HB17-28	HS-1	06/22/2017	8:45	602.946	15.75	587.2	9.5	115	9.58	101%	10	63), (63 - 75), (75 - 87), (87 - 99)
HB17-36	CS-1	06/22/2017	10:30	602.815	9.58	593.24	6	72	6.00	100%	10	USGS-EPA
HB17-37	CS-2	06/22/2017	11:15	602.7	10.17	592.53	5	61	5.08	102%	10	USGS-EPA
HB17-09	CS-5	06/22/2017	11:50	602.779	15.08	587.7	3	30	2.50	83%	5	(0 - 30) & (0 - 30) DUP
HB17-24	CS-1	06/22/2017	14:35	603.232	10.5	592.73	7.5	80	6.67	89%	10	(0 - 80)
HB17-25	CS-2	06/22/2017	15:20	603.255	13.5	589.76	3	30	2.50	83%	10	(0-30)
HB17-21	FS-1	06/22/2017	16:20	603.136	12.5	590.64	4.5	37	3.08	69%	5	(0 - 20) & (0 - 20) DUP
HB17-22	FS-1	06/22/2017	17:10	603.045	12.83	590.22	5	58	4.83	97%	5	(0 - 33), (33 - 45), (45 - 58)
HB17-35	OC-8	06/23/2017	8:10	603.028	18.75	584.28	1.5	17	1.42	94%	5	(0 - 17)
HB17-26	FP-2	06/23/2017	8:49	602.74	17.58	585.16	5	50	4.17	83%	5	(0 - 12), (12 - 24), (24 - 36), (36 - 50)
HB17-31	FP-2	06/23/2017	9:45	602.69	15.92	586.77	5	50	4.17	83%	5	(0 - 28), (28 - 40), (40 - 50)
HB17-30	FP-2	06/23/2017	10:48	602.526	13.08	589.45	2.5	22	1.83	73%	10	(0 - 22)

Table 3a: Bulk Sediment Analytical Results (excluding VOCs)

Parameters	DMU	CS-1	CS-2	CS-4	CS-5	CS-5	FC-1	FC-14	FC-15	FC-16	FC-2	FC-3	FP-2	FP-2	FP-2	FP-2	FP-2
	Location Depth Interval (in) Units/Date	HB17-24 0-80 06/22/2017	HB17-25 0-30 06/22/2017	HB17-03 36-49 06/19/2017	HB17-09 0-30 06/22/2017	HB17-09DUP 0-30 06/22/2017	HB17-10 44-86 06/21/2017	HB17-12 0-31 06/21/2017	HB17-14 0-26 06/21/2017	HB17-16 0-63 06/21/2017	HB17-06 53-60 06/19/2017	HB17-11 17-51 06/21/2017	HB17-26 0-12 06/23/2017	HB17-26 DUP 0-12 06/23/2017	HB17-26 12-24 06/23/2017	HB17-26 24-36 06/23/2017	HB17-26 36-50 06/23/2017
Percent Solids	%	38.9	49.4	29.4	54.4	49.5	65.5	51.4	64.2	66.8	64.4	56.7	55.2	55.8	62.4	54.7	46.6
Total Organic Carbon	mg/kg	168,000	65,100		33,600	32,400	22,400	28,600	19,600	16,900		14,600					
<b>Metals</b>																	
Lead	mg/kg	302	225	52.8	95.6	109	175				96.8	90.6	130	121	104	90.3	80.6
Thallium	mg/kg	<0.84	<0.67		<0.64	<0.53	<0.44					<0.59					
Mercury	mg/kg	1.7	0.86	0.1	0.52	0.41	0.4				0.61	0.44	1.1	0.69	0.55	0.2	0.13
<b>PAHs</b>																	
1-Methylnaphthalene	ug/kg	1,160	307		225	534	260	87	53	19		265					
2-Methylnaphthalene	ug/kg	1,750	449		347	1,070	360	124	76	26		366					
Acenaphthene	ug/kg	644	194		114	238	69	34	40	9		60					
Acenaphthylene	ug/kg	212	72		57	159	40	31	15	10		43					
Anthracene	ug/kg	1,100	440		266	531	153	108	100	26		174					
Benzo(a)anthracene	ug/kg	2,190	1,210		727	1,410	405	314	243	91		452					
Benzo(a)pyrene	ug/kg	2,130	1,020		651	1,220	356	281	206	80		384					
Benzo(b)fluoranthene	ug/kg	3,460	1,670		1,200	1,630	509	503	327	135		594					
Benzo(g,h,i)perylene	ug/kg	1,090	256		192	312	129	94	66	25		148					
Benzo(k)fluoranthene	ug/kg	1,040	599		355	562	196	133	97	47		176					
Chrysene	ug/kg	2,560	1,390		1,040	1,680	506	355	258	100		565					
Dibenzo(a,h)anthracene	ug/kg	284	83		62	107	40	30	20	8		44					
Fluoranthene	ug/kg	8,280	2,490		1,890	2,630	698	588	453	175		772					
Fluorene	ug/kg	930	276		210	416	116	73	62	19		126					
Indeno(1,2,3-cd)pyrene	ug/kg	1,010	293		207	355	129	102	70	28		145					
Naphthalene	ug/kg	2,180	495		394	1,010	294	159	90	33		307					
Phenanthrene	ug/kg	7,300	1,900		1,460	2,170	700	381	386	104		754					
Pyrene	ug/kg	7,110	2,260		1,800	2,590	750	579	462	171		790					
Total PAH18	ug/kg	44,430	15,404		11,197	18,624	5,709	3,977	3,025	1,106		6,165					

Shading Key: Results above CUG for Pb or Hg or disposal criteria for PAHs  
 Results above 5 x disposal criteria

Table 3a: Bulk Sediment Analytical Results (ex

Parameters	DMU	FP-2	FP-2	FP-2	FP-2	FS-2	FS-2	FS-1	FS-1	FS-1	FS-1	FS-1	FS-1	HS-1	HS-1	HS-1	HS-1
	Location Depth Interval (in) Units/Date	HB17-30 0-22 06/23/2017	HB17-31 0-28 06/23/2017	HB17-31 28-40 06/23/2017	HB17-31 40-50 06/23/2017	HB17-08 24-36 06/20/2017	HB17-08 36-41 06/20/2017	HB17-21 0-20 06/22/2017	HB17-21 DUP 0-20 06/22/2017	HB17-22 0-33 06/22/2017	HB17-22 33-45 06/22/2017	HB17-22 45-58 06/22/2017	HB17-23 0-30 06/21/2017	HB17-04 72-84 06/19/2017	HB17-04 84-92 06/19/2017	HB17-28 0-63 06/22/2017	HB17-28 39-51 06/22/2017
Percent Solids	%	45.1	51.9	66.2	72	60.1	65.4	47.7	44.6	51.7	52.9	57.5	54.1	54.3	76.8	53.3	53.7
Total Organic Carbon	mg/kg							96,200	79,200	38,500			46,600			34,000	
<b>Metals</b>																	
Lead	mg/kg	114	127	59.6	19.9	243	179	333	274	310	195	175	158	94.2	17.9		71.5
Thallium	mg/kg							<0.74	<0.81	<0.59			0.83				
Mercury	mg/kg	0.4	0.53	0.13	0.09	0.075	0.3	0.4	0.28	0.54	0.58	0.3	0.75	0.25	0.061		0.51
<b>PAHs</b>																	
1-Methylnaphthalene	ug/kg							715	489	615			477				213
2-Methylnaphthalene	ug/kg							993	675	849			655				304
Acenaphthene	ug/kg							613	397	275			116				184
Acenaphthylene	ug/kg							126	98	103			78				63
Anthracene	ug/kg							1,400	974	527			302				444
Benzo(a)anthracene	ug/kg							3,840	4,060	1,180			798				1,600
Benzo(a)pyrene	ug/kg							4,040	3,440	935			722				1,310
Benzo(b)fluoranthene	ug/kg							5,760	5,190	1,330			1,150				1,870
Benzo(g,h,i)perylene	ug/kg							2,020	1,840	532			198				326
Benzo(k)fluoranthene	ug/kg							2,180	1,920	450			377				569
Chrysene	ug/kg							5,170	4,570	1,370			934				1,670
Dibenzo(a,h)anthracene	ug/kg							551	480	141			64				100
Fluoranthene	ug/kg							10,000	8,850	2,230			1,530				3,430
Fluorene	ug/kg							792	567	440			207				240
Indeno(1,2,3-cd)pyrene	ug/kg							2,050	1,860	512			216				352
Naphthalene	ug/kg							911	572	705			559				404
Phenanthrene	ug/kg							7,270	6,050	2,210			1,340				2,400
Pyrene	ug/kg							8,880	7,580	2,130			1,520				2,840
Total PAH18	ug/kg							57,311	49,612	16,534			11,243				18,319

Shading Key: Results above CUG  
Results above 5 x d

Table 3a: Bulk Sediment Analytical Results (ex

Parameters	DMU	HS-1	HS-1	HS-1	HS-1	HS-3	OC-11	OC-12	OC-12	OC-12	OC-12	OC-12	OC-12	OC-12	OC-16	OC-3	OC-7
	Location Depth Interval (in) Units/Date	HB17-28 51-63 06/22/2017	HB17-28 63-75 06/22/2017	HB17-28 75-87 06/22/2017	HB17-28 87-99 06/22/2017	HB17-02 0-11 06/19/2017	HB17-07 46-58 06/20/2017	HB17-19 0-42 06/21/2017	HB17-19 42-54 06/21/2017	HB17-19 54-66 06/21/2017	HB17-19 66-78 06/21/2017	HB17-19 78-90 06/21/2017	HB17-19 90-102 06/21/2017	HB17-19 102-112 06/21/2017	HB17-20 0-16 06/21/2017	HB17-17 0-16 06/21/2017	HB17-18 0-12 06/21/2017
Percent Solids	%	48.9	49.6	68.6	76	35.4	61	48.1	51.1	50.2	45.7	49.9	49.3	52.7	65.1	50.2	62.7
Total Organic Carbon	mg/kg							41,400							16,800	32,000	12,500
<b>Metals</b>																	
Lead	mg/kg	105	211	59.9	2	45.8	39.3	94.3	101	107	129	73.7	72.7	40.4		89.8	60.4
Thallium	mg/kg							<0.69								<0.53	<0.58
Mercury	mg/kg	0.97	0.51	0.25	0.0017	0.22	0.19	0.37								0.24	0.12
<b>PAHs</b>																	
1-Methylnaphthalene	ug/kg							196							48	184	65
2-Methylnaphthalene	ug/kg							250							75	255	91
Acenaphthene	ug/kg							59							19	35	35
Acenaphthylene	ug/kg							42							14	34	20
Anthracene	ug/kg							185							59	132	242
Benzo(a)anthracene	ug/kg							507							171	409	264
Benzo(a)pyrene	ug/kg							427							156	434	213
Benzo(b)fluoranthene	ug/kg							653							262	668	341
Benzo(g,h,i)perylene	ug/kg							197							51	244	80
Benzo(k)fluoranthene	ug/kg							195							73	181	115
Chrysene	ug/kg							532							184	434	320
Dibenzo(a,h)anthracene	ug/kg							55							16	68	23
Fluoranthene	ug/kg							830							318	654	473
Fluorene	ug/kg							126							38	85	75
Indeno(1,2,3-cd)pyrene	ug/kg							193							55	237	84
Naphthalene	ug/kg							253							91	227	95
Phenanthrene	ug/kg							696							195	461	345
Pyrene	ug/kg							832							324	715	454
Total PAH18	ug/kg							6,228							2,148	5,457	3,335

Shading Key: Results above CUG  
Results above 5 x d

Table 3a: Bulk Sediment Analytical Results (ex

Parameters	DMU Location Depth Interval (in) Units/Date	OC-7	OC-8	Screening Values		
		HB17-18 12-24 06/21/2017	HB17-35 0-17 06/23/2017	Cleanup Goal	Disposal Criteria	5xDisposal Criteria
Percent Solids	%	61.1	57.6			
Total Organic Carbon	mg/kg					
<b>Metals</b>						
Lead	mg/kg	20.1	297	83	400	2000
Thallium	mg/kg			NA	3.04	15.2
Mercury	mg/kg		0.47	0.64	3.13	15.65
<b>PAHs</b>						
1-Methylnaphthalene	ug/kg				17,600	88,000
2-Methylnaphthalene	ug/kg				239,000	1,195,000
Acenaphthene	ug/kg				3,590,000	17,950,000
Acenaphthylene	ug/kg				NA	
Anthracene	ug/kg				17,900,000	89,500,000
Benzo(a)anthracene	ug/kg				4,400	22,000
Benzo(a)pyrene	ug/kg				447	2,235
Benzo(b)fluoranthene	ug/kg				4,470	22,350
Benzo(g,h,i)perylene	ug/kg				NA	
Benzo(k)fluoranthene	ug/kg				11,500	57,500
Chrysene	ug/kg				115,000	575,000
Dibenzo(a,h)anthracene	ug/kg				447	2,235
Fluoranthene	ug/kg				2,390,000	11,950,000
Fluorene	ug/kg				2,390,000	11,950,000
Indeno(1,2,3-cd)pyrene	ug/kg				4,470	22,350
Naphthalene	ug/kg				5,520	27,600
Phenanthrene	ug/kg				NA	
Pyrene	ug/kg				NA	
Total PAH18	ug/kg					

Shading Key: Results above CUG  
Results above 5 x d



Table 3b: Sediment VOC Analytical Results (detections shown in **bold**)

Parameters	DMU	CS-1	CS-2	FS-1	FS-1	FS-1
	Location Depth Interval (in) Units/Date	HB17-24 0-80 06/22/2017	HB17-25 0-30 06/22/2017	HB17-21 0-20 06/22/2017	HB17-21 DUP 0-20 06/22/2017	HB17-22 0-33 06/22/2017
<b>VOCs</b>						
1,1,1,2-Tetrachloroethane	mg/kg	<0.072	<0.057	<0.059	<0.063	<0.027
1,1,1-Trichloroethane	mg/kg	<0.062	<0.049	<0.050	<0.025	<0.023
1,1,2,2-Tetrachloroethane	mg/kg	<0.057	<0.045	<0.046	<0.036	<0.021
1,1,2-Trichloroethane	mg/kg	<0.041	<0.032	<0.033	<0.049	<0.015
1,1-Dichloroethane	mg/kg	<0.064	<0.051	<0.052	<0.054	<0.024
1,1-Dichloroethene	mg/kg	<0.067	<0.053	<0.054	<0.056	<0.025
1,1-Dichloropropene	mg/kg	<0.028	<0.022	<0.023	<0.058	<0.011
1,2,3-Trichlorobenzene	mg/kg	<0.057	<0.024	<0.046	<0.049	<0.021
1,2,3-Trichloropropane	mg/kg	<0.057	<0.045	<0.046	<0.049	<0.021
1,2,4-Trichlorobenzene	mg/kg	<0.077	<0.045	<0.063	<0.067	<0.029
1,2,4-Trimethylbenzene	mg/kg	<0.067	<0.045	<0.054	<0.058	<0.025
1,2-Dibromo-3-chloropropane	mg/kg	<0.10	<0.047	<0.084	<0.089	<0.039
1,2-Dibromoethane	mg/kg	<0.059	<0.047	<0.048	<0.051	<0.022
1,2-Dichlorobenzene	mg/kg	<0.075	<0.053	<0.061	<0.065	<0.028
1,2-Dichloroethane	mg/kg	<0.059	<0.055	<0.048	<0.051	<0.022
1,2-Dichloropropane	mg/kg	<0.031	<0.055	<0.025	<0.027	<0.012
1,3,5-Trimethylbenzene	mg/kg	<0.057	<0.059	<0.046	<0.049	<0.021
1,3-Dichlorobenzene	mg/kg	<0.070	<0.061	<0.056	<0.060	<0.026
1,3-Dichloropropane	mg/kg	<0.077	<0.061	<0.063	<0.067	<0.029
1,4-Dichlorobenzene	mg/kg	<0.070	<0.081	<0.056	<0.060	<0.026
2,2-Dichloropropane	mg/kg	<0.046	<0.010	<0.038	<0.040	<0.017
2-Butanone	mg/kg	<b>0.25</b>	<0.020	<b>0.232</b>	<0.20	<0.087
2-Chlorotoluene	mg/kg	<0.067	<0.032	<0.054	<0.058	<0.025
2-Hexanone	mg/kg	<0.28	<0.036	<0.23	<0.25	<0.11
4-Chlorotoluene	mg/kg	<0.067	<0.036	<0.054	<0.058	<0.025
4-Methyl-2-pentanone	mg/kg	<0.18	<0.043	<0.15	<0.16	<0.068
Acetone	mg/kg	<0.72	<0.045	<0.59	<b>4.63</b>	<b>2.05</b>
Benzene	mg/kg	<0.013	<0.047	<0.010	<0.011	<0.0048
Bromobenzene	mg/kg	<0.077	<0.053	<0.063	<0.067	<0.029
Bromochloromethane	mg/kg	<0.026	<0.053	<0.021	<0.022	<0.0097
Bromodichloromethane	mg/kg	<0.041	<0.061	<0.033	<0.036	<0.015
Bromoform	mg/kg	<0.046	<0.081	<0.038	<0.040	<0.017
Bromomethane	mg/kg	<0.10	<0.10	<0.084	<0.089	<0.039
Carbon disulfide	mg/kg	<0.21	<0.12	<0.17	<0.18	<0.077
Carbon tetrachloride	mg/kg	<0.057	<0.14	<0.046	<0.049	<0.021
Chlorobenzene	mg/kg	<0.059	<0.16	<0.048	<0.051	<0.022
Chloroethane	mg/kg	<0.15	<0.18	<0.13	<0.13	<0.058
Chloroform	mg/kg	<0.054	<0.22	<0.044	<0.047	<0.020
Chloromethane	mg/kg	<0.13	<0.57	<0.10	<0.11	<0.048
cis-1,2-Dichloroethene	mg/kg	<0.070	<0.055	<0.056	<0.060	<0.026
cis-1,3-Dichloropropene	mg/kg	<0.049	<0.038	<0.040	<0.042	<0.018
Dibromochloromethane	mg/kg	<0.046	<0.036	<0.038	<0.040	<0.017
Dibromomethane	mg/kg	<0.031	<0.024	<0.025	<0.027	<0.012
Dichlorodifluoromethane	mg/kg	<0.10	<0.081	<0.084	<0.089	<0.039
Diisopropyl ether	mg/kg	<0.077	<0.061	<0.063	<0.067	<0.029
Ethylbenzene	mg/kg	<0.054	<0.043	<0.044	<0.047	<0.020
Hexachlorobutadiene	mg/kg	<0.072	<0.057	<0.059	<0.063	<0.027
Isopropylbenzene	mg/kg	<0.064	<0.051	<0.052	<0.056	<0.024
m & p-Xylene	mg/kg	<0.070	<0.055	<0.056	<0.060	<0.026
Methyl tert-butyl ether	mg/kg	<0.062	<0.049	<0.050	<0.054	<0.023
Methylene chloride	mg/kg	<0.077	<0.061	<0.063	<0.067	<0.029
Naphthalene	mg/kg	<b>0.15</b>	<0.059	<0.061	<0.065	<b>0.0309</b>
n-Butylbenzene	mg/kg	<0.067	<0.053	<0.054	<0.058	<0.025
n-Propylbenzene	mg/kg	<0.067	<0.053	<0.054	<0.058	<0.025
o-Xylene	mg/kg	<0.062	<0.049	<0.050	<0.054	<0.023
p-Isopropyltoluene	mg/kg	<0.057	<0.045	<0.046	<0.049	<0.021
sec-Butylbenzene	mg/kg	<0.072	<0.057	<0.059	<0.063	<0.027
Styrene	mg/kg	<0.075	<0.059	<0.061	<0.065	<0.028
tert-Butylbenzene	mg/kg	<0.064	<0.051	<0.052	<0.056	<0.024
Tetrachloroethene	mg/kg	<0.034	<0.026	<0.027	<0.029	<0.013
Tetrahydrofuran	mg/kg	<b>0.624</b>	<b>0.521</b>	<b>0.605</b>	<b>1.56</b>	<b>0.681</b>
Toluene	mg/kg	<b>0.135</b>	<b>0.0462</b>	<b>0.0404</b>	<b>0.177</b>	<b>0.0513</b>
trans-1,2-Dichloroethene	mg/kg	<0.026	<0.020	<0.021	<0.022	<0.0097
trans-1,3-Dichloropropene	mg/kg	<0.059	<0.047	<0.048	<0.051	<0.022
Trichloroethene	mg/kg	<0.039	<0.030	<0.031	<0.033	<0.014
Trichlorofluoromethane	mg/kg	<0.10	<0.081	<0.084	<0.089	<0.039
Vinyl acetate	mg/kg	<0.31	<0.24	<0.25	<0.27	<0.12
Vinyl chloride	mg/kg	<0.026	<0.020	<0.021	<0.022	<0.0097

Table 4: SPLP Analytical Results

Parameter	DMU Location Depth Interval (in) Units/Date	CS-1	CS-2	FC-1	FC-3	FS-1	FS-1	FS-1	OC-16	NR 140	NR 140
		HB17-24 0-80 06/22/2017	HB17-25 0-30 06/22/2017	HB17-10 44-86 06/21/2017	HB17-11 17-51 06/21/2017	HB17-21 0-20 06/22/2017	HB17-21 DUP 0-20 06/22/2017	HB17-23 0-30 06/21/2017	HB17-20 0-16 06/21/2017	Preventive Action Limit -	Enforcement Standard -
<b>Metals</b>											
Arsenic	mg/L	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	2	10
Barium	mg/L	<0.00070	0.016	0.015	0.014	0.032	0.028	0.025	<0.00070	400	2000
Cadmium	mg/L	<0.00026	<0.00026	<0.00026	<0.00026	<0.00026	<0.00026	<0.00026	<0.00026	0.5	5
Chromium	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0021	<0.0010	<0.0010	10	100
Selenium	mg/L	<0.012	<0.012	<0.012	<0.012	<0.0015	<0.0015	<0.0015	<0.0015	10	50
Silver	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	10	50
Lead	mg/L	<0.0015	<0.0015	<0.0015	0.0023	<0.0020	<0.0020	<0.0020	<0.0020	1.5	15
Mercury	mg/L	0.000089	<0.000020	0.000056	0.000066	<0.000020	<0.000020	0.000046	0.000033	0.2	2
<b>PAHs</b>											
1-Methylnaphthalene	ug/L	0.31	5.8	0.067	1.8	0.086	0.063	0.57	0.054	NSE	NSE
2-Methylnaphthalene	ug/L	0.23	10	0.072	1.8	0.1	0.071	0.52	0.049	NSE	NSE
Acenaphthene	ug/L	0.077	0.66	0.077	0.54	0.071	0.069	0.029	0.089	NSE	NSE
Acenaphthylene	ug/L	<0.0030	0.0097	<0.0030	0.027	<0.0030	<0.0030	0.0047	<0.0030	NSE	NSE
Anthracene	ug/L	0.02	0.02	0.021	0.15	0.022	0.022	0.012	0.02	600	300
Benzo(a)anthracene	ug/L	0.011	0.0096	0.012	0.015	0.0092	0.0099	0.011	0.01	NSE	NSE
Benzo(a)pyrene	ug/L	0.0063	<0.0050	0.0055	0.008	<0.0050	0.0055	<0.0050	<0.0050	0.02	0.2
Benzo(b)fluoranthene	ug/L	0.011	<0.0080	0.0089	0.013	<0.0080	<0.0080	<0.0080	<0.0080	0.02	0.2
Benzo(g,h,i)perylene	ug/L	0.0053	<0.0050	0.0051	0.0066	<0.0050	0.0064	<0.0050	<0.0050	NSE	NSE
Benzo(k)fluoranthene	ug/L	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	NSE	NSE
Chrysene	ug/L	0.014	0.008	0.012	0.017	0.012	0.012	0.0093	0.0061	0.02	0.2
Dibenzo(a,h)anthracene	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NSE	NSE
Fluoranthene	ug/L	0.087	0.091	0.094	0.22	0.11	0.1	0.079	0.064	80	400
Fluorene	ug/L	0.046	0.043	0.031	0.38	0.054	0.052	0.017	0.045	80	400
Indeno(1,2,3-cd)pyrene	ug/L	<0.0050	<0.0050	<0.0050	0.0052	<0.0050	0.0056	<0.0050	<0.0050	NSE	NSE
Naphthalene	ug/L	0.11	2.7	0.098	1.3	0.047	0.074	0.36	0.11	10	100
Phenanthrene	ug/L	0.12	0.14	0.15	0.86	0.16	0.17	0.11	0.13	NSE	NSE
Pyrene	ug/L	0.07	0.071	0.071	0.13	0.076	0.078	0.062	0.048	50	250

Table 5: TCLP Analytical Results

Parameter	DMU Location Depth Interval (in) Units/Date	CS-1 HB17-24 0-80 06/22/2017	CS-2 HB17-25 0-30 06/22/2017	FS-1 HB17-21 0-20 06/22/2017	FS-1 HB17-21 DUP 0-20 06/22/2017	TCLP Standard NR 661.24 (mg/L)
<b>Metals</b>						
Arsenic	mg/L	0.056	0.024	<0.0060	0.031	5
Barium	mg/L	0.9	1	0.76	0.8	100
Cadmium	mg/L	0.0094	0.0071	0.0039	0.011	1
Chromium	mg/L	0.0061	0.0015	0.0033	0.0044	5
Selenium	mg/L	0.018	0.018	0.016	0.019	1
Silver	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	5
Lead	mg/L	0.26	0.14	0.13	0.21	5
Mercury	mg/L	<0.000020	0.000053	0.000053	<0.000020	0.2
<b>PAHs</b>						
1-Methylnaphthalene	ug/L	0.21	0.22	0.049	0.056	NSE
2-Methylnaphthalene	ug/L	0.29	0.25	0.029	0.07	NSE
Acenaphthene	ug/L	0.11	0.1	0.074	0.085	NSE
Acenaphthylene	ug/L	<0.0030	<0.0030	<0.0030	<0.0030	NSE
Anthracene	ug/L	0.024	0.021	0.023	0.058	NSE
Benzo(a)anthracene	ug/L	0.011	0.0085	0.0098	0.0092	NSE
Benzo(a)pyrene	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	NSE
Benzo(b)fluoranthene	ug/L	<0.0080	<0.0080	<0.0080	<0.0080	NSE
Benzo(g,h,i)perylene	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	NSE
Benzo(k)fluoranthene	ug/L	<0.0060	<0.0060	<0.0060	<0.0060	NSE
Chrysene	ug/L	0.0066	0.005	0.0095	0.0091	NSE
Dibenzo(a,h)anthracene	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	NSE
Fluoranthene	ug/L	0.086	0.079	0.099	0.12	NSE
Fluorene	ug/L	0.052	0.028	0.047	0.081	NSE
Indeno(1,2,3-cd)pyrene	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	NSE
Naphthalene	ug/L	0.34	0.24	0.037	0.042	NSE
Phenanthrene	ug/L	0.18	0.088	0.16	0.22	NSE
Pyrene	ug/L	0.065	0.064	0.076	0.089	NSE

Table 6: WDNR Recommended Changes to dredge cut elevations for dredge prims for locations sampled

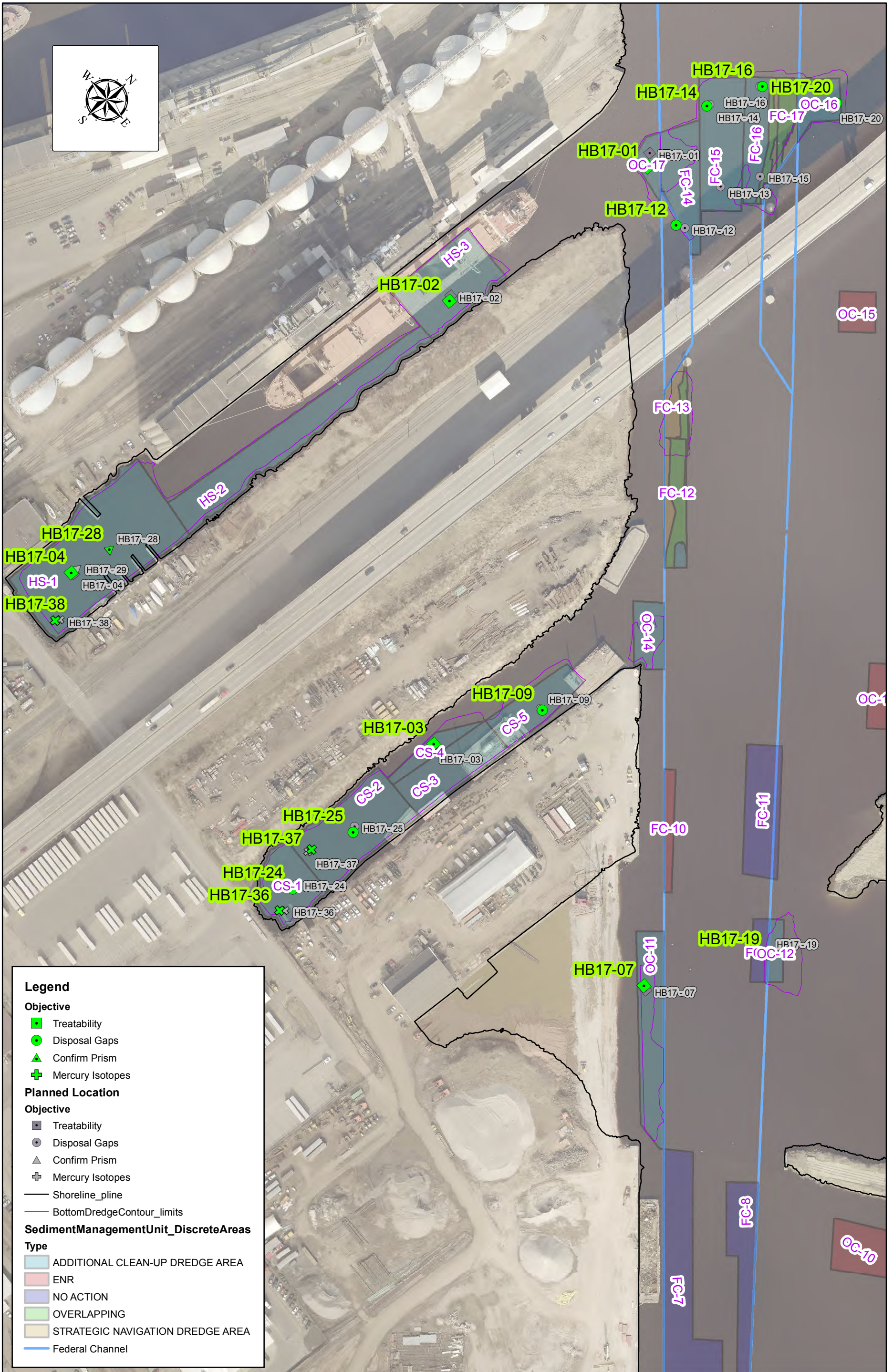
Location	Unit	Refusal	Surface Elevation	Contamination Elevation	65% Design Cut Elevation	Difference Contamination vs Proposed Cut	Recommended changes to cut depth at sample location	Suggested Cut Elevation	Magnitude of Change (feet)	LWD Depth at 65% Cutline	LWD Depth at Proposed Cutline	Notes
HB17-04	HS-1	Yes	587.92	580.95	581	0.05	None	581	0	20.1	20.1	
HB17-28	HS-1	Yes	587.2	580.95	582.4	1.45	1.5 ft. deeper	580.9	-1.5	18.7	20.2	Pb 211 mg/kg at 75 inches, Hg 1 mg/kg at 63 inches, did not sample for TBT.
HB17-02	HS-3	Yes	580.84	579.92	578.9	-1.02	None	578.9	0	22.2	22.2	Did not get to target depth on core that was sampled. Can treatability bucket HB17-02 be tested for mercury?
HB17-01	OC-17	No	577.21	576	576	0.00	None	576	0	25.1	25.1	Did not sample.
HB17-12	FC-14	Yes	573.76	571.2	571.2	0.00	None	571.2	0	29.9	29.9	PAH & TOC only
HB17-14	FC-15	No	573.5	570.89	570.89	0.00	None	570.89	0	30.21	30.21	PAH & TOC only
HB17-16	FC-16	Yes	572.89	566.87	566.87	0.00	None	566.87	0	34.23	34.23	PAH & TOC only
HB17-20	OC-16	Yes	592.75	590.5	590.5	0.00	None	590.5	0	10.6	10.6	PAH & TOC only
HB17-24	CS-1	Yes	592.73	586.06	585.66	-0.40	None	585.66	0	15.44	15.44	Bottom not clean: Pb 302 mg/kg & Hg 1.5 mg/kg
HB17-25	CS-2	Yes	589.76	587.26	585.8	-1.46	None	585.8	0	15.3	15.3	Bottom not clean: Pb 205 mg/kg & Hg 0.86 mg/kg
HB17-03	CS-4	No	594.31	591.94	591.94	0.00	None	591.94	0	9.16	9.16	Clean bottom
HB17-09	CS-5	Yes	587.7	585.2	585.8	0.60	0.5 ft. deeper	585.3	-0.5	15.3	15.8	Bottom not clean: Pb 109 mg/kg
HB17-19	OC-12	No	578.93	572.43	575.43	3.00	3 ft. deeper	572.43	-3	25.67	28.67	Clean below 78"
HB17-07	OC-11	Yes	586.5	583.4	583.4	0.00	None	583.4	0	17.7	17.7	Clean bottom
HB17-21	FS-1	Yes	589.5	588.97	587.9	-1.07	1.0 ft shallower to 589'	588.9	1	13.2	12.2	Bottom not clean: Pb 333 mg/kg. Red clay at 20 inches
HB17-22	FS-1	No	590.64	585.39	587.1	1.71	1.5 ft. deeper & eliminate lobe from 587 contour line	585.6	-1.5	14	15.5	Bottom not clean: Pb 175 mg/kg
HB17-23	FS-1	Yes	590.22	587	585	-2.00	2 ft shallower to 587'	587	2	16.1	14.1	Bottom not clean: Pb 158 mg/kg. Red clay at 30 inches.
HB17-08	FS-2	Yes	589.1	585.68	586.2	0.52	0.5 ft. deeper	585.7	-0.5	14.9	15.4	Bottom not clean: Pb 243 mg/kg
HB17-35	OC-8	Yes	584.28	582.86	581.5	-1.36	1.0 ft shallower to 582.5'	582.5	1	19.6	18.6	Bottom not clean: Pb 297 mg/kg, red clay at bottom of tube
HB17-18	OC-7	Yes	581.51	581.51	580.4	-1.11	Why dredge this location? 1.1 ft. shallower	581.5	1.1	20.7	19.6	Clean - full profile
HB17-11	FC-3	Yes	575.01	570.76	570.4	-0.36	None	570.4	0	30.7	30.7	Bottom not clean: Pb 91 mg/kg
HB17-06	FC-2	Yes	574.47	569.47	570.5	1.03	1.0 ft. deeper to 569.5'	569.5	-1	30.6	31.6	Bottom not clean: Pb 97 mg/kg. Red clay at 60 inches.
HB17-10	FC-1	Yes	574.47	570.03	569.9	-0.13	None	569.9	0	31.2	31.2	Bottom not clean: Pb 175 mg/kg
HB17-17	OC-3	No	584.49	583.16	580.95	-2.21	2.0 ft. shallower to 582.95. Straighten cut lines?	582.95	2	20.15	18.15	Bottom not clean: Pb 175 mg/kg. Red clay at 16 inches
HB17-30	FP-2	Yes	589.45	587.62	584.4	-3.22	None	584.4	0	16.7	16.7	Bottom not clean: Pb 114 mg/kg - Core tube tipped
HB17-26	FP-2	No	585.16	582.16	584.95	2.79	2.74 ft deeper to 582.2	582.21	-2.74	16.15	18.89	Clean below 36 inches
HB17-05	FP-2	No	585.76	581.59	581.3	-0.29	None	581.3	0	19.8	19.8	No sample
HB17-31	FP-2	No	586.77	584.44	584.5	0.06	None	584.5	0	16.6	16.6	Clean below 28 inches

FIGURES (6 of 8 Figures not included with all copies)

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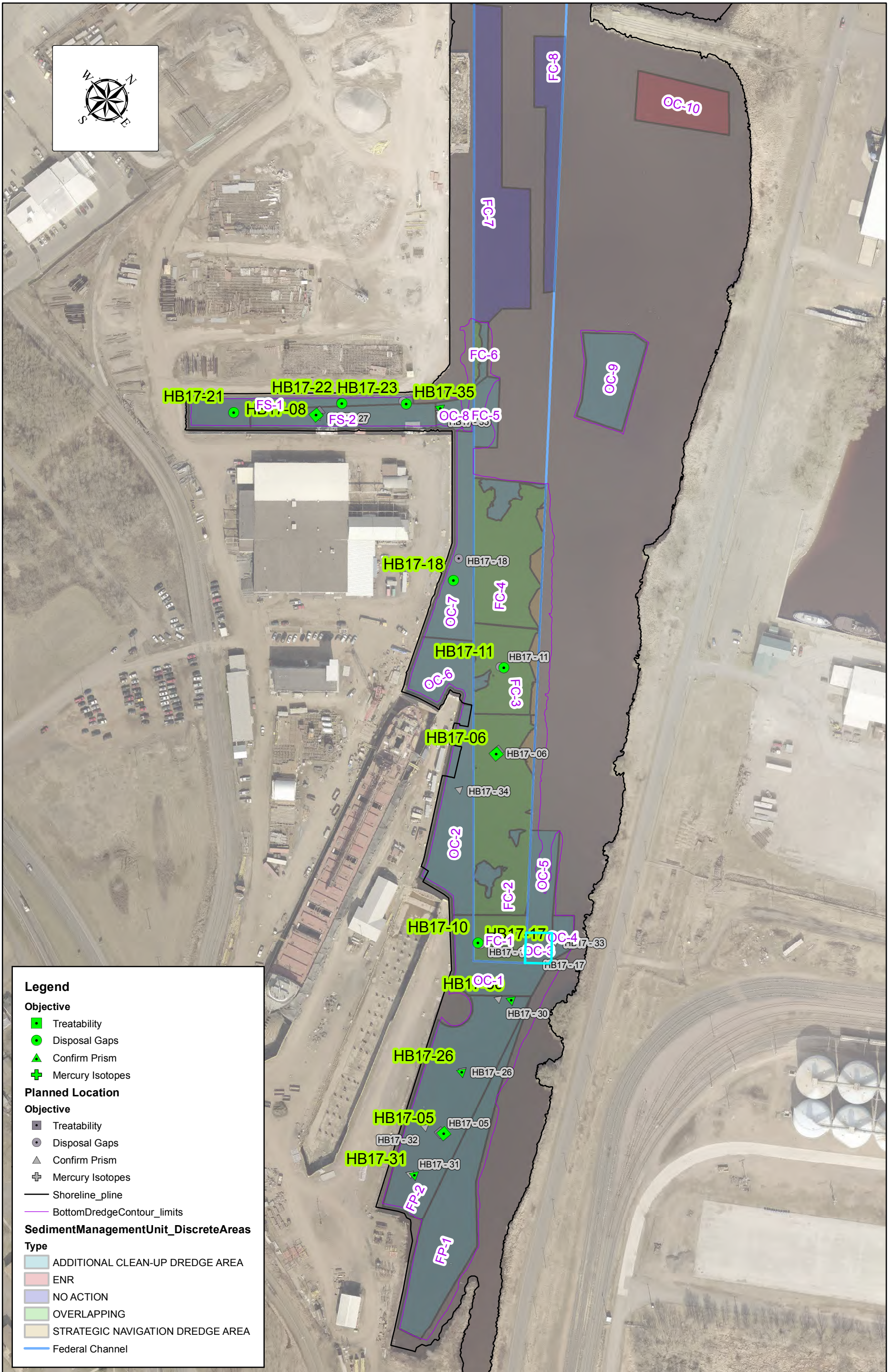


# Howards Bay 2017 Sediment Sampling Overview - North Half





# Howards Bay 2017 Sediment Sampling Overview - South Half



0 50 100 200 300 400 Feet



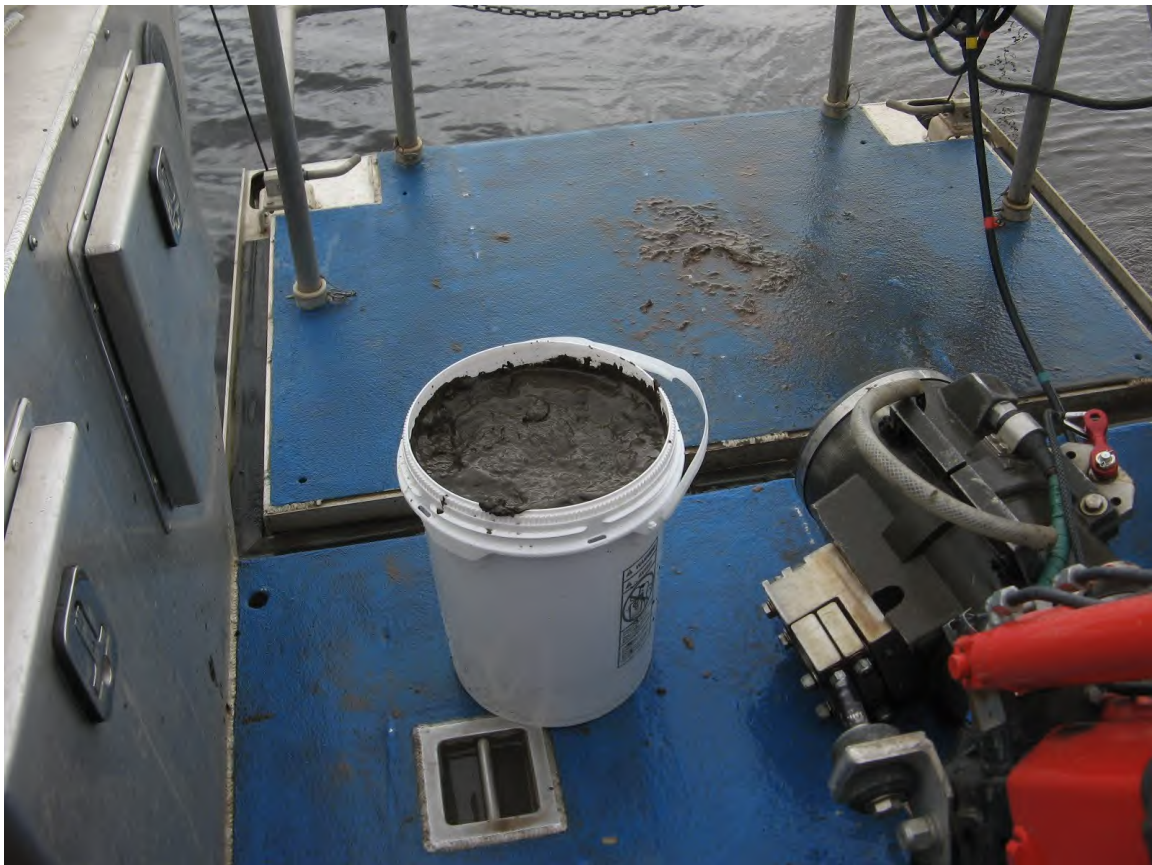
PHOTOS

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Howards Bay 2017 Sediment Sampling— Select Photos taken by Joe Graham (Canon Powershot A710)



Ponar grab sample for treatability testing at HB17-01



Sediment sample for treatability testing—Typical





Core taken with Vibracore —Typical



Extraction of core HB17-17 into pan. (Photo 1 of 3): Top to right. Note plug of dense red clay from core bottom (left)





Extraction of core HB17-17 into pan. (Photo 2 of 3): Red clay plug split lengthwise.



Extraction of core HB17-17 into pan. (Photo 3 of 3): Close-up of red clay plug split lengthwise.





Soft silty clay over dense fine sand - Typical



Extraction of core HB17-21, note red clay plug from bottom of core.



Howards Bay 2017 Sediment Sampling—Select Photos taken by Joe Graham (Cannon Powershot A710)



Warehouse for sale in Hughitt Slip—cracks in bricks & mortar were evident from top to bottom at right corner.

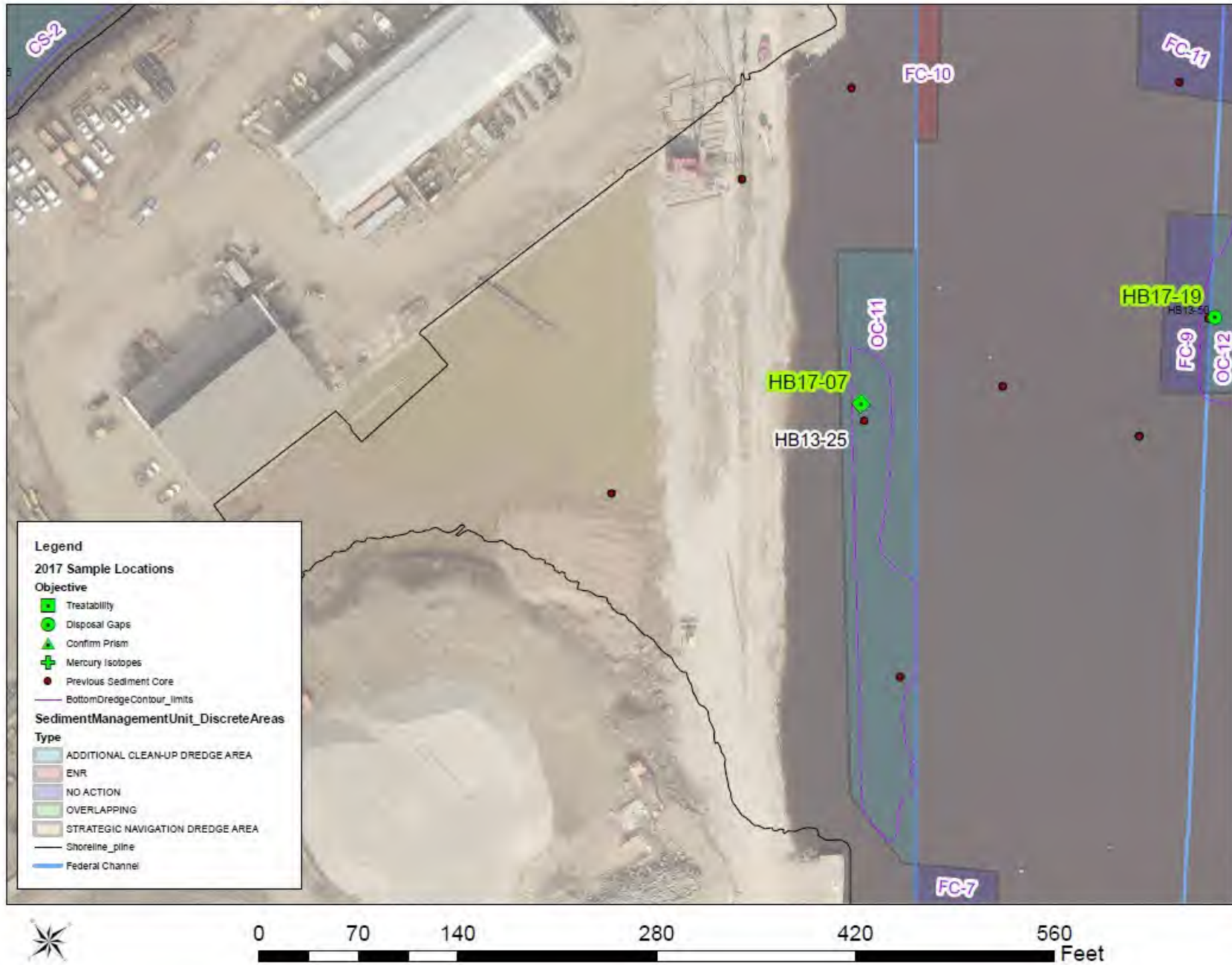


End of warehouse and possible old intake structure in Hughitt Slip

MAP, CORE LOG, AND PHOTOGRAPHS REFERENCED IN OTHER OBSERVATIONS SECTION

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Map showing locations of sediment cores HB17-07 and HB13-25

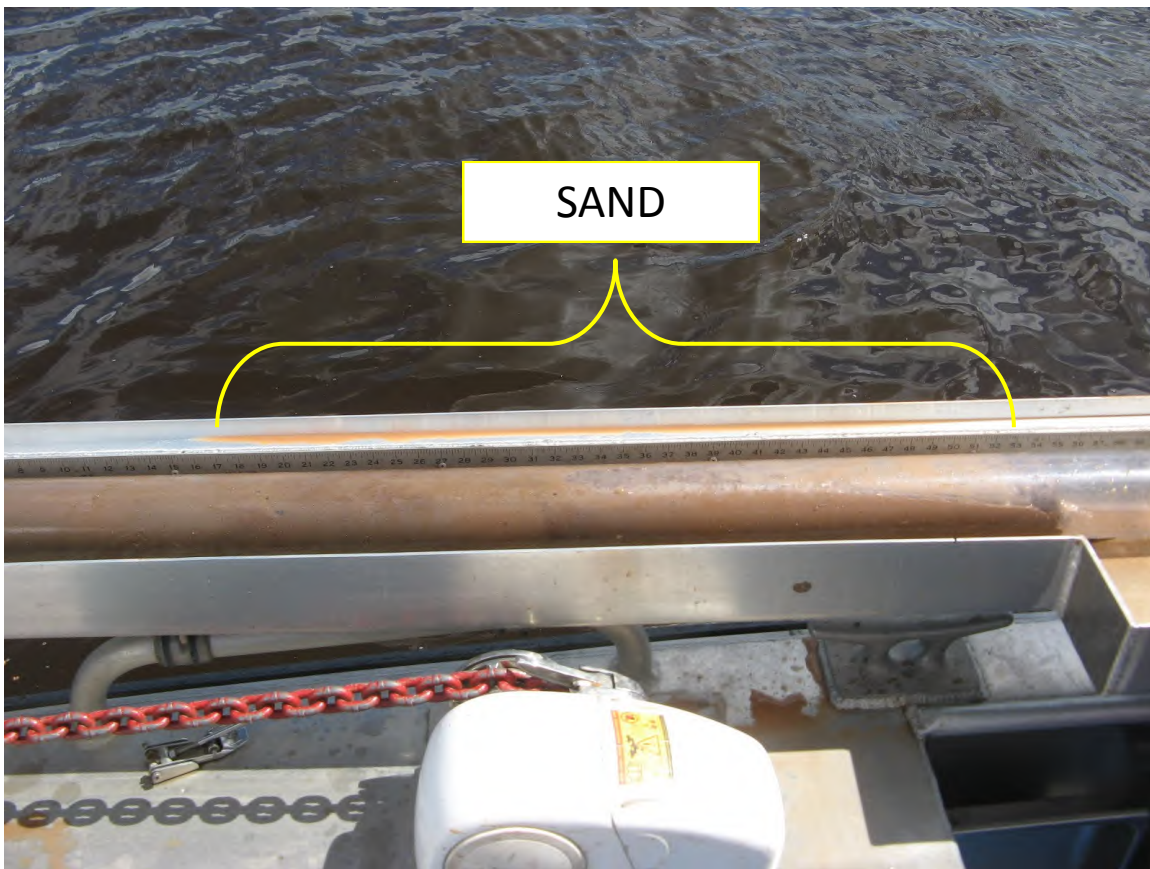




Photographs: Location HB17-07 (page 1 of 2)



Typical Core at HB17-07: Cores at this location were collected off right side of the boat using boom arm of crane. Photographed by J. Graham 06/20/2017 with Cannon Power Shot A710.



Core 1 of 5 at HB17-07 for USACE treatability sample: Top is to right. The lighter brown material is sand. Yellow bracket and text superimposed. Photographed by J. Graham 06/20/2017 with Cannon Power Shot A710.

Photographs: Location HB17-07 (page 2 of 2)



Contents of Core 1 of 5 at HB17-07 for USACE treatability sample; bucket contains sand from top of core , pan at right has 12 inches of brown silty clay from bottom of the core tube. Photographed by J. Graham 06/20/2017 with Cannon Power Shot A710.



# SAMPLE COLLECTION FIELD LOG

**Project Title:** Fraser Shipyards **Sampling Date:** 09122013  
**Project #:** CI001796.0001 **Sample Matrix:** Sediment  
**Field Personnel:** P Viana, J Mayo, S Inman, E Endsley **Sampling Method:** Vibracore  
**Weather:** Clear skies, 70's **Logged by:** JM, PV  
**Sample ID:** HB13-25 **Latitude:** \_\_\_\_\_ **Longitude:** \_\_\_\_\_

Sample Location ID	Time	Water Depth (ft)	Penetration Depth (ft)	Recovery Depth (ft)	CT Length (ft)
HB13-25	1501	17'4"	5'6"	57"	7'6"

Depth (inches)	Description	PID
0-36	silt with little sand, grey brown, poorly sorted, medium plasticity, very soft, wet	
36-47	clay, trace sand, organics, brown, poorly sorted, high plasticity, soft, wet	
47-48	organics with clay, brown, poorly sorted, high plasticity, soft, wet	
48-57	clay, trace sand, organics, brown, poorly sorted, high plasticity, soft, wet	

**Additional Notes:**

**Top depth interval:** \_\_\_\_\_  
**Bottom depth interval:** \_\_\_\_\_  
**Sample IDs for analysis:** \_\_\_\_\_  
**Sample IDs on hold:** \_\_\_\_\_  
**Constituents Sampled:** \_\_\_\_\_  
**Photos:** \_\_\_\_\_  
**Comments:** 86% recovery



Photographs of Core HB13-25 (Page 1 of 4)



Full profile—no flash. Top is to left. Top is grey brown silt. See core log for full description. Photo by ARCADIS 09/12/2013.



Full profile—with flash. Top is to left. Top is grey brown silt. See core log for full description. Photo by ARCADIS 09/12/2013.

Photographs of Core HB13-25 (Page 2 of 4)



Core HB13-25: 0 to 12 inch depth interval. Grey Brown Silt. See core log for full description. Photo by ARCADIS 09/12/2013



Core HB13-25: 12 to 24 inch depth interval. Grey brown silt. See core log for full description. Photo by ARCADIS 09/12/2013.



Photographs of Core HB13-25 (Page 2 of 4)



Core HB13-25: 24 to 36 inch depth interval. Grey Brown Silt. See core log for full description. Photo by ARCADIS 09/12/2013



Core HB13-25: 36 to 48 inch depth interval. Brown clay with organics. See core log for full description. Photo by ARCADIS

Photographs of Core HB13-25 (Page 2 of 4)



Core HB13-25: 48 to 57 inch depth interval. Brown clay. See core log for full description. Photo by ARCADIS 09/12/2013

LABORATORY REPORTS (Not included with all copies)

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QAPP (not included with all copies)

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**Design modifications for placement of  
Howards Bay environmental dredging  
material at the Wisconsin Point Landfill**



**Date:** May 1, 2018

**To:** Howards Bay Design Team c/o Steve Ruple and Eric Malburg (USACE Detroit District)

**From:** Joe Graham (WDNR), Darienne McNamara (City of Superior), and Bill Murray (EPA GLNPO)

**Subject:** Design modifications for placement of Howards Bay environmental dredging material at the Wisconsin Point Landfill

The purpose of this memo is to inform the Howards Bay design team of a change that will affect final design elements related to the placement of cleanup dredge material at the Wisconsin Point Landfill. Changes are necessary based on the December 7, 2017, Howard's Bay Sediment Dewatering Treatability Study Report by ARCADIS. Recommendations for changes given below.

**Increase cover thickness due to high pH of amended material:**

Treatability testing by ARCADIS indicates that dredged material amended with Portland cement has a pH of more than 12 standard units (s.u.). A second sample of this same amended material was also analyzed at the UW Soil & Forage Analysis Lab and had a pH of 10.4 s.u. (Attachment 1). The Wisconsin Point landfill site needs to be revegetated following placement of material. It may be difficult to achieve and maintain vegetative cover in soil with pH levels in this range. The target pH is 5.0 to 7.0 s.u. Previous recommendations to consider eliminating the imported topsoil layer as a cost savings measure are withdrawn. The current design calls for a 6-inch layer of topsoil, and this should be retained. Due to the high pH levels of the amended material, we recommend an additional 6 inches of rooting zone material be placed below the 6 inches of topsoil, for a total cover thickness of 12-inches, to ensure adequate rooting depth for the preferred seed mix for this site. Due to local scarcity of affordable topsoil sources, we recommended evaluating the difference in costs between commercially sourced topsoil and fine-grained dredged material from Erie Pier for rooting zone material (i.e., half the cover thickness).

**Erie Pier as Potential Source for Bottom Half of Cover Thickness:**

Fines from Erie Pier that meet the site-specific placement criteria for the Wisconsin Point landfill (April 19, 2017, DNR Memo) are suitable for use in the rooting zone of the cover. Based on a review of USACE testing in 2007, 2010, and 2013 the levels of PAHs, lead, mercury and thallium in Erie Pier fines are below the site-specific placement criteria, and detections of compounds without site-specific criteria are below residential direct contact levels (Attachment 2). Further evaluation of dioxin (2,3,7,8, TCDD TEQ) was completed for 2007, 2010, and 2013 data sets. The residential and industrial direct contact levels for 2,3,7,8 TCDD are 4.82 ng/kg

and 21.8 ng/kg, respectively. While the average TCDD-TEQ for the 2007 samples of 5.3 ng/kg slightly exceeds the residential level, the average TCDD-TEQ for 2010 and 2013 are 3.3 and 4.1 ng/kg, respectively (Attachment 3). The overall average TCDD-TEQ for 2007, 2010, and 2013 Erie Pier samples is 4.18 ng/kg, which is also below the residential direct contact level. Based on a review of available chemical data, the fine material at Erie Pier is suitable for use in the cover at the Wisconsin Point Landfill.

**Recommendation:**

Increase the thickness of the cover material to be placed over the amended dredged material due to elevated pH levels. Modify the design, as necessary, to require an additional 6 inches of rooting zone material placed immediately below the upper 6 inches of topsoil (total soil cover of 12 inches). Evaluate the difference in cost between obtaining 100% commercially sourced topsoil versus the cost of obtaining one-half of the material (lower 6-inch rooting zone) from Erie Pier. Fine material from Erie Pier should be placed below any imported topsoil. Based on estimates for another current City project, the hauling costs from Erie Pier to the Moccasin Mike landfill are about \$ 7 per cubic yard. Additional costs for loading trucks at Erie Pier would also be incurred. USACE (or its contractor) to produce a cost comparison for consideration by the project partners. The project partners, i.e., EPA, DNR, City, and Fraser, will utilize cost estimates provided by USACE and its contractor for a decision on the use of material from Erie Pier at the Wisconsin Point landfill.

**Attachment 1**

Soil Test Report – UW Soil & Forage Analysis Lab, 12/27/2017





## pH Test on amended Howards Bay dredged material by Wisconsin DNR

April 24, 2018, 11:30 AM

Joe Graham and Craig Roesler tested the pH of amended dredged material from Howards Bay. The material was amended with Portland cement during bench testing by ARCADIS in November 2017 and shipped to DNR in a plastic bucket labeled "Prep 4 Mix-2, Howard's Bay, 11/8/17." The bucket was stored indoors and kept above freezing prior to testing.

### Test procedure (1:1 Soil to water):

Calibrate pH meter (Oakton pH5 Acorn Series) using pH 7 and 10 buffer solutions

Weigh 10 grams of soil into 60 ml poly bottle

Add 10 milliliters of distilled water to the soil in the bottle, stir, and wait 10 minutes

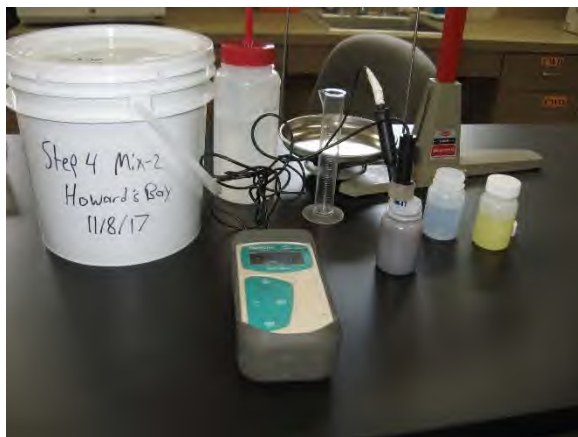
Place glass electrode and record pH after reading stabilizes

### Result:

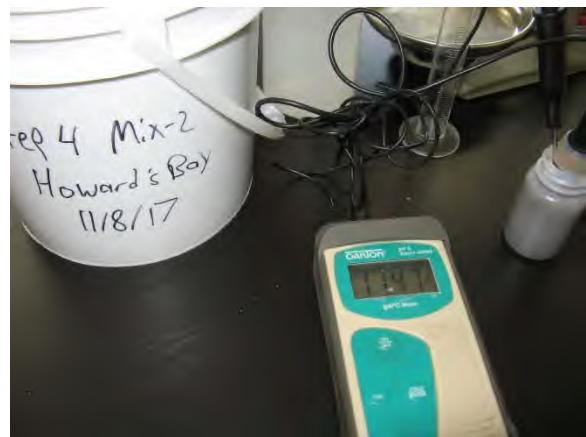
Soil water mixture pH is 11.47 s.u.

### Photos:

Test Apparatus



Reading of pH meter



## **Attachment 2**

Placement Criteria and Erie Pier Analytical Test Results Summary

**Table 1 (April 18, 2017 Revision): Recommended Wisconsin Point Landfill Placement Criteria in mg/kg**

Chemical	CAS Number	EPA Calculator Site-Specific Screening Level (90 days – 4hrs.)	Basis	NI DC (March 2017)	IND DC (March 2017)	Dataset Max	Criteria Basis	Placement Criteria
Lead and Compounds	7439-92-1	400	nc	400	800	2,700	NI DC	<b>400</b>
Mercury (elemental)	7439-97-6	3.13	Ssat	3.13	3.13	9	NI DC	<b>3.13</b>
Acenaphthene	83-32-9	13,900	nc	3,590	45,200	1.9	NI DC	<b>3,590</b>
Acenaphthylene	208-96-8	--	--	--	--	0.36	--	--
Anthracene	120-12-7	69,700	nc	17,900	100,000	3.3	NI DC	<b>17,900</b>
Benz[a]anthracene	56-55-3	4.44	ca	1.14	20.8	6.3	Site-Specific	<b>4.44</b>
Benzo(j)fluoranthene	205-82-3	1.65	ca	0.424	1.76		Site-Specific	<b>1.65</b>
Benzo[a]pyrene	50-32-8	0.447	ca	0.115	2.11	5.3	Site-Specific	<b>0.447</b>
Benzo[b]fluoranthene	205-99-2	4.47	ca	1.15	21.1	7.8	Site-Specific	<b>4.47</b>
Benzo[g,h,i]perylene	191-24-2	--	--	--	--	2.7	--	--
Benzo[k]fluoranthene	207-08-9	44.7	ca	11.5	211	2.8	NI DC	<b>11.5</b>
Chrysene	218-01-9	447	ca	115	2,110	6.7	NI DC	<b>115</b>
Dibenz[a,h]anthracene	53-70-3	0.447	ca	0.115	2.11	0.64	Site-Specific	<b>0.447</b>
Fluoranthene	206-44-0	9,300	nc	2,390	30,100	9.1	NI DC	<b>2,390</b>
Fluorene	86-73-7	9,300	nc	2,390	30,100	2	NI DC	<b>2,390</b>
Indeno[1,2,3-cd]pyrene	193-39-5	4.47	ca	1.15	21.1	2.5	Site-Specific	<b>4.47</b>
Methylnaphthalene, 1-	90-12-0	68.3	ca	17.6	72.7	0.42	NI DC	<b>17.6</b>
Methylnaphthalene, 2-	91-57-6	930	nc	239	3,010	1.2	NI DC	<b>239</b>
Naphthalene	91-20-3	47.6	ca*	5.52	24.1	4.3	NI DC	<b>5.52</b>
Perylene	198-55-0	--	--	--	--	0.66	--	--
Phenanthrene	85-01-8	--	--	--	--	9.8	--	--
Pyrene	129-00-0	6,970	nc	1,790	22,600	9	NI DC	<b>1,790</b>
Thallium (Soluble Salts)	7440-28-0	3.04	nc	0.782	10.2	5.9	Site-Specific	<b>3.04</b>
Tributyltin Compounds	NA	73.7	nc	--	--	13	Site-Specific	<b>73.7</b>

All values in milligrams per kilogram (mg/Kg)

-- = Value not available

Dataset Max = maximum value of that compound contained in comprehensive project sampling database

Abbreviations for *Basis* as follows: non-carcinogen (nc), carcinogen (ca), soil saturation level (Ssat), ceiling level (max)

NI DC = non-industrial direct contact RCL from DNR web calculator spreadsheet (350 days – 24 hrs.)

IND DC = industrial direct contact from DNR web calculator spreadsheet (250 days – 8 hrs.)

## 2007 Erie Pier Data



FIGURE 1: SAMPLING MAP — ERIE PIER CONFINED DISPOSAL FACILITY

STOCKPILE B = 185,000 Square Feet

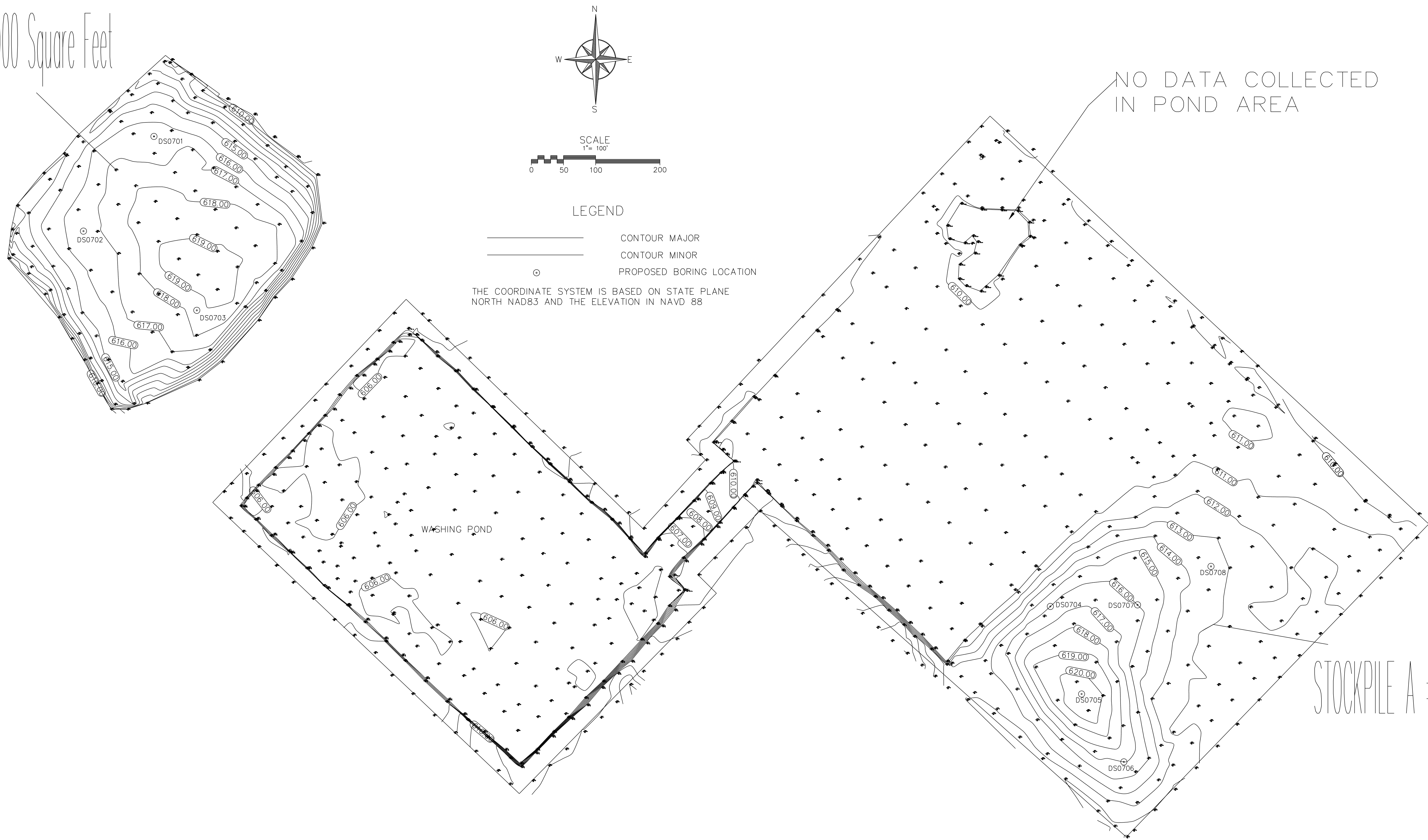


Table 3 - Sample Results  
 Erie Pier Combined Disposal Facility  
 May 2007

Analysis	Parameter	Units	DS070 1	DS070 2	DS070 3	DS070 4	DS070 5	DS070 6	DS070 7	DS070 8
ASTM D 854-91	Specific Gravity	-	2.9	2.5	2.5	2.8	2.7	3	2.7	2.8
ASTM D-2974-87	Moisture, Percent	%	23	21	19	18	21	23	24	23
ASTM E 112	Grain Sizes see attached custom report.	-	-	-	-	-	-	-	-	-
EPA 300.0	Nitrate Nitrogen	mg/kg	5.7	5.8	5.4	4.5	8.6	7.4	9.5	5.8
EPA 300.0	Nitrite Nitrogen	mg/kg	<0.32	<0.31	<0.31	<0.30	<0.31	<0.32	<0.33	<0.32
EPA 350.1	Ammonia Nitrogen	mg/kg	5	7.6	5.5	1.3	3.1	7.4	<1.3	1.5
EPA 351.2	Total Kjeldahl Nitrogen	mg/kg	2200	2300	1800	1600	1500	2500	2100	1200
Org. Carbon by Walkley Black	Total Organic Carbon	mg/kg	20000	17000	17000	25000	15000	20000	23000	15000
SW846 6010B	Boron	mg/kg	6.4	5.3	4.8	3.6	4.3	6.9	5	5.1
	Phosphorus, Total (as P)	mg/kg	620	500	500	530	530	600	740	700
	Strontium	mg/kg	21	19	17	17	15	24	21	20
SW846 6020	Antimony	mg/kg	0.32	0.3	0.26	0.21	0.41	0.29	0.43	0.29
	Arsenic	mg/kg	3.2	2.5	2.5	2.1	2	3	3.2	2.8
	Barium	mg/kg	86	76	64	51	50	71	81	71
	Beryllium	mg/kg	0.45	0.37	0.38	0.32	0.29	0.4	0.42	0.38
	Cadmium	mg/kg	0.39	0.28	0.25	0.23	0.2	0.32	0.37	0.35
	Chromium	mg/kg	27	22	20	16	17	25	26	23
	Copper	mg/kg	25	20	18	15	14	19	23	19
	Lead	mg/kg	20	38	15	14	11	17	21	19
	Manganese	mg/kg	540	440	430	380	390	490	550	490
	Molybdenum	mg/kg	0.25	0.18	0.19	0.19	0.16	0.2	0.25	0.26
	Nickel	mg/kg	22	18	17	15	15	19	21	19
	Selenium	mg/kg	0.37	0.25	0.32	0.27	0.31	0.29	0.39	0.31
	Silver	mg/kg	0.33	0.24	0.19	0.21	0.15	0.23	0.33	0.27
	Thallium	mg/kg	0.15	0.12	0.12	0.11	0.11	0.14	0.16	0.16
	Vanadium	mg/kg	32	28	27	22	24	32	30	28
Zinc	mg/kg	89	83	65	56	53	81	88	84	

Table 3 - Sample Results  
 Erie Pier Combined Disposal Facility  
 May 2007

Analysis	Parameter	Units	DS070 1	DS070 2	DS070 3	DS070 4	DS070 5	DS070 6	DS070 7	DS070 8
SW846 7471	Mercury	mg/kg	<b>0.15</b>	<b>0.15</b>	<b>0.07</b>	<b>0.11</b>	<b>0.061</b>	<b>0.1</b>	<b>0.2</b>	<b>0.13</b>
SW846 8081A	4,4'-DDD	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	4,4'-DDE	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	4,4'-DDT	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Aldrin	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Dieldrin	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Endosulfan I	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Endosulfan II	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Endosulfan sulfate	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Endrin	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Endrin aldehyde	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Endrin ketone	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Heptachlor	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Heptachlor epoxide	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Methoxychlor	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	Toxaphene	ug/kg	<220	<210	<210	<200	<210	<220	<220	<220
	alpha-BHC	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	alpha-Chlordane	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	beta-BHC	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
	delta-BHC	ug/kg	<4.3	<6.3	<4.1	<4.1	<4.2	<4.3	<7.9	<4.3
	gamma-BHC (Lindane)	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3
gamma-Chlordane	ug/kg	<4.3	<4.2	<4.1	<4.1	<4.2	<4.3	<4.4	<4.3	
SW846 8082	Aroclor 1221	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043
	Aroclor-1016	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043
	Aroclor-1232	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043
	Aroclor-1242	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043
	Aroclor-1248	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043
	Aroclor-1254	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043
	Aroclor-1260	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043

Table 3 - Sample Results  
 Erie Pier Combined Disposal Facility  
 May 2007

Analysis	Parameter	Units	DS070 1	DS070 2	DS070 3	DS070 4	DS070 5	DS070 6	DS070 7	DS070 8
SW846 8270C	1-Methylnaphthalene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21
	2-Methylnaphthalene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21
	Acenaphthene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21
	Acenaphthylene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21
	Anthracene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21
	Benzo(a)anthracene	mg/kg	<0.043	<b>0.067</b>	<b>0.046</b>	<b>0.045</b>	<0.042	<b>0.072</b>	<b>0.097</b>	<0.043
	Benzo(a)pyrene	mg/kg	<b>0.044</b>	<b>0.07</b>	<b>0.048</b>	<b>0.047</b>	<b>0.048</b>	<b>0.081</b>	<b>0.11</b>	<0.043
	Benzo(b)fluoranthene	mg/kg	<b>0.063</b>	<b>0.095</b>	<b>0.069</b>	<b>0.063</b>	<b>0.066</b>	<b>0.11</b>	<b>0.13</b>	<b>0.053</b>
	Benzo(g,h,i)perylene	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<b>0.06</b>	<0.043
	Benzo(k)fluoranthene	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<b>0.047</b>	<b>0.063</b>	<0.043
	Chrysene	mg/kg	<b>0.043</b>	<b>0.066</b>	<b>0.047</b>	<b>0.043</b>	<b>0.045</b>	<b>0.073</b>	<b>0.11</b>	<0.043
	Dibenzo(a,h)anthracene	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	<0.043	<0.043
	Fluoranthene	mg/kg	<b>0.068</b>	<b>0.14</b>	<b>0.09</b>	<b>0.076</b>	<b>0.072</b>	<b>0.12</b>	<b>0.2</b>	<b>0.065</b>
	Fluorene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21
	Indeno(1,2,3-cd)pyrene	mg/kg	<0.043	<0.042	<0.041	<0.040	<0.042	<0.043	0.065	<0.043
	Naphthalene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21
	Phenanthrene	mg/kg	<0.043	<b>0.093</b>	<b>0.047</b>	<b>0.051</b>	<0.042	<b>0.06</b>	<b>0.15</b>	<0.043
Pyrene	mg/kg	<0.21	<0.21	<0.20	<0.20	<0.21	<0.21	<0.22	<0.21	
SW846 9012A	Cyanide, Total	mg/kg	<b>0.21</b>	<b>0.21</b>	<b>0.27</b>	<b>0.21</b>	<b>0.15</b>	<b>0.2</b>	<b>0.22</b>	<b>0.17</b>
SW846 9066 (w- Manual Dist)	Phenolics, Total Recoverable	mg/kg	<0.37	<b>0.28</b>	<0.32	<0.32	<b>0.27</b>	<b>0.67</b>	<b>0.34</b>	<b>0.34</b>
SW846 9071A	Oil & Grease	mg/kg	<330	<320	<310	<310	<320	<330	<330	<330

Table 4 - Sample Results, Dioxin  
Erie Pier Combined Disposal Facility  
May 2007

Parameter	Result <sup>1</sup> (pg/g), Qualifier							
	DS0701	DS0702	DS0703	DS0704	DS0705	DS0706	DS0707	DS0708
1,2,3,4,6,7,8-HpCDD	27	250	68	13	39	18	28	23
1,2,3,4,6,7,8-HpCDF	42	94	110	18	51	26	63	51 M
1,2,3,4,7,8,9-HpCDF	0.50 Q J	1.0 J	1.5 J	0.39 Q J	0.79 Q J	0.51 Q J	0.79 J	0.60 J
1,2,3,4,7,8-HxCDD	0.30 Q J	2.2 J	0.67 J	0.16 Q J	0.49 J	<6.4	<6.6	0.33 J
1,2,3,4,7,8-HxCDF	0.74 J	1.9 Q J	1.9 J	0.29 Q J	0.94 Q J	0.33 Q J	1.0 J	0.64 J
1,2,3,6,7,8-HxCDD	1.8 Q J	22	4.7 J	1.0 Q J	2.5 J	1.2 Q J	2.1 Q J	1.8 J
1,2,3,6,7,8-HxCDF	1.0 J	1.6 J	2.5 Q J	0.56 Q J	1.4 J	0.53 Q J	1.2 J	0.89 J
1,2,3,7,8,9-HxCDD	1.0 J	16	2.6 J	0.55 J	1.3 Q J	0.73 Q J	1.2 Q J	1.0 J
1,2,3,7,8,9-HxCDF	<7.2	<6.4	<6.5	<6.2	<6.3	<6.4	<6.6	<6.4
1,2,3,7,8-PeCDD	0.29 J	2.2 J	0.80 J	0.26 Q J	0.40 J	<6.4	<6.6	0.20 Q J
1,2,3,7,8-PeCDF	<7.2	0.22 Q J	0.22 Q J	<6.2	0.20 Q J	<6.4	<6.6	<6.4
2,3,4,6,7,8-HxCDF	0.24 J	0.62 Q J	0.58 Q J	0.26 Q J	0.43 J	0.27 Q J	0.49 Q J	0.33 Q J
2,3,4,7,8-PeCDF	<7.2	0.51 Q J	0.63 J	<6.2	0.34 Q J	<6.4	0.35 Q J	0.22 J
2,3,7,8-TCDD	<1.4	0.57 J	0.35 Q J	<1.2	<1.3	<1.3	<1.3	<1.3
2,3,7,8-TCDF	1.1 Q J	1.0 Q J	1.8 Q	0.61 Q J	1.2 Q J	0.61 Q J	0.65 Q J	1.0 Q J
OCDD	270 B	1200 B	740 B	130 B	420 B	170 B	270 B	200 B M
OCDF	21 B	36 B	51 B	8.6 B J	27 B	13 B	28 B	21 B
Total HpCDD	56	430	150	30	84	38	58	54
Total HpCDF	78 Q	180 Q	200	34 Q	100 Q	48 Q	110 Q	90 Q
Total HxCDD	14 J Q	150 Q	38 Q	8.1 J Q	20 Q	8.4 Q J	15 Q	14 J Q
Total HxCDF	24 Q	58 Q	66 Q	15 Q	35 Q	16 Q	32 Q	26 Q
Total PeCDD	3.0 Q J	28 Q J	11 Q J	1.8 Q J	4.5 Q J	1.5 Q J	3.0 Q J	3.1 Q J
Total PeCDF	8.5 J Q	19 J Q	21 J Q	7.2 J Q	12 J Q	5.5 Q J	17 J Q	9.2 J Q
Total TCDD	0.78 J Q	8.8 Q	8.3 Q	0.17 Q J	2.9 J Q	<1.3	2.6 J Q	1.8 J Q
Total TCDF	8.2 Q	19 Q	19 Q	8.2 Q	13 Q	5.5 Q	22 Q	8.7 Q
Percent Moisture	31	22.1	22.6	19.2	20.6	22.3	23.7	21.9

1 Results reporting limits adjusted for dry weight.

< Analyte was not detected above minimum level (ML). The numerical value represents the ML, which is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point."

B Method blank contamination. Associated method blank contains the target analyte at a reportable level.

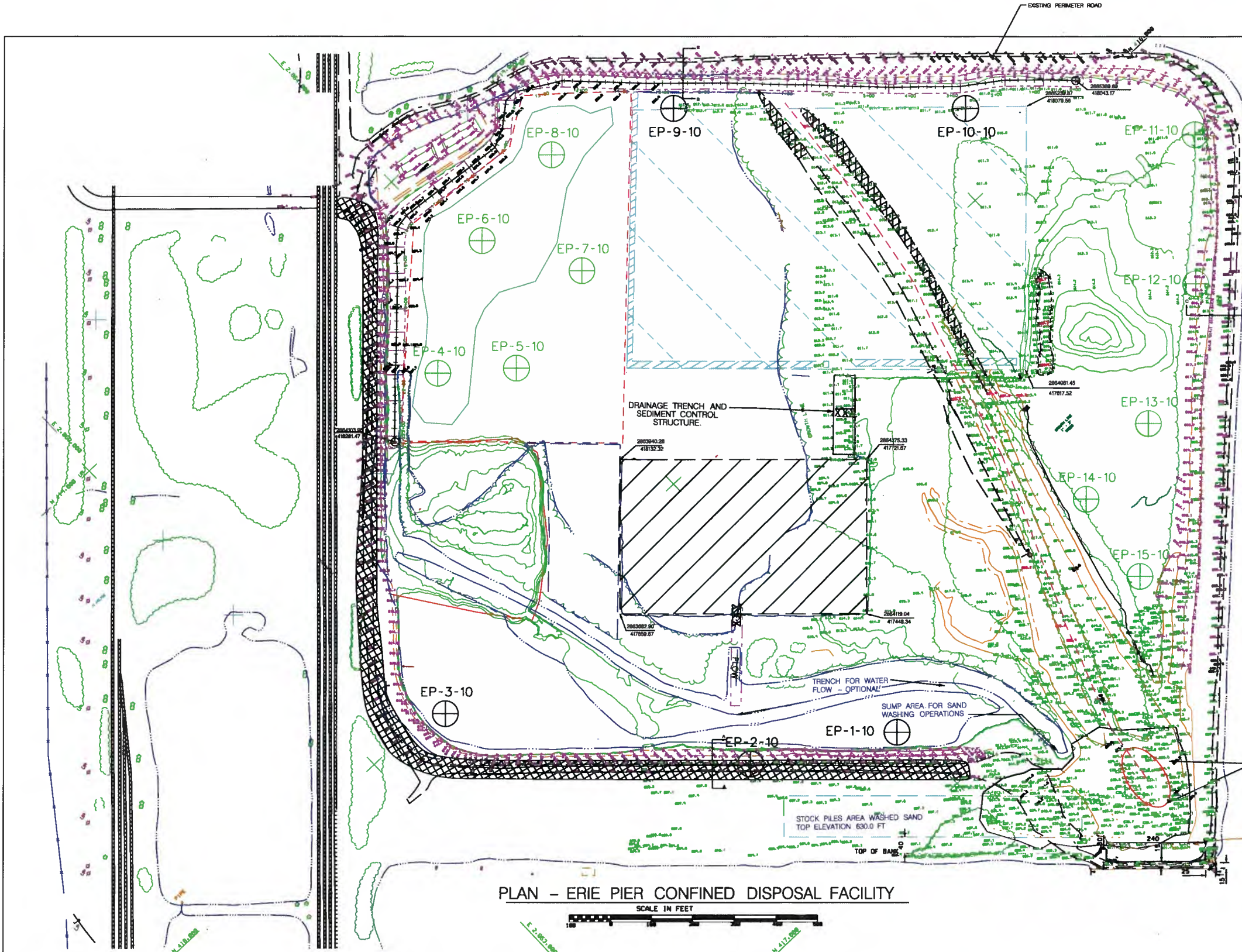
J Estimated result.

M Matrix spike recovery outside limits.

Q Estimated maximum possible concentration (EMPC).

## 2010 Erie Pier Data





SOIL BORING LOCATIONS			
DESIGNATION	EASTING = X	NORTHING = Y	DEPTH = FT
EP-1-10	2,863,974.43	417,188.57	30
EP-2-10	2,863,662.26	417,377.39	40
EP-3-10	2,863,209.72	417,972.37	30
EP-4-10	2,863,763.60	418,586.69	30
EP-5-10	2,863,909.55	418,465.75	10
EP-6-10	2,864,060.77	418,747.00	10
EP-7-10	2,864,185.88	418,529.08	10
EP-8-10	2,864,323.98	418,783.39	10
EP-9-10	2,864,616.50	418,661.42	40
EP-10-10	2,865,129.80	418,176.69	30
EP-11-10	2,865,490.92	417,749.23	30
EP-12-10	2,865,245.51	417,484.84	10
EP-13-10	2,864,930.77	417,316.77	10
EP-14-10	2,864,695.02	417,286.91	10
EP-15-10	2,864,661.90	417,060.54	30

**LEGEND**

- HORIZONTAL CONTROL POINT
- ELEVATION ABOVE MWL 614.7
- VEGETATION
- EXISTING DREDGED MATERIAL PLACEMENT AREA
- EXISTING WASHING POND
- EXISTING STOCK PILE WASHED MATERIAL - GRADE TO 630.00 FT

**PLAN - ERIE PIER CONFINED DISPOSAL FACILITY**



1. THE INFORMATION DEPICTED ON THIS DRAWING REPRESENTS THE RESULTS OF TOPOGRAPHIC SURVEYS PERFORMED BY THE DULUTH AREA OFFICE IN SEPTEMBER 2006, APRIL 2007 & MAY 2009 AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS AT THAT TIME.
2. ALL ELEVATIONS ARE REFERRED TO MEAN WATER LEVEL RIMOUSKI, PD. (I.G.L.D. 1985). ELEVATIONS ARE SHOWN AS THUS: 611.3
3. THE ABILITY OF EXISTING MATERIALS WITHIN THE CONFINED DISPOSAL FACILITY TO SUPPORT EQUIPMENT AND PERSONNEL IS UNKNOWN. THE CONTRACTOR SHALL MAKE ITS OWN INVESTIGATIONS AS NECESSARY IN ORDER TO DETERMINE THE SELECTION OF EQUIPMENT AND MANNER OF OPERATION TO BE USED AT THE SITE.
4. THE LEVEL OF EXISTING WATER WITHIN THE DISPOSAL AREA MAY VARY.
5. THE GRID SYSTEM SHOWN IS REFERENCED TO THE MINNESOTA SYSTEM OF STATE PLANE COORDINATES, LAMBERT PROJECTION, NORTH ZONE, 1983 NORTH AMERICAN DATUM.
6. THIS AREA HAS CHANGED SINCE THE DATE OF THE SURVEYS SHOWN.

- EP-15-10 GEOTECHNICAL AND ENVIRONMENTAL BORING LOCATION
- EP-1-10 GEOTECHNICAL BORING LOCATION

DESIGNED BY: PJD	REVISION	BY
DRAWN BY: PJD	U.S. ARMY ENGINEER DISTRICT, DETROIT	
CHECKED BY: EJJ	CORPS OF ENGINEERS	
REVIEWED BY: WDM	DETROIT, MICHIGAN	
APPROVED BY: WDM	DULUTH - SUPERIOR HARBOR	
MINNESOTA-WISCONSIN		
FY 10 SOIL BORINGS		
ERIE PIER CONFINED DISPOSAL FACILITY		
PLOT SCALE: 1"=100'	FILE NAME: 090709.dgn	
DATE: 23 AUG 10	SOLICITATION NUMBER: W911X-09-B-0004	
SHEET: 1 OF 1	CONTRACT NUMBER: W911X-09-C-000X	



**APPENDIX B**

**Table - 1 :Sediment Chemical Analytical Results Summary Table**

Parameter	Sample ID		EP-4-10	EP-5-10	EP-6-10	EP-7-10	EP-8-10	EP-11-10	EP-12-10	EP-13-10	EP-14-10	EP-15-10
	Lab ID		T10J341-10	T10J341-09	T10J341-08	T10J341-07	T10J341-06	T10J341-01	T10J341-02	T10J341-03	T10J341-05	T10J341-04
	Date Collected		10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010
	Core Thickness (ft)											
Physical Kit	Analysis Method	Units										
% Solids	ASTM D2974-87	% by Wt.	72	77	73	78	73	80	84	75	82	82
Specific Gravity	SM2710F		2.6	2.8	2.6	2.6	2.6	2.6	2.5	2.6	2.7	2.7
In-Place Density	USACE, In-Place Density	g/mL	2	1.8	1.7	1.6	1.9	1.8	2	1.7	2.1	2.0
Nutrient Kit												
Ammonia as N	E350.1	mg/kg dry	28	1.6	25	<1.0	9.8	1.8	3.8	1.4	<1.0	3.8
Total Kjeldahl Nitrogen	E351.2	mg/kg dry	710	1,100	280	1,000	850	790	510	820	850	420
Phosphorus	EPA 601B	mg/kg dry	480	480	94	400	450	440	330	440	410	320
Organic Kit												
Cyanide (total)	EPA 9012B	mg/kg dry	<0.42	<0.39	<0.41	<0.36	<0.38	<0.39	<0.39	<0.31	<0.30	<0.31
Oil & Grease (HEM)	EPA 9071B	mg/kg dry	<420	<420	<420	<420	<420	<420	<420	<420	<420	<420
Chemical Oxygen Demand	PLUMB	mg/kg dry	70,000	4,200	69,000	59,000	70,000	32,000	6,600	82,000	37,000	3,500
Volatile Solids	PLUMB	% by Wt.	8.7	4.7	7.6	9.9	7.2	6.2	6	5.6	5.8	3.4
Total Organic Carbon	WALKLEY BLACK	mg/kg dry	22,000	17,000	20,000	20000	20,000	13,000	36,000	18,000	15,000	9,800

**APPENDIX B**

**Table - 1 :Sediment Chemical Analytical Results Summary Table**

Parameter	Sample ID		EP-4-10	EP-5-10	EP-6-10	EP-7-10	EP-8-10	EP-11-10	EP-12-10	EP-13-10	EP-14-10	EP-15-10
	Lab ID		T10J341-10	T10J341-09	T10J341-08	T10J341-07	T10J341-06	T10J341-01	T10J341-02	T10J341-03	T10J341-05	T10J341-04
	Date Collected		10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010
	Core Thickness (ft)											
<b>PCBs</b>	<b>Analysis Method</b>	<b>Units</b>										
Aroclor-1016	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
Aroclor-1221	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
Aroclor-1232	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
Aroclor-1242	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
Aroclor-1248	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
Aroclor-1254	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
Aroclor-1260	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
<b>Total PCBs</b>	SW8082	ug/kg dry	<92	<86	<91	<86	<91	<83	<79	<90	<82	<82
<b>PNAs</b>	<b>Analysis Method</b>	<b>Units</b>										
Acenaphthene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Acenaphthylene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Anthracene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo (a) anthracene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo (a) pyrene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo (b) fluoranthene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo (g,h,i) perylene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo (k) fluoranthene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Chrysene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Dibenz (a,h) anthracene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluoranthene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluorene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Indeno (1,2,3-cd) pyrene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Methylnaphthalene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Naphthalene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Phenanthrene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pyrene	EPA 8270C	ug/kg dry	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
<b>Phenolics</b>	<b>Analysis Method</b>	<b>Units</b>										
4,4'-DDD	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
4,4'-DDE	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
4,4'-DDT	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20



**APPENDIX B**

**Table - 1 :Sediment Chemical Analytical Results Summary Table**

Parameter	Sample ID		EP-4-10	EP-5-10	EP-6-10	EP-7-10	EP-8-10	EP-11-10	EP-12-10	EP-13-10	EP-14-10	EP-15-10
	Lab ID		T10J341-10	T10J341-09	T10J341-08	T10J341-07	T10J341-06	T10J341-01	T10J341-02	T10J341-03	T10J341-05	T10J341-04
	Date Collected		10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010
	Core Thickness (ft)											
alpha-BHC	EPA 8081A	ug/kg dry	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
alpha-Chlordane	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
beta-BHC	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
delta-BHC	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Dieldrin	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Endosulfan I	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Endosulfan II	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Endosulfan Sulfate	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Endrin	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Endrin Aldehyde	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Endrin Ketone	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
gamma-Chlordane	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
gamma-BHC(Lindane)	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Heptachlor	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Heptachlor Epoxide	EPA 8081A	ug/kg dry	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Methoxychlor	EPA 8081A	ug/kg dry	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxaphene	EPA 8081A	ug/kg dry	<170	<170	<170	<170	<170	<170	<170	<170	<170	<170





APPENDIX B

Table - 1 :Sediment Chemical Analytical Results Summary Table

Parameter	Sample ID		EP-4-10	EP-5-10	EP-6-10	EP-7-10	EP-8-10	EP-11-10	EP-12-10	EP-13-10	EP-14-10	EP-15-10
	Lab ID		T10J341-10	T10J341-09	T10J341-08	T10J341-07	T10J341-06	T10J341-01	T10J341-02	T10J341-03	T10J341-05	T10J341-04
	Date Collected		10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/22/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010	10/21/2010
	Core Thickness (ft)											
Metals Kit	Analysis Method	Units										
Arsenic	SW6020A	mg/kg dry	<b>2.7</b>	<b>1.9</b>	<b>2.7</b>	<b>2.3</b>	<b>2.6</b>	<b>1.9</b>	<b>1.9</b>	<b>2.2</b>	<b>2.2</b>	<b>1.8</b>
Barium	SW6020A	mg/kg dry	<b>73</b>	<b>45</b>	<b>65</b>	<b>53</b>	<b>62</b>	<b>42</b>	<b>34</b>	<b>47</b>	<b>63</b>	<b>38</b>
Cadmium	SW6020A	mg/kg dry	<b>0.26</b>	<0.20	<b>0.22</b>	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chromium	SW6020A	mg/kg dry	<b>22</b>	<b>15</b>	<b>20</b>	<b>16</b>	<b>19</b>	<b>14</b>	<b>13</b>	<b>16</b>	<b>19</b>	<b>12</b>
Copper	SW6020A	mg/kg dry	<b>17</b>	<b>12</b>	<b>16</b>	<b>13</b>	<b>16</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>14</b>	<b>10</b>
Iron	SW6020A	mg/kg dry	<b>16,000</b>	<b>11,000</b>	<b>15,000</b>	<b>13,000</b>	<b>15,000</b>	<b>11,000</b>	<b>10,000</b>	<b>13,000</b>	<b>14,000</b>	<b>10,000</b>
Lead	SW6020A	mg/kg dry	<b>19</b>	<b>8.5</b>	<b>18</b>	<b>13</b>	<b>17</b>	<b>8.6</b>	<b>28</b>	<b>13</b>	<b>13</b>	<b>8.7</b>
Manganese	SW6020A	mg/kg dry	<b>460</b>	<b>320</b>	<b>450</b>	<b>350</b>	<b>450</b>	<b>310</b>	<b>220</b>	<b>330</b>	<b>390</b>	<b>220</b>
Mercury	SW7471A	mg/kg dry	<b>0.13</b>	<b>0.05</b>	<b>0.11</b>	<b>0.083</b>	<b>0.11</b>	<b>0.059</b>	<b>0.061</b>	<b>0.091</b>	<b>0.069</b>	<b>0.065</b>
Nickel	SW6020A	mg/kg dry	<b>16</b>	<b>13</b>	<b>16</b>	<b>13</b>	<b>15</b>	<b>12</b>	<b>11</b>	<b>12</b>	<b>15</b>	<b>11</b>
Selenium	SW6020A	mg/kg dry	<0.37	<0.37	<0.38	<0.40	<0.39	<0.38	<0.38	<0.38	<0.36	<0.38
Silver	SW6020A	mg/kg dry	<b>0.24</b>	<b>0.15</b>	<b>0.2</b>	<b>0.21</b>	<b>0.14</b>	<b>0.11</b>	<0.10	<b>0.13</b>	<b>0.16</b>	<b>0.13</b>
Zinc	SW6020A	mg/kg dry	<b>81</b>	<b>42</b>	<b>70</b>	<b>50</b>	<b>72</b>	<b>39</b>	<b>39</b>	<b>61</b>	<b>56</b>	<b>36</b>

**Bold** - Analysis is above detection limit.

*Italized* - Analysis result is estimated



Table - 2: Sediment Dioxin Analytical Results Summary Table

Parameter	Sample ID	EP 4-10		EP 5-10		EP 6-10		EP 8-10		EP 11-10		EP 11-10-MS		EP 11-10-MSD		EP 12-10		EP 13-10		EP 14-10		EP 15-10		
	Laboratory ID	G0J260520-009		G0J260520-008		G0J260520-007		G0J260520-006		G0J260520-001		G0J260520-001		G0J260520-001		G0J260520-002		G0J260520-003		G0J260520-005		G0J260520-004		
	Sample Date	10/22/2010		10/22/2010		10/22/2010		10/22/2010		10/21/2010		10/21/2010		10/21/2010		10/21/2010		10/21/2010		10/21/2010		10/21/2010		
	Sample Time	13:15		12:45		10:45		8:30		9:00		9:00		9:00		10:00		14:00		16:00		15:00		
	Test Method	Units	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier
Percent Moisture	D 2216-90	%	27.2	—	20.7	—	25.8	—	26	—	19.9	—	19.9	—	19.9	—	22.6	—	26	—	32.5	—	19.3	—
<b>DIOXIN RESULTS</b>																								
1,2,3,4,6,7,8-HpCDD	EPA 8290	pg/g	63	B	24	B	52	B	57	B	100	B	124	a B	115	a B	35	B	54	B	14	B	18	B
1,2,3,4,6,7,8-HpCDF	EPA 8290	pg/g	98	B	56	B	82	B	91	B	70	B	163	B	141	a B	42	B	110	B	23	B	29	B
1,2,3,4,7,8,9-HpCDF	EPA 8290	pg/g	1.2	J B	0.65	J Q B	1.3	J B	1.3	J B	1.2	J B	96.8	B	101	B	0.73	J B	1.4	J B	0.43	J B	0.51	J B
1,2,3,4,7,8-HxCDD	EPA 8290	pg/g	0.69	J	0.37	J	0.39	J Q	0.6	J Q	0.56	J	83.5	—	71.1	—	0.27	J Q	0.4	J Q	0.21	J	0.18	J Q
1,2,3,4,7,8-HxCDF	EPA 8290	pg/g	0.39	J Q B	0.72	J Q B	1.3	J Q B	1.9	J B	1.2	J B	86.7	B	82.7	B	0.74	J B	1.7	J B	0.51	J B	0.51	J Q B
1,2,3,6,7,8-HxCDD	EPA 8290	pg/g	4	J B	1.5	J B	3.2	J B	3.4	J B	4.1	J B	80.5	B	89.6	B	1.7	J B	4	J B	1	J B	0.98	J Q B
1,2,3,6,7,8-HxCDF	EPA 8290	pg/g	2.3	J B	1.1	J B	2.2	J B	2.3	J B	1.8	J B	87.2	B	83.9	B	1.3	J B	2.6	J B	0.65	J B	0.63	J B
1,2,3,7,8,9-HxCDD	EPA 8290	pg/g	2.2	J	0.81	J	1.2	J	1.7	J	1.6	J	82.3	—	83.2	—	0.81	J	1.7	J	0.6	J	0.42	J Q
1,2,3,7,8,9-HxCDF	EPA 8290	pg/g	0.083	J Q B	<0.073	U	<0.076	U	0.14	J B	<0.12	U	82.7	B	86	B	0.12	J Q B	<0.10	U	<0.12	U	<0.076	U
1,2,3,7,8-PeCDD	EPA 8290	pg/g	0.88	J	0.38	J	0.79	J	0.73	J Q	0.62	J	92.3	—	88.3	—	0.44	J Q	0.78	J	<0.18	U	0.25	J Q
1,2,3,7,8-PeCDF	EPA 8290	pg/g	0.44	J	<0.15	U	0.42	J Q	0.4	J Q	0.3	J Q	86.5	—	84.8	—	<0.19	U	0.34	J Q	<0.12	U	0.17	J
2,3,4,6,7,8-HxCDF	EPA 8290	pg/g	0.78	J B	0.27	J Q B	0.55	J B	0.69	J B	0.98	J B	84.9	B	84.2	B	0.3	J B	0.52	J B	0.19	J B	0.17	J B
2,3,4,7,8-PeCDF	EPA 8290	pg/g	0.79	J	0.29	J	0.56	J Q	0.69	J	0.44	J Q	84.3	—	86.7	—	0.38	J	0.52	J Q	<0.24	U	0.15	J Q
2,3,7,8-TCDD	EPA 8290	pg/g	0.63	J	0.31	J	0.46	J Q	0.66	J	0.44	J Q	18.4	—	17.6	—	0.19	J Q	0.46	J Q	0.23	J	0.25	J Q
2,3,7,8-TCDF	EPA 8290	pg/g	2	CON	0.54	J CON	2.3	CON	2.2	CON	1.2	CON	19.7	CON	18.8	CON	0.95	J CON	1.8	CON	0.77	J CON	0.69	J CON
OCDD	EPA 8290	pg/g	610	B	230	B	480	B	490	B	760	B	486	a B	427	a B	290	B	490	B	120	B	160	B
OCDF	EPA 8290	pg/g	45	B	23	B	41	B	41	B	45	B	184	a B	182	a B	20	B	41	B	10	B	14	B
Total HpCDD	EPA 8290	pg/g	140	B	52	B	110	B	130	B	210	B	—	—	—	—	120	B	120	B	31	B	38	B
Total HpCDF	EPA 8290	pg/g	200	J B	110	J Q B	180	J B	200	J B	170	J B	—	—	—	—	89	J B	230	J B	53	J B	59	J B
Total HxCDD	EPA 8290	pg/g	38	J B	14	J Q B	27	J Q B	32	J Q B	29	J Q B	—	—	—	—	19	J Q B	33	J Q B	10	J B	9.1	J Q B
Total HxCDF	EPA 8290	pg/g	65	J Q B	26	J Q B	54	J Q B	63	J Q B	47	J Q B	—	—	—	—	28	J Q B	68	J Q B	19	J Q B	16	J Q B
Total PeCDD	EPA 8290	pg/g	11	J Q	5	J Q	10	J Q	10	J Q	8.3	J Q	—	—	—	—	4.4	J Q	9.9	J Q	4.2	J Q	2.6	J Q
Total PeCDF	EPA 8290	pg/g	12	J Q	3.6	J	14	J Q	14	J Q	8	J Q	—	—	—	—	4.7	J Q	13	J Q	2.5	J Q	2.8	J Q
Total TCDD	EPA 8290	pg/g	8.4	J Q	4	J Q	9.3	J Q	7.7	J Q	6.2	J Q	—	—	—	—	5.1	J Q	7	J Q	5.7	J Q	2.6	J Q
Total TCDF	EPA 8290	pg/g	10	J Q	3.5	J Q	13	J Q	12	J Q	7.4	J Q	—	—	—	—	4.4	J Q	9.4	J Q	3.3	J Q	3	J Q
<b>TEQ Concentrations</b>	EPA 8290	pg/g	4.8		2.2		4.1		4.6		4.3		—		—		2.2		4.5		1.0		1.4	

**Bold** - detectable level of analyte above the minimum estimated reporting limit.

**B** Method blank contamination.

**J** Estimated result. Result exceeds the calibration.

**Q** Estimated maximum possible concentrations.

**U** Non-detected.

**D** Results was obtained from the analysis of the dilution



## 2013 Erie Pier Data





N46.746°

W92.1492°

**EP-13-3**

**EP-13-4**

**EP-13-1**

**EP-13-2**

**EP-13-5**

**EP-13-6**

W92.142°

N46.7388°



Appendix B

TABLE 1: ERIE PIER SOIL ANALYTICAL RESULTS

Parameter	Sample ID		EP-13-1	EP-13-2	EP-13-3	EP-13-4	EP-13-5	EP-13-6
	Lab ID		1310A28-001	1310A28-002	1310A28-003	1310A28-004	1310A28-005	1310A28-006
	Date Collected		10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013
	Latitude, ° ' N		46° 44.6314'	46° 44.6010'	46° 44.6205'	46° 44.6520'	46° 44.6275'	46° 44.6434'
	Longitude, ° ' W		092° 08.7423'	092° 08.7464'	092° 08.8001'	092° 08.7615'	092° 08.6759'	092° 08.6402'
<b>Physical Kit</b>	<b>Method</b>	<b>Units</b>						
Density		20C	14.5	17.2	15.6	15.2	16.4	14.4
Specific Density		Cu Ft	1.74	2.06	1.87	1.82	1.97	1.73
% Moisture	Moisture	% by Wt.	27	40	34	39	30	28
% Solids	ASTM D2216	% by Wt.	73	60	66	61	70	72
<b>Nutrients Kit</b>	<b>Method</b>	<b>Units</b>						
Phosphorus, total	SM 4500 P-F	mg/Kg dry	140	130	100	120	150	200
Nitrogen, Ammonia	EPA 350.1	mg/Kg dry	190	220	200	180	180	94
Nitrogen, Kjeldahl, total	EPA 351.2	mg/Kg dry	730	1,900	870	1,300	960	720
<b>Organic Indicators Kit</b>	<b>Method</b>	<b>Units</b>						
Oil & Grease, total	SW 9071	mg/Kg dry	0.14	0.19	0.20	0.32	0.15	<0.14
Cyanide, total	SW 9012	mg/Kg dry	<0.70	<0.83	<0.76	<0.84	<0.72	<0.69
Chemical Oxygen Demand	EPA 410.4	mg/Kg dry	7,600	32,000	9,200	11,000	7,900	9,600
Total Volatile Solids	SM 2540 G	% by Wt	4.7	6.6	6	9.8	6.6	3.5
Total Organic Carbon	SW 9060	g/Kg dry	11,000	31,000	19,000	29,000	39,000	10,000
<b>Organochlorine Pesticides (GC)</b>	<b>Method</b>	<b>Units</b>						
4,4'-DDD	SW 8081A	ug/kg dry	<0.91	1.0	<0.99	<1.1	<0.91	<0.93
4,4'-DDE	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
4,4'-DDT	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Aldrin	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
alpha-BHC	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
alpha-Chlordane	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
beta-BHC	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Chloradane	SW 8081A	ug/kg dry	<4.7	<5.7	<5.1	<5.6	<4.7	<4.8
delta-BHC	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Dieldrin	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Endosulfan I	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Endosulfan II	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Endosulfan sulfate	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Endrin	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Endrin aldehyde	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93

Non-detected results = "<" RL

Appendix B

TABLE 1: ERIE PIER SOIL ANALYTICAL RESULTS

Parameter	Sample ID		EP-13-1	EP-13-2	EP-13-3	EP-13-4	EP-13-5	EP-13-6
	Lab ID		1310A28-001	1310A28-002	1310A28-003	1310A28-004	1310A28-005	1310A28-006
	Date Collected		10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013
Endrin ketone	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
gamma-BHC (Lindane)	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
gamma-Chlordane	SW 8081A	ug/kg dry	<0.91	1.1	<0.99	<1.1	<0.91	<0.93
Heptachlor	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Heptachlor epoxide	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Methoxychlor	SW 8081A	ug/kg dry	<0.91	<1.1	<0.99	<1.1	<0.91	<0.93
Toxaphene	SW 8081A	ug/kg dry	<6.8	<8.2	<7.4	<8.1	<6.8	<6.9
<b>Polychlorinated Biphenyls (PCBs) by Gas Chromatography</b>	<b>Method</b>	<b>Units</b>						
Aroclor-1016	SW 8082A	ug/kg dry	<9.1	<11	<9.8	<11	<9.1	<9.2
Aroclor-1221	SW 8082A	ug/kg dry	<4.1	<4.9	<4.4	<4.8	<4.1	<4.1
Aroclor-1232	SW 8082A	ug/kg dry	<6.1	<7.3	<6.6	<7.3	<6.1	<6.2
Aroclor-1242	SW 8082A	ug/kg dry	<5.1	<6.1	<5.5	<6.0	<5.1	<5.1
Aroclor-1248	SW 8082A	ug/kg dry	<4.8	<5.7	>5.2	<5.7	<4.8	<4.9
Aroclor-1254	SW 8082A	ug/kg dry	<5.8	<6.9	>6.2	<6.8	<5.7	<5.8
Aroclor-1260	SW 8082A	ug/kg dry	<9.1	16	>9.8	<11	<9.1	<9.2
Aroclor-1262	SW 8082A	ug/kg dry	<5.4	<6.5	<5.8	<6.4	<5.4	<5.5
<b>6010B Metals (ICP)</b>	<b>Method</b>	<b>Units</b>						
Arsenic	SW 6010B	ug/kg dry	4,000	6,300	5,200	6,900	4,600	3,700
Barium	SW 6010B	ug/kg dry	74,000	140,000	130,000	170,000	130,000	6,600
Cadmium	SW 6010B	ug/kg dry	140	440	270	410	270	150
Chromium	SW 6010B	ug/kg dry	22,000	40,000	34,000	45,000	25,000	22,000
Copper	SW 6010B	ug/kg dry	19,000	37,000	33,000	42,000	23,000	15,000
Iron	SW 6010B	ug/kg dry	23,000,000	39,000,000	33,000,000	46,000,000	35,000,000	20,000,000
Manganese	SW 7471A	ug/kg dry	720,000	1,100,000	920,000	1,200,000	1,100,000	610,000
Mercury	SW 6010B	ug/kg dry	55	150	120	100	81	46
Silver	SW 6010B	ug/kg dry	<220	<260	<220	<290	<260	<280
Nickel	SW 6010B	ug/kg dry	18,000	34,000	31,000	41,000	20,000	17,000
Zinc	SW 6010B	ug/kg dry	41,000	110,000	69,000	110,000	84,000	54,000
Lead	SW 6010B	ug/kg dry	9,000	23,000	13,000	25,000	19,000	9,500
Selenium	SW 6010B	ug/kg dry	<870	<1,000	<880	<1,200	<1,000	<1,100
<b>Semi-Volatile Organic Compounds (GC/MS)</b>	<b>Method</b>	<b>Units</b>						

Non-detected results = "<" RL

Appendix B

TABLE 1: ERIE PIER SOIL ANALYTICAL RESULTS

Parameter	Sample ID		EP-13-1	EP-13-2	EP-13-3	EP-13-4	EP-13-5	EP-13-6
	Lab ID		1310A28-001	1310A28-002	1310A28-003	1310A28-004	1310A28-005	1310A28-006
	Date Collected		10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013
Acenaphthene	SW 8270C	ug/kg dry	18	23	12	13	14	13
Acenaphthylene	SW 8270C	ug/kg dry	<22	28	13	18	12	14
Anthracene	SW 8270C	ug/kg dry	52	87	52	54	53	54
Benzo(a)anthracene	SW 8270C	ug/kg dry	140	250	140	180	130	130
Benzo(b)fluoranthene	SW 8270C	ug/kg dry	<b>230</b>	<b>510</b>	<b>260</b>	<b>340</b>	<b>230</b>	<b>220</b>
Benzo(k)fluoranthene	SW 8270C	ug/kg dry	67	110	81	120	88	110
Benzo(g,h,i)perylene	SW 8270C	ug/kg dry	67	140	80	100	69	67
Benzo(a)pyrene	SW 8270C	ug/kg dry	140	<b>300</b>	170	210	150	150
2-Methylnaphthalene	SW 8270C	ug/kg dry	32	53	30	46	59	45
Fluoranthene	SW 8270C	ug/kg dry	<b>290</b>	<b>450</b>	<b>250</b>	<b>290</b>	<b>270</b>	<b>250</b>
Fluorene	SW 8270C	ug/kg dry	29	47	25	29	27	27
Indeno(1,2,3-cd)pyrene	SW 8270C	ug/kg dry	63	120	58	86	66	65
Naphthalene	SW 8270C	ug/kg dry	56	140	77	110	100	89
Phenanthrene	SW 8270C	ug/kg dry	170	220	130	160	150	140
Pyrene	SW 8270C	ug/kg dry	<b>270</b>	<b>430</b>	<b>250</b>	<b>310</b>	<b>250</b>	<b>250</b>
Chrysene	SW 8270C	ug/kg dry	160	<b>290</b>	170	220	160	160
Dibenz(a,h)anthracene	SW 8270C	ug/kg dry	<44	<55	<50	<55	<47	<45

Non-detected results = "<" RL



Appendix B

**TABLE 2: ERIE PIER GRAIN SIZE ANALYSIS RESULTS**

Parameter	Sample ID		EP-13-1	EP-13-2	EP-13-3	EP-13-4	EP-13-5	EP-13-6
	Lab ID		1310A28-001	1310A28-002	1310A28-003	1310A28-004	1310A28-005	1310A28-006
	Date Collected		10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013
Grain Size Analysis	Method							
% Gravel	ASTM D422		0.0	0.0	0.0	0.0	0.0	0.0
% Sand	ASTM D422		0.0	0.0	0.0	0.0	0.0	0.0
% Coarse Sand	ASTM D422		4.8	1.4	4.6	10.4	1.5	0.7
% Medium Sand	ASTM D422		45.0	25.3	42.9	37.1	24.7	23.2
% Fine Sand	ASTM D422		29.2	50.3	32.6	32.5	49.7	57.5
% Silt	ASTM D422		21.0	23.0	19.9	20.0	24.1	18.6
% Clay	ASTM D422		0.0	0.0	0.0	0.0	0.0	0.0
<b>Total Percent</b>	ASTM D422		100.0	100.0	100.0	100.0	100.0	100.0

Non-detected results = "<" Limit of Detection  
 Results with "J" qualifier reported as estimated number  
 Bold type = results above Limit Of Quantitation



Appendix B

TABLE 2: ERIE PIER SEDIMENT DIOXIN ANALYTICAL RESULTS

Parameter	Well ID		EP-13-1	EP-13-2	EP-13-3	EP-13-4	EP-13-5	EP-13-6
	Lab ID		1310A28-001	1310A28-002	1310A28-003	1310A28-004	1310A28-005	1310A28-006
	Date Collected		10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013	10/28/2013
	Corrected Depth (ft)							
	Core Thickness (ft)							
	Latitude, ° N		46° 44.6314'	46° 44.6010'	46° 44.6205'	46° 44.6520'	46° 44.6275'	46° 44.6434'
	Longitude, ° W		092° 08.7423'	092° 08.7464'	092° 08.8001'	092° 08.7615'	092° 08.6759'	092° 08.6402'
Dioxin/Furans	Method	Units						
2,3,7,8-TCDF	EPA 8290	ng/Kg	0.13	<b>3.4</b>	<b>1.10</b>	0.83	<0.057	0.71
<b>Total TCDF</b>	EPA 8290	ng/Kg	0.64	<b>21.0</b>	<b>5.40</b>	<b>6.00</b>	0.210	<b>4.40</b>
2,3,7,8-TCDD	EPA 8290	ng/Kg	<0.065	<b>0.98</b>	0.41	0.32	<0.077	<b>0.20</b>
<b>Total TCDD</b>	EPA 8290	ng/Kg	0.56	<b>19.0</b>	<b>5.40</b>	<b>4.30</b>	<b>0.180</b>	<b>2.00</b>
1,2,3,7,8-PeCDF	EPA 8290	ng/Kg	<0.110	1.3	0.39	0.29	<0.098	0.51
2,3,4,7,8-PeCDF	EPA 8290	ng/Kg	0.16	<b>1.60</b>	0.66	0.63	<0.058	0.54
<b>Total PeCDF</b>	EPA 8290	ng/Kg	1.30	<b>32.0</b>	<b>9.80</b>	<b>10.00</b>	0.230	<b>5.80</b>
1,2,3,7,8-PeCDD	EPA 8290	ng/Kg	0.11	2.6	0.66	0.58	<0.069	0.58
<b>Total PeCDD</b>	EPA 8290	ng/Kg	0.86	<b>35.0</b>	<b>6.10</b>	<b>5.80</b>	0.130	3.00
1,2,3,4,7,8-HxCDF	EPA 8290	ng/Kg	<b>0.44</b>	4.5	1.8	1.9	<0.075	0.93
1,2,3,6,7,8-HxCDF	EPA 8290	ng/Kg	0.18	<b>5.3</b>	1.80	1.90	<0.065	0.92
2,3,4,6,7,8-HxCDF	EPA 8290	ng/Kg	<b>0.14</b>	1.5	1.10	0.98	<0.053	0.54
1,2,3,7,8,9-HxCDF	EPA 8290	ng/Kg	0.13	1.3	0.41	0.34	<0.080	0.40
<b>Total HxCDF</b>	EPA 8290	ng/Kg	3.10	<b>59.0</b>	<b>36.00</b>	<b>41.00</b>	0.570	<b>15.00</b>
1,2,3,4,7,8-HxCDD	EPA 8290	ng/Kg	0.29	3.2	0.63	0.44	<0.084	0.36
1,2,3,6,7,8-HxCDD	EPA 8290	ng/Kg	0.62	<b>12.0</b>	3.30	3.00	<b>0.14</b>	1.20
1,2,3,7,8,9-HxCDD	EPA 8290	ng/Kg	<b>0.28</b>	<b>5.8</b>	1.60	1.60	0.094	0.66
<b>Total HxCDD</b>	EPA 8290	ng/Kg	<b>15.00</b>	<b>220.0</b>	<b>29.00</b>	<b>27.00</b>	0.780	<b>12.00</b>
1,2,3,4,6,7,8-HpCDF	EPA 8290	ng/Kg	<b>5.20</b>	<b>210.0</b>	<b>82.00</b>	<b>98.00</b>	2.000	<b>16.00</b>
1,2,3,4,7,8,9-HpCDF	EPA 8290	ng/Kg	<b>0.27</b>	3.0	0.99	0.84	<0.072	0.44
<b>Total HpCDF</b>	EPA 8290	ng/Kg	<b>12.00</b>	<b>340.0</b>	<b>130.00</b>	<b>150.00</b>	4.100	<b>27.00</b>
1,2,3,4,6,7,8-HpCDD	EPA 8290	ng/Kg	<b>32.00</b>	<b>290.0</b>	<b>55.00</b>	<b>43.00</b>	1.700	<b>12.00</b>
<b>Total HpCDD</b>	EPA 8290	ng/Kg	<b>150.00</b>	<b>840.0</b>	<b>120.00</b>	<b>99.00</b>	4.000	<b>31.00</b>
OCDF	EPA 8290	ng/Kg	<b>12.00</b>	<b>110.0</b>	<b>53.00</b>	<b>50.00</b>	1.300	<b>10.00</b>
OCDD	EPA 8290	ng/Kg	<b>240.00</b>	<b>2800.0</b>	<b>550.00</b>	<b>430.00</b>	<b>16.000</b>	<b>110.00</b>
<b>Total 2,3,7,8-TCDD Equivalence*</b>	EPA 8290	ng/Kg	<b>0.74</b>	<b>12</b>	<b>3.8</b>	<b>3.6</b>	<b>0.051</b>	<b>1.6</b>

\* Using 2005 WHO Factors

E Qualified-Above calibration

Interference, Max estimated possible concentration

Non-detected results = "<" Limit of Detection  
 Results with "J" qualifier reported as estimated number  
 Bold type = results above Limit Of Quantitation

## **Attachment 3**

Erie Pier Dioxin TEQ Data and Box Plot

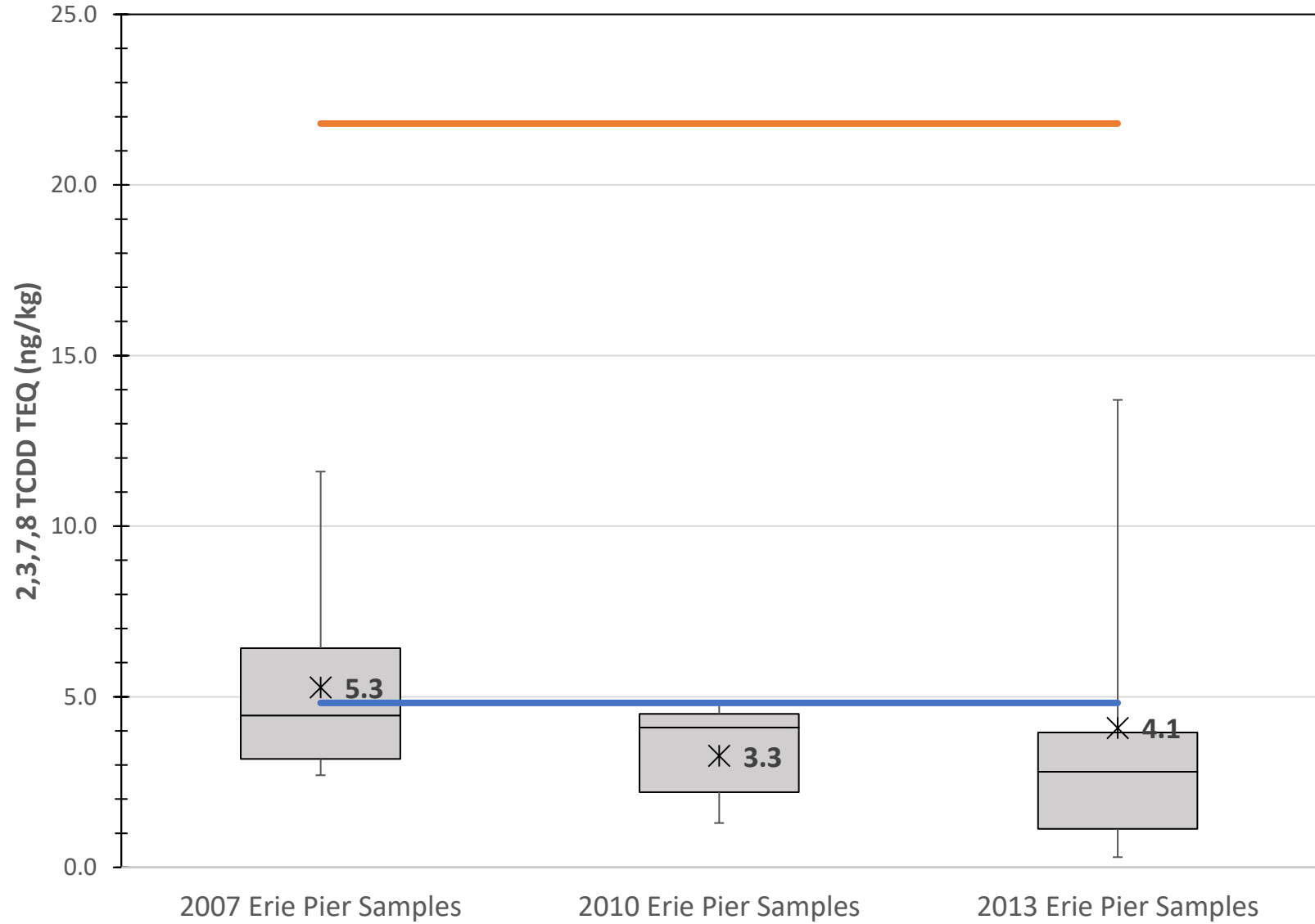
Dioxin TEQ (2,3,7,8 TCDD-TEQ Human Health WHO 2005), Erie Pier Fines

<i>Year</i>	<i>Location</i>	<i>TCDD TEQ (Human) (ng/kg) (ND=1/2DL)</i>
2007	DS0701	3.8
2007	DS0702	<b>11.6</b>
2007	DS0703	<b>5.1</b>
2007	DS0704	2.8
2007	DS0705	3.3
2007	DS0706	<b>6.4</b>
2007	DS0707	<b>6.5</b>
2007	DS0708	2.7
2010	EP 4-10	4.8
2010	EP 5-10	2.2
2010	EP 6-10	4.1
2010	EP 8-10	4.6
2010	EP 11-10	4.3
2010	EP 12-10	2.2
2010	EP 13-10	4.5
2010	EP 14-10	1.3
2010	EP 15-10	1.4
2013	EP-13-1	0.9
2013	EP-13-2	<b>13.7</b>
2013	EP-13-3	4
2013	EP-13-4	3.8
2013	EP-13-5	0.3
2013	EP-14-6	1.8

**Bold** = result above residential direct contact level of 4.82 ng/kg (5 of 23 results)

<b>SUMMARY STATS (concentration in ng/kg – parts per trillion)</b>				
	<b>2007 Samples</b>	<b>2010 Samples</b>	<b>2013 Samples</b>	<b>2007, 2010, &amp; 2013 Samples</b>
Count	8	9	6	23
Min	2.7	1.3	0.3	0.3
Mean	5.3	3.3	4.1	4.2
Max	11.6	4.8	13.7	13.7
Median	4.5	4.1	2.8	3.8
Stdev	3.0	1.5	4.9	3.1

### 2,3,7,8-TCDD TEQ (Human Health-WHO 2005)



\* Mean    — Residential Direct Contact    — Industrial Direct Contact

# Sampling and Analysis of Fine Material Stockpiles at Erie Pier, Duluth MN



DATE: 08/31/2018 FILE REF: Howards Bay

TO: Howards Bay Project Team

FROM: Joe Graham, Wisconsin DNR

SUBJECT: Sampling and Analysis of Fine Material Stockpiles at Erie Pier, Duluth MN

At approximately 9:00 AM on July 20, 2018, Joe Graham (DNR-OGW) met Ed Parzych of the USACE Duluth Area Office at the Erie Pier access gate located near the intersection of 40<sup>th</sup> Avenue West and Oneoda St. in Duluth Minnesota. Mr. Parzych opened the gate and drove into the Erie Pier facility. Graham followed in a state-owned pickup truck. Parzych provided Graham a tour of the Erie Pier facility explaining the sand separation process and identified two areas where fine material had been pushed into stockpiles. Parzych also pointed out a “lake” created by others that had taken fines from the stockpile areas and advised Graham not to create “lake” when taking material. Parzych left the site and advised Graham to lock the access gate when done.

At 9:25 AM Graham began collecting composite samples from portions of the two areas generally identified by Parzych. Samples were collected using a stainless steel soil probe. The soil probe was pushed into the ground 1 foot and the recovered soil placed in a clean 5-gallon bucket. The process was repeated using the same hole to collect samples from the 2 and 3-foot depth intervals with all recovered soil material placed into the same bucket. Multiple locations were sampled at random while meandering through the two areas outlined on the attached map. Intervals that were saturated with water were excluded and not kept as samples. Recovered soils were brown to dark brown sandy clay with medium to soft density. The vegetative cover was variable and included dense willow thickets (~10 feet tall, < 1-inch diameter), forbs, grasses and sedges typical of wet soil. Sample collection was completed at 10:30 AM. Graham took photographs of the sampling areas, the entrance sign, and then exited the property and locked the gate at about 10:55 AM. The material in the bucket was homogenized at the Spooner DNR office at 1:45 PM and placed into two plastic zip lock bags. One bag was labeled sample “Erie Pier Fines PC1” (Permanent Cover Crop-Prairie), and the other bag was labeled “Erie Pier Fines M4” (Mixed Beds-Annual & Perennial flowers & shrubs).

The sample bags were shipped via Speedee Delivery to the UW Soil & Forage Analysis Lab in Marshfield Wisconsin. Samples PC1 and M4 were analyzed for pH, lime requirement, organic matter, phosphorus (P), and potassium (K). Sample PC1 was also analyzed for texture (hydrometer). Results and fertilizer recommendations are attached for Permanent Cover Prairie and Mixed Beds.

I suggest that the fertilizer recommendations for Permanent Cover/Prairie be used for the incorporation of Erie Pier fines in the landfill cover at the closed Wisconsin Point landfill.

Attachments:


- Map of composite sample locations at Erie Pier
- UW Soil Lab Lawn & Garden Submission Form
- Soil Test Reports for Permanent Cover/Prairie & Mixed Bed/Annual flowers, perennial flowers and shrubs
- Soil Texture Analysis
- Site Photos
- Invoice from UW Soil Lab



# Erie Pier Fine Stockpile Sampling

WDNR, J. Graham, July 20, 2018

## Legend

 Composite Sample Area



Google Earth

© 2018 Google



1000 ft





For Lab Use Only:

Date:

## Lawn and Garden Submission Form

Lab No.:

Customer Information	Payment Information
<b>Please check the box below on how you would like your results sent to you:</b> <i>(Allow 2-3 days extra for US Mail)</i> <input checked="" type="checkbox"/> Email   OR <input type="checkbox"/> US Mail   OR <input type="checkbox"/> Both	Account Number:
Name: <u>Joe Graham</u>	OR Amount Paid: \$ <u>Due 53<sup>00</sup></u>
Address: <u>WONR, 810 W. Maple St.</u>	<b>Method of Payment:</b>
City: <u>Spoooner</u> State: <u>WI</u> Zip: <u>54901</u>	<input type="checkbox"/> Cash
Phone: <u>715 635-4075</u>	<input type="checkbox"/> Check – Number:
Email: <u>Joseph.graham@wisconsin.gov</u>	<input checked="" type="checkbox"/> Credit card – <i>We will call you for number.</i>

Sample Description:			
Sample No.	Sample Name <i>(so you know where sample was taken from)</i>	County <i>(where your sample was taken) If more than one county – use separate sheet for each county</i>	What are you going to grow in this area? <i>(See Landscape Category below – Only one per sample)*</i>
1	<u>Eric Pier Fines PC1</u>	<u>Douglas</u>	<u>PC1</u>
2	<u>Eric Pier Fines M4</u>	"	<u>M4</u>
3			
4			
5			

Routine test   
 Texture

Landscape Category: <i>(Choose Only ONE category per sample)</i>			
Landscape Category	Landscape Category	Landscape Category	Landscape Category
<b>Lawn</b> • Established L1 • New from seed L2 • New from sod L3  <b>Vegetable Gardens</b> • Mixed vegetables G1 • Asparagus G2  <b>Flower Gardens</b> • Annual FG1 • Perennial FG2 • Prairie FG3  <b>Permanent Cover Crops</b> • Native/Bluegrass PC2 • Prairie PC1 • Trefoil PC4 • Vetch PC3	<b>Mixed Beds</b> • Annual & perennial flowers M1 • Annual flowers & roses M2 • Annual & perennial flowers & shrubs M4 • Perennial flowers & shrubs M3  <b>Annual Cover Crops (Green Manure)</b> • Alfalfa AC2 • Barley AC1 • Buckwheat AC1 • Clover AC3 • Oat AC1 • Rye AC1 • Wheat AC1	<b>Fruits</b> • Apple F6 • Apricot F9 • Blueberry F2 • Bush fruit (current, gooseberry, elderberry) F5 • Cherry F8 • Grape F3 • Peach F9 • Pear F7 • Plum F9 • Raspberry (red, black purple) F4 • Strawberry F1	<b>Shrubs</b> • Azalea S3 • Bush fruit (viburnum, juneberry) S1 • Deciduous S5 • Evergreen S4 • Rhododendron S3  <b>Trees</b> • Evergreen T3 • Hardwood flowering T2 • Hardwood shade T1  <b>Topsoil</b> – choose a landscape category that best describes the crop to be grown. <i>(See back for sampling details.)</i>

\*If no Landscape Category is given, we will assume L1.

*Prices listed are per sample bag.*

**Routine test includes:** pH, lime requirement, organic matter, phosphorous (P), and potassium (K) (\$15)

**Additional tests:** Calcium and Magnesium (\$3), Soluble salts (\$7), Texture: Percent Sand, Silt, Clay (\$23),

**Lead screening:** *Must fill out separate lead screening submission form* (\$15)

**Sample size required for analysis:** 1-2 cups.

7/20/2014

**Samples Analyzed By:**  
Soil & Forage Analysis Lab  
2611 Yellowstone Dr  
Marshfield, WI 54449  
(715) 387-2523

# SOIL TEST REPORT

## GARDEN SOIL

COOPERATIVE EXTENSION  
University of Wisconsin-Extension  
University of Wisconsin-Madison  
Department of Soil Science

**Lab Number:** 3934

**Access Code:** 1nvt

**Date received:** 7/27/2018

**County:** Douglas

**Date processed:** 8/2/2018

**Send to:**

Joe Graham  
WDNR, 810 W Maple St  
Spooner WI 54801

**Area Type**  
Permanent Cover/Prairie

**Area Designation**  
Erie Pier Fines

### RECOMMENDATIONS

#### Lime to Apply

No soil pH adjustment is recommended.

#### Fertilizer to Apply

The following summary specifies the actual amount of nutrients needed based on the results of your soil analysis. Most plants require at least an annual nitrogen application, but recommended potassium should be split over two years and soils retested in 2-3 years to determine if more is needed.

Actual Nutrient Need (lbs/100 ft <sup>2</sup> )		
Nitrogen (N)	Phosphate (P <sub>2</sub> O <sub>5</sub> )	Potassium (K <sub>2</sub> O)
0.00	0.0	0.5

These nutrients can be applied using many different commercial fertilizers. The following suggestions are provided for your reference.

**Nitrogen:** Little or no nitrogen is needed for prairie plants.

**Phosphate:** No phosphate fertilizer needed.

**Potassium:** Apply 1.3 lbs of high potassium fertilizer per 100 sq-ft annually for 2 years to meet plant potassium needs.

Use of high potassium fertilizer will increase available potassium to a level optimum for plant growth and supply some needed nitrogen. For a description of fertilizer grades please see <http://uwlax.soils.wisc.edu/pubs/grades.pdf>

#### Environmental Tips

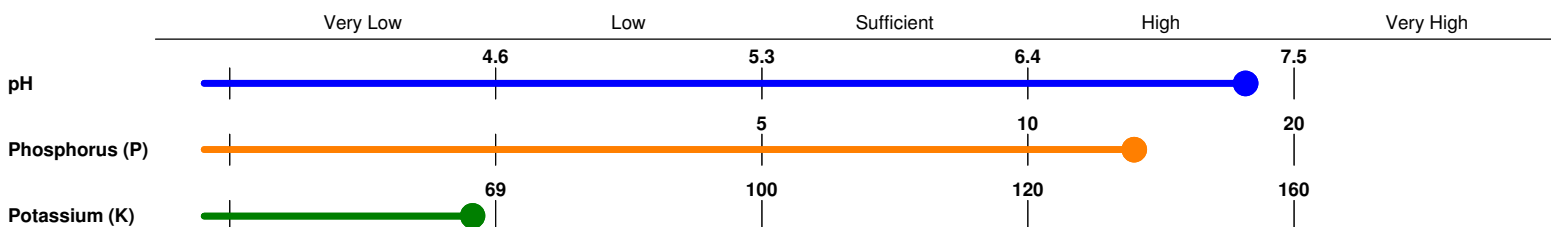
Soil tests indicate that potassium fertilizer is needed. Broadcast and incorporate recommended materials into the upper 6-8 inches prior to planting or topdress to previously established areas and water in thoroughly.

#### References and Resources

For additional information on permanent cover crop fertilization please see [http://uwlax.soils.wisc.edu/permanent\\_cover.htm](http://uwlax.soils.wisc.edu/permanent_cover.htm)

For further explanation please contact your County Extension Office. Locations can be found at <http://www.uwex.edu/locations/>.

### LABORATORY ANALYSIS INTERPRETATIONS



### LABORATORY ANALYSIS

Sample	pH	Phosphorus [P] (ppm)	Potassium [K] (ppm)	Organic Matter %
1	7.3	14	63	2.6

**Samples Analyzed By:**  
Soil & Forage Analysis Lab  
2611 Yellowstone Dr  
Marshfield, WI 54449  
(715) 387-2523

# SOIL TEST REPORT

## GARDEN SOIL

COOPERATIVE EXTENSION  
University of Wisconsin-Extension  
University of Wisconsin-Madison  
Department of Soil Science

**Lab Number:** 3934

**Access Code:** 1nvt

**Date received:** 7/27/2018

**County:** Douglas

**Date processed:** 8/2/2018

**Send to:**

Joe Graham  
WDNR, 810 W Maple St  
Spooner WI 54801

Area Type
Mixed Bed/Annual flowers, perennial flowers and shrubs

Area Designation
Eric Pier Fines

### RECOMMENDATIONS

#### Lime to Apply

No soil pH adjustment is recommended.

#### Fertilizer to Apply

The following summary specifies the actual amount of nutrients needed based on the results of your soil analysis. Most plants require at least an annual nitrogen application, but recommended phosphate and potassium fertilizers should be split over three years and soils retested in 2-3 years to determine if more is needed.

Actual Nutrient Need (lbs/100 ft <sup>2</sup> )		
Nitrogen (N)	Phosphate (P <sub>2</sub> O <sub>5</sub> )	Potassium (K <sub>2</sub> O)
0.15	1.5	1.5

These nutrients can be applied using many different commercial fertilizers. The following suggestions are provided for your reference.

**Nitrogen:** Apply about 0.6 lb high nitrogen fertilizer (0.15 lb nitrogen) per 100 sq-ft of bed to satisfy nitrogen requirements. Repeat application where annuals are planted. Apply two more applications within 4 to 6 weeks where shrubs are planted. Increase application by 50% in years where organic mulch is applied. Apply recommended nitrogen annually starting the first year after planting when rapid vegetative growth is desired. Apply little or no nitrogen at planting.

**Phosphate:** Apply 2.5 lbs of high phosphorus fertilizer per 100 sq-ft annually for 3 years to meet plant phosphate needs.

**Potassium:** Apply 2.5 lbs of high potassium fertilizer per 100 sq-ft annually for 3 years to meet plant potassium needs.

Use of high phosphorus and high potassium fertilizers will increase available phosphorus and potassium to levels optimum for plant growth and supply some needed nitrogen. Recommended high phosphorus fertilizer should be applied in the spring and high potassium fertilizer should be applied in the fall. For a description of fertilizer grades please see <http://uwlab.soils.wisc.edu/pubs/grades.pdf>

#### Environmental Tips

Soil tests indicate that phosphate and potassium fertilizers are needed. Broadcast and incorporate recommended materials into the upper 6-8 inches prior to planting or topdress to previously established areas and water in thoroughly.

Reduce or eliminate nitrogen applications as shrubs reach desired size.

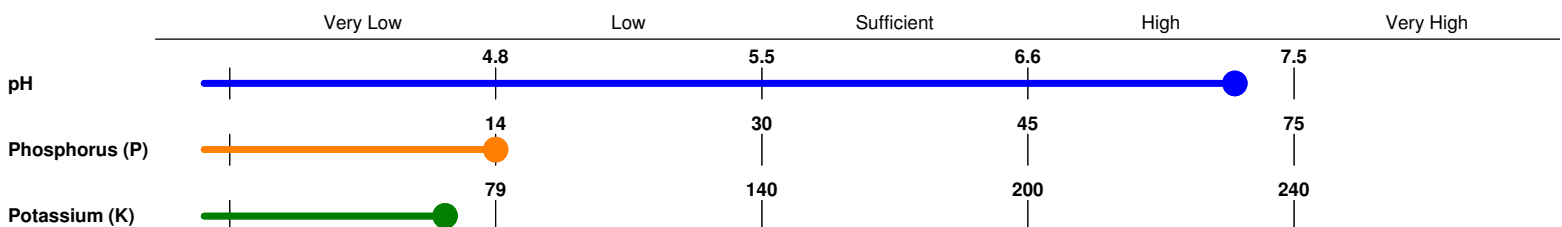
If a flowering or ornamental tree is included in the bed, apply 1 lb high nitrogen fertilizer per 100 sq-ft root zone in late fall after leaves take on autumn color or early spring before buds swell.

#### References and Resources

For additional information on mixed bed fertilization please see [http://uwlab.soils.wisc.edu/mixed\\_bed.htm](http://uwlab.soils.wisc.edu/mixed_bed.htm)

For further explanation please contact your County Extension Office. Locations can be found at <http://www.uwex.edu/locations/>.

### LABORATORY ANALYSIS INTERPRETATIONS

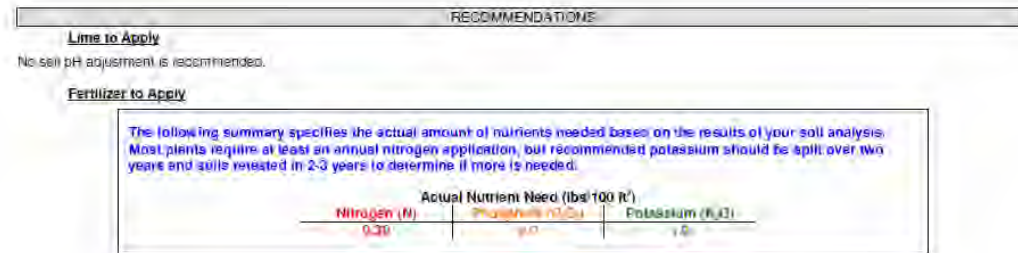


### LABORATORY ANALYSIS

Sample	pH	Phosphorus [P] (ppm)	Potassium [K] (ppm)	Organic Matter %
2	7.3	14	64	2.8

## Guide to Garden Recommendations

Lime and fertilizer recommendations are given just below the sample information



**Lime rates** are given in pounds of “finely ground lime” per thousand square feet. This assumes a Lime product with a Neutralizing Index of 90-99. If you choose a lower grade lime, more product will be required as the Neutralizing Index will be proportionally less.

**Lime applications** can be made at any time as it may take 24 months or longer for it to fully react with soil acidity. If you plan on tilling your garden, tilling the lime in as well will be beneficial as it will react with more soil deeper down (as deep as you till).

**Fertilizer rates** are given in pounds of *actual nutrient* per hundred square feet. Fertilizers are sold with a standard “N – P<sub>2</sub>O<sub>5</sub> – K<sub>2</sub>O” label. This is the *percent of that nutrient* in the bag. Fertilizers may be sold with only one nutrient, a combination of two, or all three. Rates are given in pounds of actual nutrient to allow for you to custom meet your lawn or garden’s needs. This may require buying more than one type of fertilizer to meet your N-P-K needs.

**Product application rates** may be calculate using the below example:

Pounds of product to apply = nutrient need / (percent nutrient in the fertilizer *as a decimal*)

*(Example - can be used for N, P, K or any other fertilizer)*

My N need is 0.3 lbs N / 100 Sq Ft. and I buy a bag of 10-0-0.

My rate of 10-0-0 to apply is calculated as  $0.3 / 0.10 = 3$  lbs N / 100 Sq. Ft.

**Nitrogen (N)**, if needed, should be applied close to planting or during the growing season. The N rate may also be split into two or three applications.

**Phosphorus (P)**, if needed, can be applied at any time as it will not rapidly leach through the soil profile (on most WI soils).

**Potassium (K)**, if needed, can be applied at any time as it will not rapidly leach through the soil profile (on most WI soils). The Potassium fertilizer recommendation is meant to be split over two or three years.

## **Types of N, P, K Fertilizers** (Not an all-inclusive list)

### **Nitrogen (N) only fertilizers**

45-0-0 Urea  
33-0-0 Ammonium sulfate

### **Phosphorus (P) only**

0-45-0 Triple super phosphate

### **Potassium (K) only**

0-0-60 Potassium chloride  
0-0-50 Potassium sulfate

### **Blended**

Balanced	Have the same %N, P <sub>2</sub> O <sub>5</sub> , and K <sub>2</sub> O (10-10-10, 14-14-14, etc...)
Winterizers	Normally higher in %K <sub>2</sub> O (9-23-30, 10-20-30, etc...)
Starter	Generally higher in P (24-25-4, 7-22-8, etc...)
High N	Generally higher a much higher N than P or K (28-4-4, 30-3-3, etc...)

### **Manure/Bio-solids**

Usually have lower percent values of N, P, and K (such as 3-4-3).

### **Notes:**

Applying nitrogen 3-4 weeks after planting is not recommended for tomatoes.

Do not use weed and feed lawn fertilizer for vegetable gardens.



**SOIL and FORAGE ANALYSIS LABORATORY**

2611 Yellowstone Drive, Marshfield, WI 54449  
Phone 715-387-2523 ext 11

University of  
Wisconsin  
Madison/Extension

**Joe Graham**  
**WDNR, 810 W Maple St**  
**Spooner WI 54801**

**Date** 8/2/18  
**Acct #** 555901

**Soil - Texture Analysis**

<i>Lab Number</i>	<i>Sample ID</i>	<i>Sand</i> %	<i>Silt</i> %	<i>Clay</i> %	<i>Texture Name</i>
3934	Erie Pier Fines	50	25	25	sandy clay loam

















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**Date:** 8/2/2018  
**Lab Number:** 3934

**RECEIPT/INVOICE**

<b>Qty</b>	<b>Description</b>	<b>Price Each</b>	<b>Total</b>
2	Routine Lawn/Garden Soil Analysis	\$15.00	<b>\$30.00</b>
1	Soil Texture	\$23.00	<b>\$23.00</b>

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**Total Due** \$53.00  
**Paid (Visa x2574; Auth #003920)** **-\$53.00**  
**Balance Due** **\$0.00**

# Resuspension Performance Monitoring (i.e., Turbidity Requirements) for Sediment Remediation in Howards Bay, Superior, Wisconsin



DATE: May 9, 2017 - Revised November 9, 2018

FILE REF: Howards Bay

TO: Howards Bay Project Design Team

FROM: Xiaochun Zhang and Joe Graham, WDNR

SUBJECT: Resuspension Performance Monitoring (i.e., Turbidity Requirements) for Sediment Remediation in Howards Bay, Superior, Wisconsin

The purpose of this memorandum is to provide Wisconsin DNR's requirements on turbidity control, specifically the resuspension performance standard, turbidity monitoring, and sediment resuspension control measures for dredging and cover placement in Howards Bay, Superior, Wisconsin. Recommendations are made based on engineering considerations necessary for the protection of water quality as well as some of the requirements anticipated to be included in a permit for dredging and cover placement activities under ch. 30, Wis. Stats.

#### Requirements:

1. Dredging and cover placement activities shall be conducted in a manner that prevent dispersal of sediment and associated residual contaminants away from (i) the Howards Bay project site and (ii) the immediate vicinity of active dredging or placement activities within the project site.
2. Operational sequencing must be considered to prevent contamination of areas outside designated management units and particularly recontamination of areas where dredging has been completed. For example, suspended sediment from dredging in slips has a high potential to be transported outside of the dredge area, settle and recontaminate completed areas in the navigation channel.
3. In consideration of the configuration of Howards Bay, assuming low unidirectional current and seiche effects under baseline condition, the point of application for the performance standard shall be applied at (i) the project site boundary towards St. Louis River and (ii) a distance of 150 feet from areas of active dredging or cover placement.
4. Dredging shall be conducted to minimize re-suspension of sediment to the maximum extent practicable to prevent total suspended solids (TSS) concentrations in excess of 80 mg/L above background at the point of standards application. This numerical value is the Not to Exceed (NTE) level to suspend operations and resolve the issues. Warning and Action levels at TSS concentrations of 50 and 65 mg/L, respectively, above the 0.5-hour average background will be used as a trigger to implement preventative action(s) to mitigate TSS levels prior to reaching the Action or NTE levels.
5. It is expected that the performance standard will be met through a combination of best management practices including temporary control measures, sequencing and operational controls.
6. Temporary control measures such as air curtains (bubble curtains), moon pools, turbidity barriers or silt curtains must be used as needed to meet the performance standard. In addition, air curtains must be installed, operated and maintained at the entrances to Fraser slip, Cummings Slip, and Hughitt slip to contain contaminants. Temporary control measures shall be installed prior to dredging or cover placement and removed from the waterbody after the water on both sides of the barrier is visually indiscernible. Standard specifications should be applied for bubble curtains,

moon pools, turbidity barriers and silt curtains including details for the type of materials, installation methods, and operations and maintenance.

7. Dredging must be done in a manner to minimize the amount of leakage returned to the water body due to the concern of suspended solids release that is preventable. An environmental bucket must be utilized for all contaminated sediment where the quality of the dredged material allows it (no interfering debris) and is recommended for uncontaminated sediment. The bucket should be moved quickly to deposit the dredged material onto a barge or onshore receiving area to minimize leakage into the water body. The bucket should not have holes for intentional drainage to promote dewatering unless it is operated within a dredging area containment BMP.
8. Turbidity monitoring and trigger levels do not apply to cover placement activities where the sand being placed meets the March 27, 2017 DNR recommendations for the Howards Bay project (i.e., clean-washed sand).
9. Table 1 summarizes the turbidity Warning, Action, and NTE level responses that are described in detail below.
10. The Not to Exceed (NTE) level is an 80-mg/L increase in TSS above the 0.5-hour average background and is equivalent to a field turbidity measurement of approximately 110 NTU based on a model (Eq. 1) developed by Groten et. al. for the 21<sup>st</sup> Avenue West Channel Embayment in Duluth, Minnesota.

$$SSC = 1.1876 * Turb^{0.8872} * 1.04 \quad (Eq. 1)$$

where, SSC is the average concentration of suspended solids in mg/l and Turb is turbidity in NTU.

The correlation of SSC to Turbidity developed for the 21<sup>st</sup> Avenue pilot project is adopted for the Howards Bay project to estimate TSS based on field measurement of turbidities assuming the samples contains less than 25% sand (Kreitinger et. al. 2017). Sustained turbidity above the trigger level for 30 minutes constitutes an exceedance.

11. A background monitoring station must be located in the area close to the confluence of Howards Bay and the St. Louis River. Turbidity at the background station must be continuously monitored in 10-minute intervals with calculated 0.5-hour running average turbidity levels and online data access capability. Figure 1 shows the recommended background location. Background turbidity data may also be supplemented using data collected by others for the St Louis River at the bridge crossings at the Bong (Highway 2) or Blatnick (Highway 53/535) bridges.

Figure 1 shows a potential location of the background station and illustrates buffer areas of increasing radii at the mouth of Fraser slip. The performance standards-turbidity trigger levels (Warning, Action, and NTE) are applied at a distance of 150 feet.

12. Performance monitoring station(s) shall be located 150 feet from active dredging or cover placement. Depth integrated turbidity readings will be collected using a hand-held device twice a day near the middle of each shift with active dredging or placement activities. An average value of spatially integrated readings will be compared to the 0.5-hour average background level. Three-depth integrated readings must be collected from three monitoring locations within the

150ft radius. At each monitoring location, turbidity measurements must be taken at three water depths; 1/3 depth from surface, mid-depth, and 2/3 depth from surface.

13. The Warning Level is a 50 mg/L increase in TSS above 0.5-hour average background monitoring results. If turbidity readings from any performance monitoring location (i.e. the project site boundary and 150 feet from active dredging or cover placement activities) indicate an increase of 65 NTU (equivalent to 50 mg/l based on Equation 1) above the 0.5-hour average background level, the contractor shall perform the Warning Level actions in Table 1.
14. The Action Level is 65 mg/L (midpoint between 80 and 50 mg/L) above the 0.5-hour average background TSS levels. This is equivalent to an in-situ turbidity measurement of 87 NTU. When the Action Level is exceeded the contractor must implement preventative action(s) as outlined in Table 1 to mitigate TSS levels prior to reaching the NTE level.
15. If turbidity readings from any performance monitoring location (i.e. the project site boundary and 150 feet from active dredging or cover placement activities) indicate an increase of 110 NTU (equivalent to 80 mg/l based on Equation 1) above the 0.5-hour average background monitoring result, the contractor shall stop dredging or cover placement activity and perform the actions identified in Table 1. The contractor may resume work when any operational changes have been made and turbidity levels in the area where the exceedance was measured drop below the NTE level for 30 minutes, DNR and EPA have been notified, and oversight concurs.
16. Whenever the Warning, Action, or NTE levels are exceeded the contractor must evaluate if the increase was caused by dredging or placement activities. If the increase above the action level is determined to be caused by non-dredging activities, such as storm water runoff or prop wash by non-project related vessel traffic, and project oversight concurs, work can continue. If the turbidity increase is determined to be due to the dredging or cover placement activities, the contractor shall re-assess the effectiveness of BMPs and take corrective measures to mitigate the exceedance of resuspension performance standards as identified in Table 1.
17. WDNR must be notified of the time, location, and level of exceedance in the event the NTE level is reached at a performance monitoring location. The notification must also include the identified cause of the exceedance and any corrective measures taken. The notification must be made to the WDNR project manager with 24-hours of the NTE exceedance and may be done by email.
18. Contingency resuspension control measures and an oil boom are to be kept on site, for emergency use in the event of the failure of resuspension control measures, visible sheen, or exceedance of resuspension performance standards. Dredging operations are not allowed if resuspension control measures are not in place.
19. Sediment resuspension controls and contingency measures shall not cause scouring of the sediment bed, bridge abutments, or have any other deteriorating effect on structures or facilities in the vicinity of the dredging Project area or the offloading platform facility in Howard Bay.
20. All turbidity monitoring data shall be summarized in construction progress reports and made available to Wisconsin DNR, EPA, Fraser, and the City of Superior upon request. The background and 0.5-hour average background turbidity results should be available in real-time via the Internet. All monitoring data for the project must also be appended to the construction completion report.



21. Where residual contamination levels will not be a concern and public interests will still be met, adaptive management may be employed for turbidity requirements in Howards Bay. Specifically, Wisconsin DNR, at its sole discretion, may approve more or less stringent modifications to the performance monitoring locations, depths, frequencies, action levels and warning levels herein, based on the conditions encountered during construction.

**References:**

Groten, J.T., Ellison, C.A., and Mahoney, M.H., 2016, Three-dimensional visualization maps of suspended-sediment concentrations during placement of dredged material in 21st Avenue West Channel Embayment, Duluth-Superior Harbor, Duluth, Minnesota, 2015: U.S. Geological Survey Scientific Investigations Report 2016-5086, 26 p., <http://dx.doi.org/10.3133/sir20165086>.

Kreitinger, J., Gidley, P., Felt, D., Mahoney, M., Johnson, E., and Horner, P., Technical Analysis Memorandum for Record, Subject: Duluth Superior Harbor 21<sup>st</sup> Avenue West Pilot Project – Turbidity Monitoring Final Report, US Army Engineer Research and Development Center, 2017

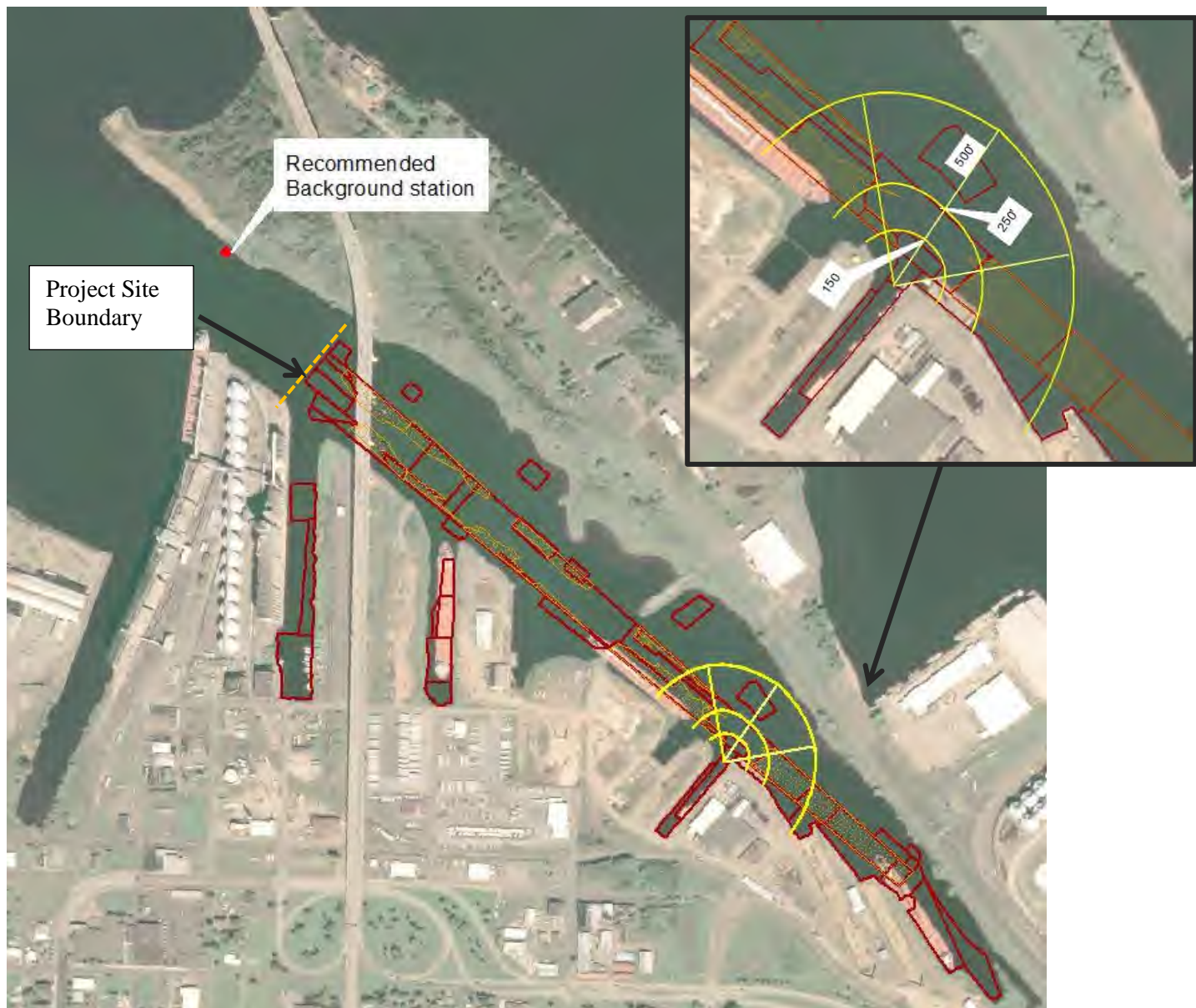


Figure 1: Proposed background monitoring station and illustration of approximate distance of performance monitoring station relative to active dredging location (readings at 150' used for warning and cease of operation, respectively). Also, the additional radius lines are drawn as reference to support the decision why place monitoring stations at 150' away from dredging or sand placement activities is recommended. For instance, if excess amount of sediment is detected at monitoring station approximately 250' or 500' outside of the slip, there is a high potential of sediment already having settled in the navigation channel or even spread across the channel).

**Table 1: Turbidity Monitoring Frequency, Warning, Action, Not to Exceed Levels and Minimum Response Actions**

Activity	Frequency	Level	Turbidity Level (NTU)	Trigger	Actions	Resume Condition
Continuous Background Measurements	Continuous, 10-minute intervals, calculating 0.5-hour average	Background	-	None – 0.5-hour average of measurements determine background turbidity levels to evaluate trigger levels below	NA	No work stoppage
Hand held measurements taken at 150 feet from dredging/cover placement activities and at the project site boundary	Twice per day, in middle of each shift with active dredging or cover placement AND every 0.5 hours where trigger level is exceeded.	Warning	65	Turbidity levels 65 to 87 NTU above average 0.5- hour background	<ol style="list-style-type: none"> <li>1. Increase hand held monitoring frequency to every 0.5-hours to confirm Warning level exceedance</li> <li>2. Inspect &amp; repair BMPs</li> <li>3. If two consecutive 0.5-hour measurements exceed the warning level but are less than the Action Level, the cause of the exceedance must be investigated</li> <li>4. Notify oversight</li> </ol>	No work stoppage
		Action	87	Turbidity levels more than 87 NTU above 0.5- hour average background	<ol style="list-style-type: none"> <li>1. Increase hand held monitoring frequency to every 0.5-hours to confirm Action level exceedance.</li> <li>2. Inspect &amp; repair BMPs</li> <li>3. Evaluate potential causes and make operational changes as appropriate.</li> <li>4. Notify oversight</li> </ol>	No work stoppage Operational changes made, as appropriate Oversight concurs
		Not to Exceed	110	Turbidity levels more than 110 NTU above 0.5-hour average background	<ol style="list-style-type: none"> <li>1. Stop in-water activities until levels are corrected.</li> <li>2. Increase hand held monitoring frequency to every 0.5-hours to confirm NTE level exceedance.</li> <li>3. Identify causes, repair BMPs and make operational changes as appropriate.</li> <li>4. Notify oversight, EPA, and WDNR</li> </ol>	Operational changes made Levels drop below NTE level (or other WDNR approved level) for 30 minutes and EPA and DNR has been notified. Oversight concurs

DATE: March 27, 2017 FILE REF: Howards Bay

TO: Howards Bay Project Design Team

FROM: Joe Graham, WDNR

SUBJECT: Recommendations for the Sand to be used for Residual Cover and Enhanced Natural Recovery in Howards Bay, Superior, Wisconsin

The purpose of this memorandum is to provide Wisconsin DNR's recommendations for the physical, chemical, and biological characteristics for the material to be placed in-water as cover for management of dredging residuals and Enhanced Natural Recovery (ENR) in Howards Bay.

The preferred cover material is clean, medium to coarse grained, sand with little to no fines (SW or SP). Clean for this purpose means imported materials that are free from debris or other deleterious substances, foreign objects such as frozen material, wood, hay, burlap, paper, plastics, tree roots, pieces of concrete or pavement or contaminants (chemical and/or biological) from a pure (virgin) source such as a nonmetallic mining operation or dredged material from the federal navigation channel confirmed by testing to meet the quality requirements below.

The department may prohibit using aggregates from any source, plant, pit, quarry, or deposit if the character of the material or method of operation makes it unlikely to furnish aggregates conforming to specified requirements; or from deposits or formations known to produce unsound materials.

Sample Frequency:

Commercial/quarry sources a minimum of one sample per 1,000 cubic yards of material prior to delivery. Federal channel dredged material or other noncommercial sources a minimum of one sample per 500 cubic yards prior to delivery.

Specific Gravity: Minimum of 2.6

Gradation: See tables below for residuals cover and enhanced natural recovery, adapted from ASTM C33 and/or WisDOT 501.2.5 for fine aggregate. Sieve analysis ASTM D2487 or equivalent.

Residuals Cover		Enhanced Natural Recovery	
<i>Sieve Size</i>	<i>% Passing</i>	<i>Sieve Size</i>	<i>% Passing</i>
3/8 – inch	100	3/8 – inch	100
#4	90 - 100	#4	95 – 100
#8	n/a	#8	80 - 100
#16	45 - 85	#16	50 - 85
#30	n/a	#30	25 - 60
#50	5 - 30	#50	10 – 30
#100	0 - 10	#100	2 - 10
#200	0 – 1	#200	0 – 3.5



Chemical Quality: Metals analyzed using methods SW846 6010 or 7471 and PAHs analyzed using GC/MS (SIM) meeting the quality limits below.

<i>Analyte Group</i>	<i>Parameter</i>	<i>Limit<sup>1</sup> (mg/kg)</i>
<i>RCRA Metals</i>	Arsenic	10
	Cadmium	1
	Chromium	43
	Copper	32
	Lead	36
	Nickel	23
	Mercury	0.2
	Zinc	120
<i>PAHs<sup>2</sup></i>	Acenaphthene	0.0067
	Acenaphthylene	0.0059
	Anthracene	0.0572
	Fluorene	0.0774
	Naphthalene	0.176
	Phenanthrene	0.204
	Benz(a)anthracene	0.108
	Benzo(a)pyrene	0.15
	Benzo(b)fluoranthene	0.24
	Benzo(k)fluoranthene	0.24
	Benzo(g,h,i)perylene	0.17
	Chrysene	0.166
	Dibenz(a,h)anthracene	0.033
	Fluoranthene	0.423
	Indeno(1,2,3-cd)pyrene	0.2
	Pyrene	0.195
	<b>Total PAHs<sup>2</sup></b>	<b>1.61</b>

<p>1 - Threshold Effects Concentration (TEC) for aquatic macroinvertebrates (WDNR 2003)</p> <p>2 - Limit applied as Total or sum of the 16 PAH compounds in table above</p>
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# APPENDIX C

## Calculations



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**GLLA SEDIMENT CLEANUP IN HOWARDS BAY  
Superior, Michigan**

**Howards Bay Areas of Concern Dredging Slope Stability Calculations**

Analyses:

Attachment A – Plan View of Cross Sections and Cross Section Geometry

Attachment B – Boring Log Location Map and Boring Logs

Attachment C - Slope/W Stability Output Results

April 2017

# DRAFT

**Client:** USACE, Detroit District

**Project:** GLLA Sediment Cleanup in Howards Bay

**Prepared by:** Kyle Warren

**Date:** April 2017

**Title:** Howards Bay Critical Areas Dredging Slope Stability Calculations

**Reviewed By:** Mandy Giampaolo

**Date:** April 2017

**Subject:** Slope Stability of Bank Slopes in Critical Areas

**OBJECTIVE:** Evaluate five critical sections of the proposed dredge prisms for stability, including 3 critical areas in Hughitt Slip, 1 critical area in Cumming Slip, and 1 critical area near the Dry Docks. Evaluation includes a sensitivity analysis comparing existing conditions as a baseline to 2(horizontal):1(vertical) and 3(horizontal):1(vertical) dredge slopes. The evaluation compares the change in factor of safety under different dredge slope conditions compared to the existing conditions.

## **REFERENCES:**

1. Das, Braja M. *Principles of Geotechnical Engineering: Sixth Edition*. Thompson. Toronto, Canada. 2006.
2. Holtz, Robert D. and Kovacs William D. *An Introduction to Geotechnical Engineering*. Prentice Hall Inc. Upper Saddle River, New Jersey. 1981.
3. Geo-Slope International Ltd, 2012. *Slope/W (2012)*.
4. "Lake Superior Fishing Co." 1507 N 1st St, Superior, WI 54880. *Google Earth*. April 2, 2016.
5. Naval Facilities Engineering Command (NAVFAC). 1986. Design Manual 7.02 Foundations & Earth Structures.
6. U.S. Army Corps of Engineers. 1994. *Design of Sheet Pile Walls*. Manual No. 1110-2-2504. March.
7. U.S. Army Corps of Engineers. January 2015. *Engineering Appendix, Strategic Navigation Dredging and Great Lake Legacy Act Remediation, Revetment Wall and Slope Stability*. Howards Bay, Superior, Wisconsin.

# DRAFT

## ATTACHMENTS:

- A. Plan View of Cross Sections and Cross Section Geometry
- B. Gradation Results (including hydrometer) for Hughitt Slip
- C. Slope/W Stability Output Results

## ASSUMPTIONS:

1. The geometry of the cross sections is based on the bathymetric surveys performed in 2013, 2014, and 2015 by United States Army Corps of Engineers (USACE). and proposed dredging depths from existing sediment surface. Transition slopes between dredge prisms are 2(horizontal):1(vertical). All dredge prisms evaluated have a minimum 10 feet offset from the shoreline. The dredge slopes are assumed to extend from the edge of shoreline to the proposed dredge depth elevation at a 2(horizontal):1(vertical) and 3(horizontal):1(vertical). Plan view figures and cross sections of sediment surface elevations for each critical case evaluated can be found in Attachment A.
2. Existing soils/sediments are conservatively assumed to be a layer of soft silt underlain by a layer of silty sand. Gradation testing from in-water borings performed by USACE and United States Environmental Protection Agency (USEPA) in October 2010 indicated the silt layer was approximately 5-6 feet thick. The boring was terminated in the silty sand layer at 9 feet below sediment surface. Gradation testing was performed by TestAmerica Laboratories, Inc. in 2010 and results are included in Attachment B. Sample testing location be found on Attachment A in the Hughitt Slip.
3. Soil and sediment parameters were assumed using gradation results presented in Attachment B and typical values presented by Das and Holtz and Kovacs (Reference 1 and Reference 2).
4. The soil parameters used in the stability calculations can be found in Table 1. These parameters were assigned using typical values and soil classifications.

**Table 1: Soil Parameters**

Type of Soil	Moist Unit Weight, $\gamma_m$ (pcf)	Internal friction angle, $\phi$ (deg)
Silt	90	28
Sand	110	30

**Notes:**

pcf = pounds per cubic foot  
deg = degrees  
psf = pounds per square foot

## DRAFT

5. All elevations referenced in this calculation are based on International Great Lakes Datum of 1985 (IGLD 85). Horizontal datum referenced in this calculation are based on Minnesota North NAD 83 State Plane.
6. Stability and surface failure planes were analyzed using the GeoSlope International Computer Program Slope/W (Reference 3) to determine an adequate Factor of Safety (FOS).
7. Rankine's theory of lateral active earth pressure was used for the stability evaluations and design.

### **Hughitt Slip – Lake Superior Fishing Co. Building**

1. Lake Superior Fishing Co. building is located on the western shoreline on the south end of Hughitt Slip. Based on visual observations and photos from google earth, it is assumed the building is a 4-story brick building (Reference 4).
2. The surcharge load applied to the western upland shoreline of Hughitt slip was assumed to be 400 pcf (Reference 5 and 6). It is assumed the building has a foundation that provides structural stability to the upland soil underlying the surcharge load that cannot be properly modeled in the Slope/W program for this evaluation. The surcharge load of 400 pcf was assumed based on the size and height of the building as well as assuming a portion of the surcharge would be dissipated by the foundation system.
3. Water level was modeled at El. 592 ft based on bathymetry data.

### **Cumming Slip – Deteriorating Wooden Revetment Wall**

1. It is assumed most the Cumming Slip shoreline consists of a deteriorating wooden revetment wall based on reconnaissance performed by USACE and documented in Reference 7. This was modeled in Slope/W as a reinforcement load with a strength of 10,000 pounds and 10 feet long for conservatism (Reference 5 and 6). In the Slope/W program, using a reinforcement load allows the slip surfaces to fail through the modeled load, if applicable (Reference 3).
2. Water level was modeled at El. 592 ft based on bathymetry data.

### **Dry Docks – Steel Sheetpile Wall**

1. It is assumed the shoreline near the Dry Docks adjacent to the deepest dredge elevation consists of a steel sheetpile wall in moderate condition (Reference 7). This was modeled



## DRAFT

in Slope/W as a reinforcement load with a strength of 16,000 pounds and 30 feet long for conservatism (Reference 5 and 6). In the Slope/W program, using a reinforcement load allows the slip surfaces to fail through the modeled load, if applicable (Reference 3).

2. Water level was modeled at El. 592 ft based on bathymetry data.

### **Hughitt Slip – South End Evaluation (Typ. Section)**

1. It is assumed the general dredge elevation throughout dredge prisms HS-1 and HS-2 (seen in Attachment A) are the same with similar existing conditions and dredge slopes to the typical section evaluated.
2. Along the southern end of Hughitt Slip, North 1<sup>st</sup> street runs east to west within 20 ft of the shoreline. A surcharge load of 100 pcf was applied to represent light traffic load on the upland shoreline (Reference 5 and 6).
3. Water level was modeled at El. 592 ft based on bathymetry data.

### **Hughitt Slip – North End**

1. It is assumed the shoreline near the northern end of the Hughitt Slip consists of old wooden piles or revetment wall (Reference 7). This was modeled in Slope/W as a reinforcement load with a strength of 10,000 pounds and 10 feet long for conservatism (Reference 5 and 6). In the Slope/W program, using a reinforcement load allows the slip surfaces to fail through the modeled load, if applicable (Reference 3).
2. Water level was modeled at El. 585 ft based on bathymetry data.

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## CALCULATIONS:

The stability analysis for the proposed dredge elevations in the critical areas in Hughitt Slip, Cumming Slip and an area around the Dry Docks was performed using the Slope/W computer program by Geo Studio International (Reference 3). Slope/W requires soils properties and soil strata to be input, and surcharge loads applied, as applicable, and then determines slope/failure surfaces with the lowest safety factor based on force equilibrium. The model inputs and outputs for stability of the proposed dredging can be found in Attachment C. The FOS results can be found in Table 2 below. As stated in the assumptions, additional models were evaluated using the existing conditions as a baseline and comparing 2(horizontal):1(vertical) and 3(horizontal):1(vertical) slopes to determine change in Factor of Safety.

Using the design criteria listed in the assumptions section, the following FOS have been calculated using Slope/W:

**Table 2: Sections and Factor of Safety**

Critical Area	Existing FOS	2:1 FOS	3:1 FOS
Hughitt Slip – Building	1.200	1.067	1.197
Cumming Slip – Wooden Wall	3.334	2.030	2.410
Dry Docks – Steel Sheet Pile Wall	2.675	2.354	--
Hughitt Slip – Typical Section	2.307	1.290	1.642
Hughitt Slip – North End	2.488	1.986	2.084

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## **CONCLUSIONS:**

Based on the assumptions stated above, and the comparative Factors of Safety above, Table 3 presents the recommendations for design slopes in the critical areas presented and described above.

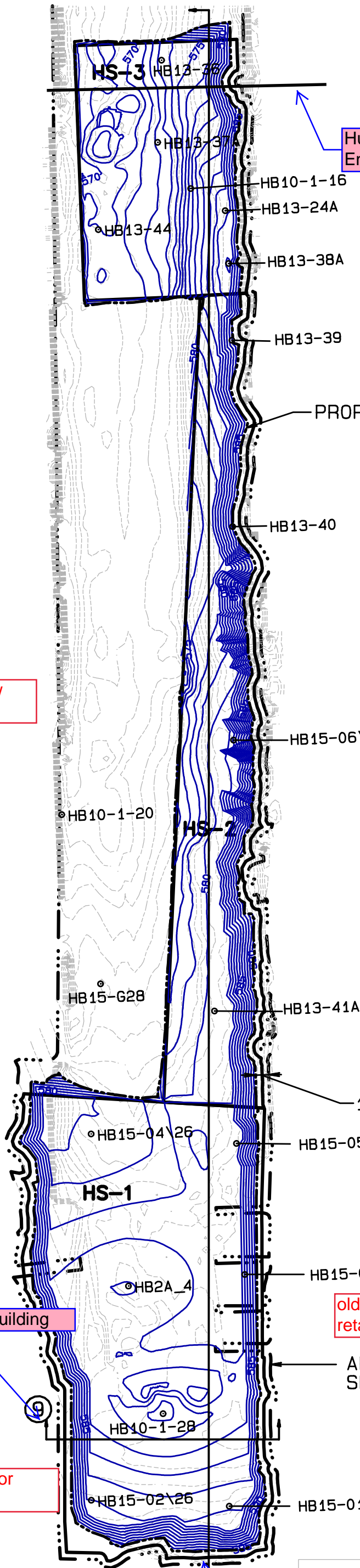
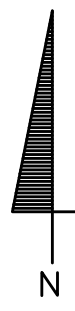
**Table 3: Recommended Design Slopes**

<b>Critical Area</b>	<b>Dredge Prism Slopes (Horizontal:Vertical)</b>
Hughitt Slip – Building	3:1
Cumming Slip – Wooden Wall	2:1
Dry Docks – Steel Sheet Pile Wall	2:1
Hughitt Slip – Typical Section	3:1
Hughitt Slip – North End	2:1

# ATTACHMENT A

Plan View of Cross Sections and Cross Section Geometry





Hughitt Slip - North End

grain silos, new SSP

Hughitt Slip - Building

Lake Superior Fishing Co.

existing city owned masonry utility structure - building

Hughitt Slip - Typical Section

old wooden retaining wall

APPROXIMATE SHORELINE

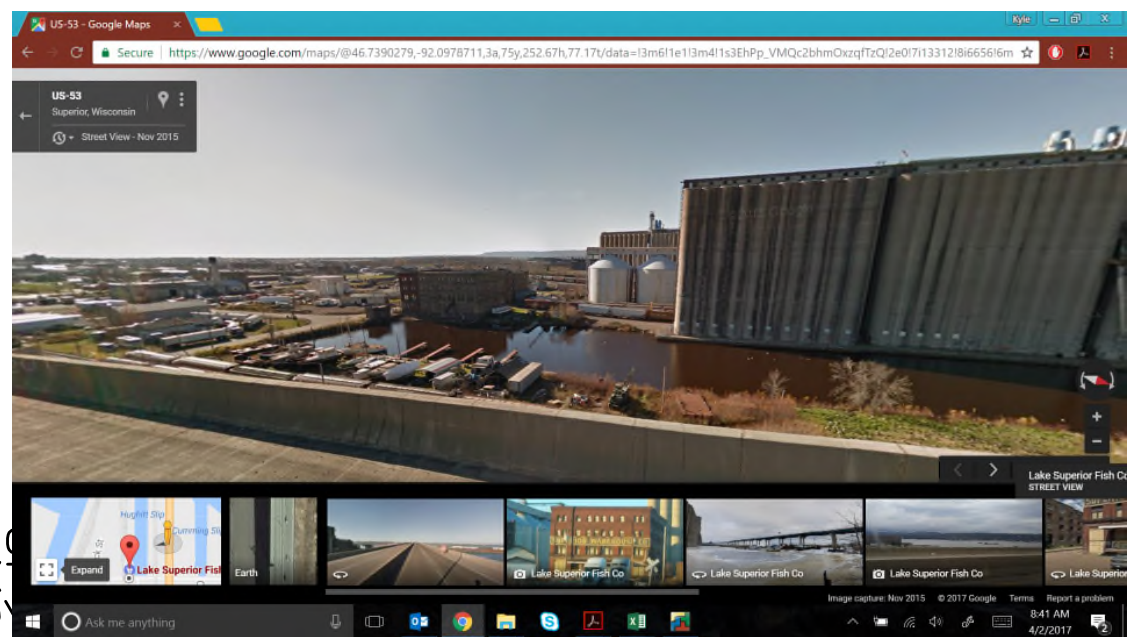
PROPOSED DREDGE LIMIT (TYP.)

### LEGEND

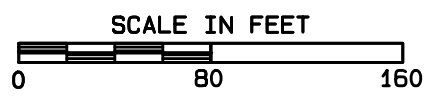
- 593 --- EXISTING BATHYMETRIC CONTOURS
- HB13-40 EXISTING SAMPLE LOCATION
- 575 — PROPOSED BOTTOM OF EXCAVATION CONTOUR
- ▭ PROPOSED DREDGE MANAGEMENT UNIT (DMU) LIMIT

### DMU LABELS

- FC = FEDERAL CHANNEL
- OC = OUTSIDE CHANNEL
- HS = HUGHITT AVE. SLIP
- CS = CUMMINGS AVE. SLIP
- FS = FRASER SLIP
- FP = FROG POND

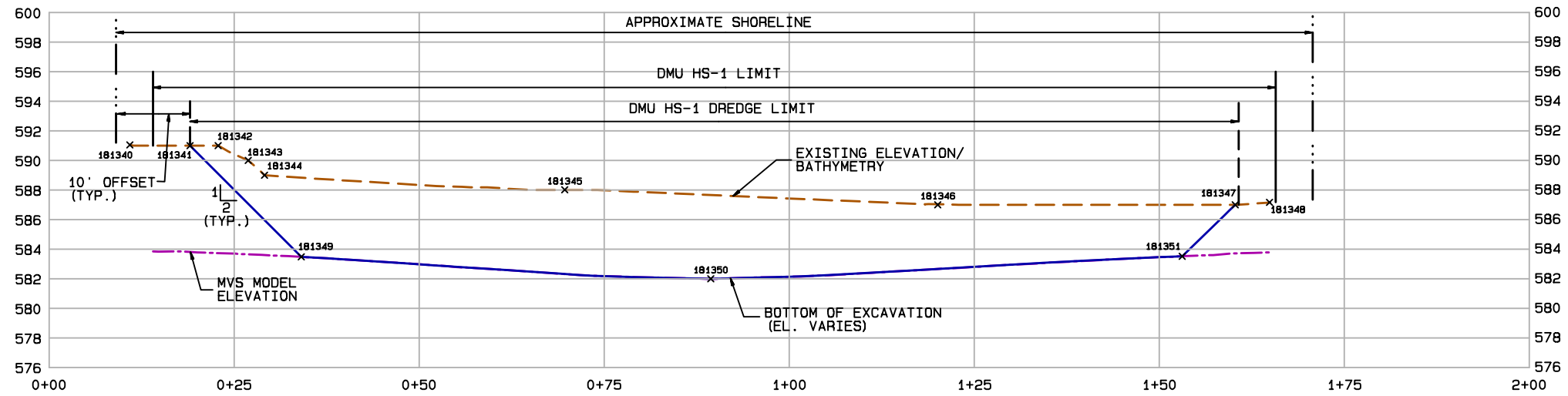


# DRAFT



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 PROJECT TITLE: HOWARDS BAY  
 LOCATION: SUPERIOR, WI  
 16935001.0000.00004  
 17 BY: RLJ FILE: HB DREDGE PRISMS.PRO

FIGURE  
7



**CROSS SECTION 9**  
 VERTICAL EXAGGERATION = 2X

Hughitt Slip - Lake Superior Fishing  
 Co. Building

DRAFT

HUGHITT SLIP  
 DMU HS-1

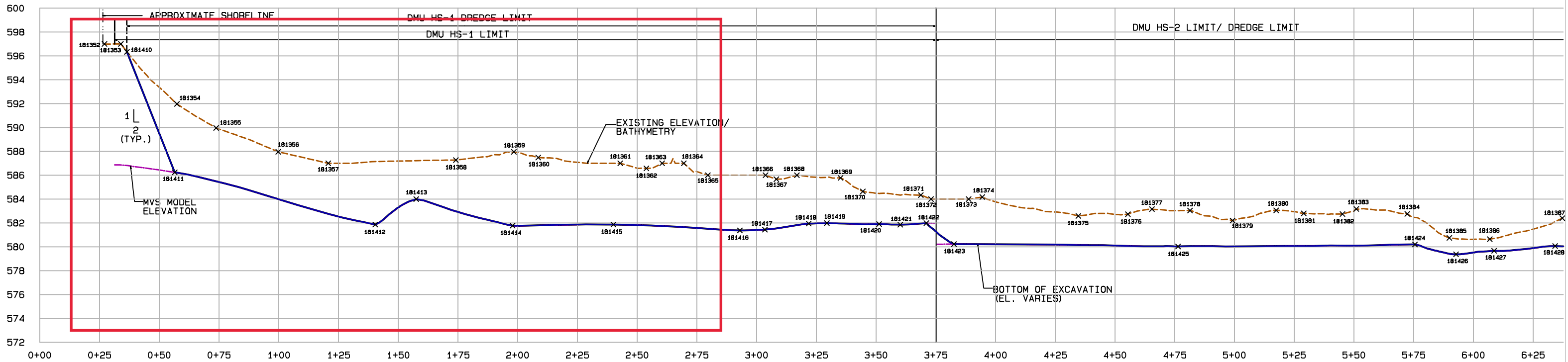
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 PROJECT TITLE: HOWARDS BAY  
 PROJECT LOCATION: SUPERIOR, WI  
 PROJECT NO: 16935001.0000.00004  
 DATE: 03/30/17 BY: RLJ FILE: HB DREDGE PRISMS.PRO

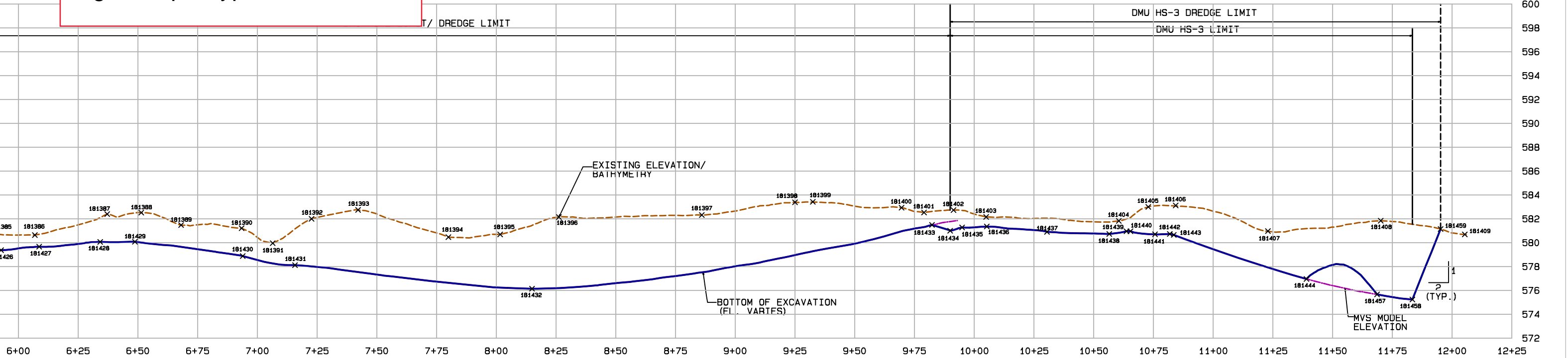
FIGURE

18





Hughitt Slip - Typical Section

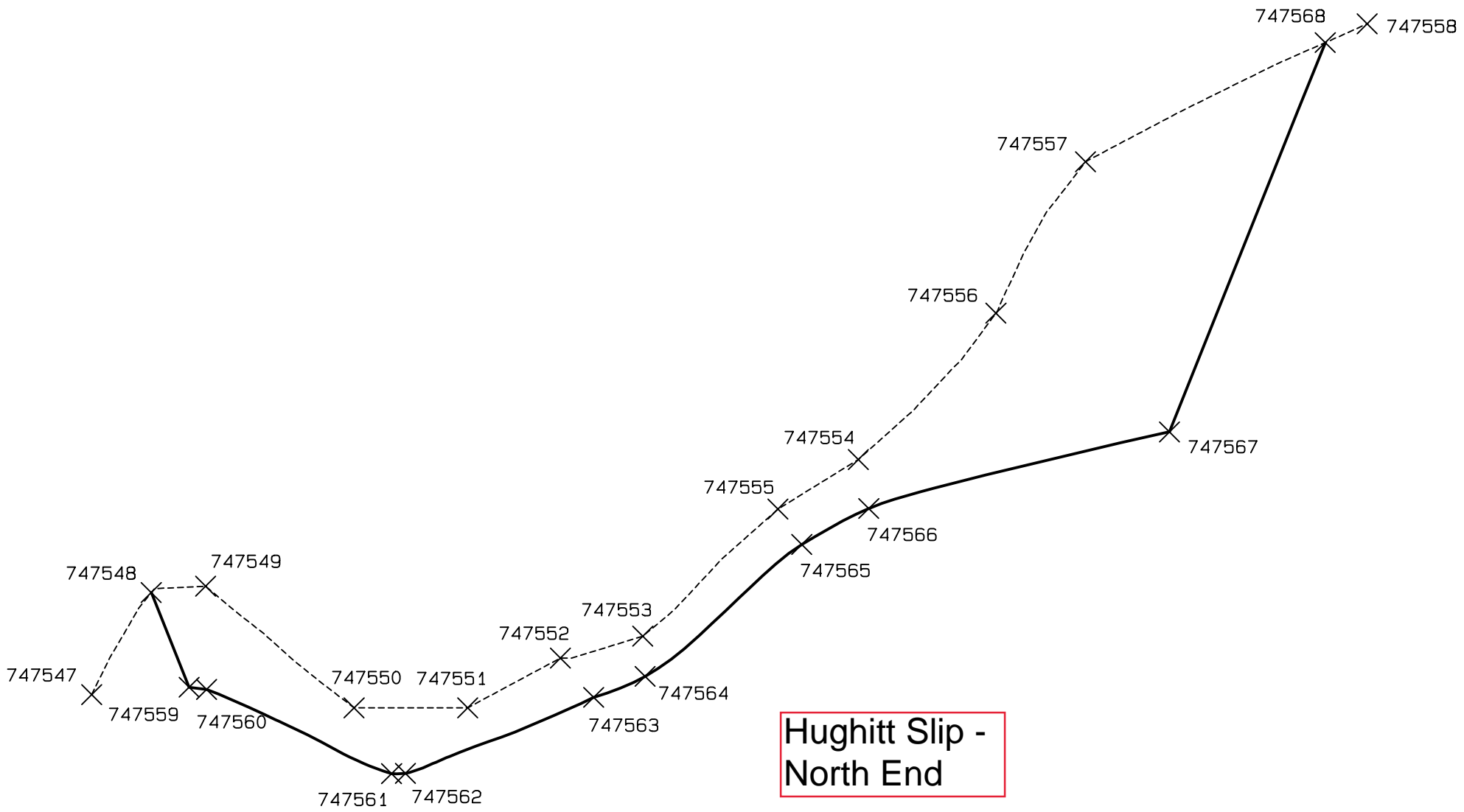


CROSS SECTION 8  
 VERICAL EXAGGERATION = 5X

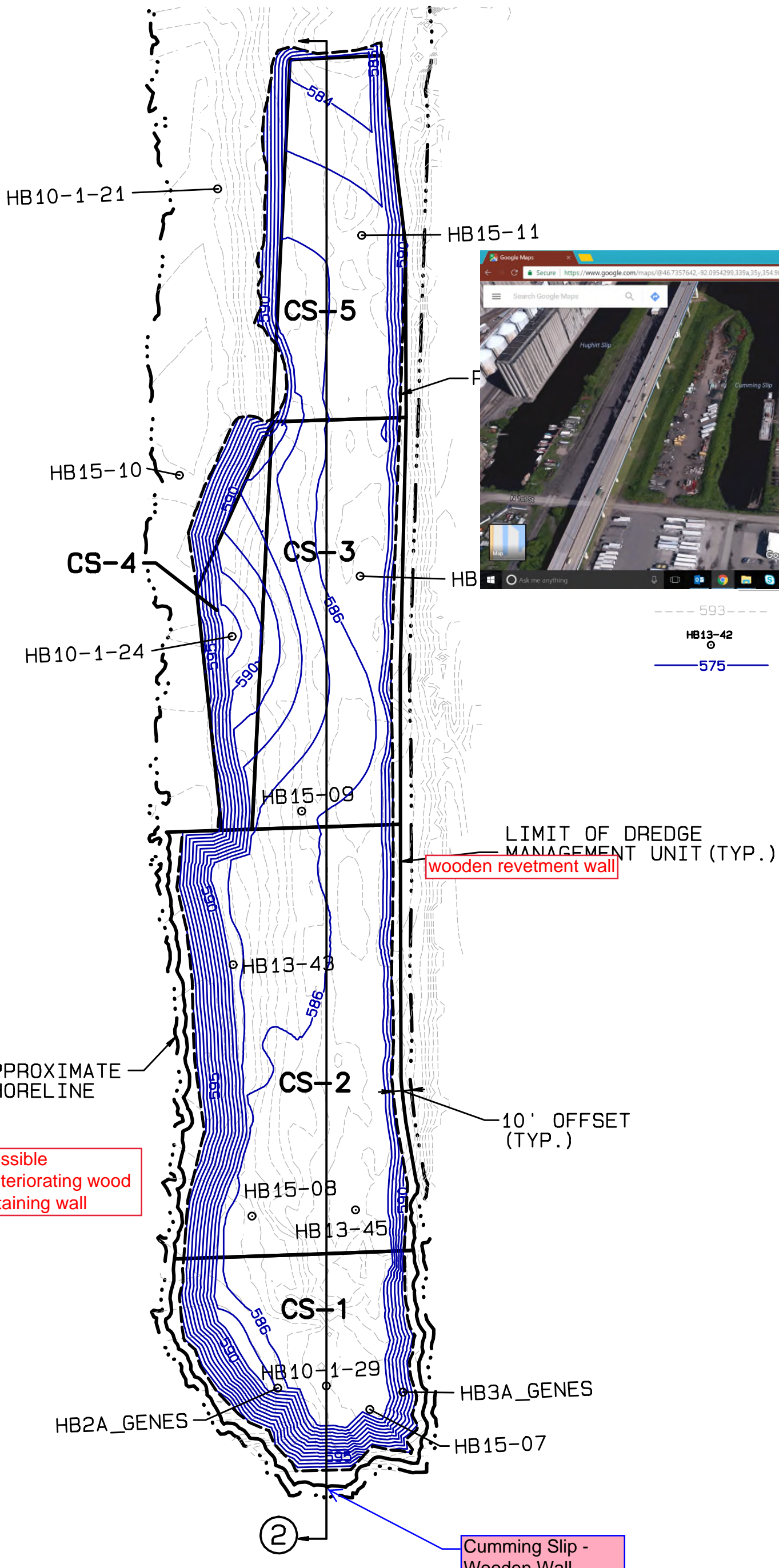
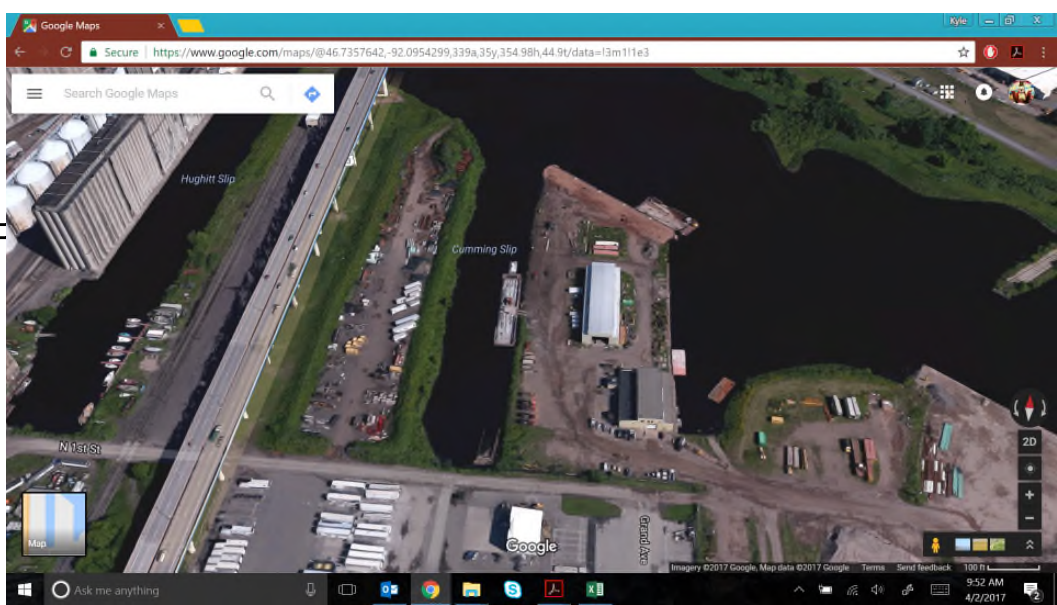
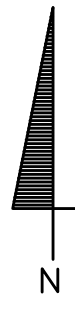
DRAFT

HUGHITT SLIP  
 DMUs HS-1/HS-2/HS-3

ARCADIS	SHEET TITLE: DREDGE PRISM AREAS		FIGURE <b>17</b>
	PROJECT TITLE: HOWARDS BAY		
	PROJECT LOCATION: SUPERIOR, WI		
	PROJECT NO: 16935001.0000.00004		
	DATE: 03/30/17	BY: RLJ	

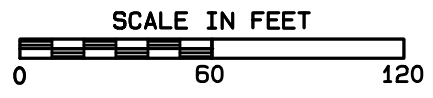


Hughitt Slip -  
North End



- 593 --- EXISTING BATHYMETRIC CONTOURS
- HB13-42 EXISTING SAMPLE LOCATION
- 575 — PROPOSED BOTTOM OF EXCAVATION CONTOUR

DRAFT

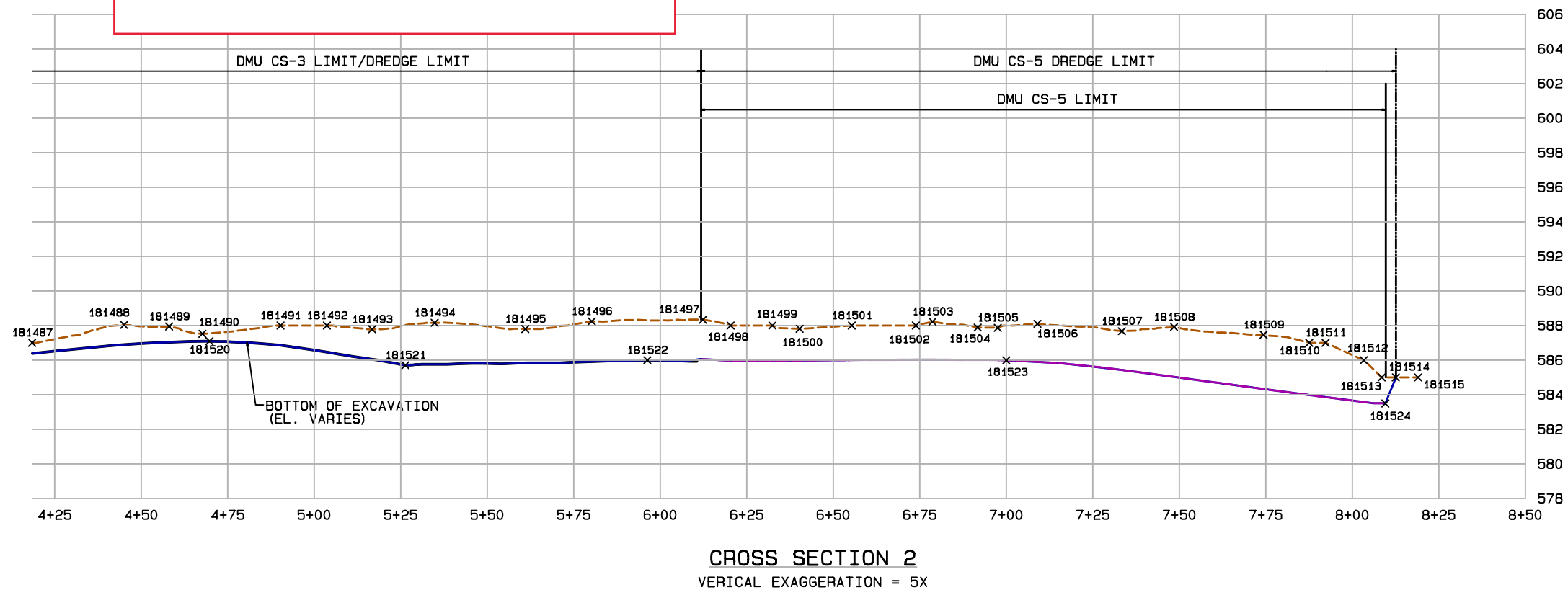
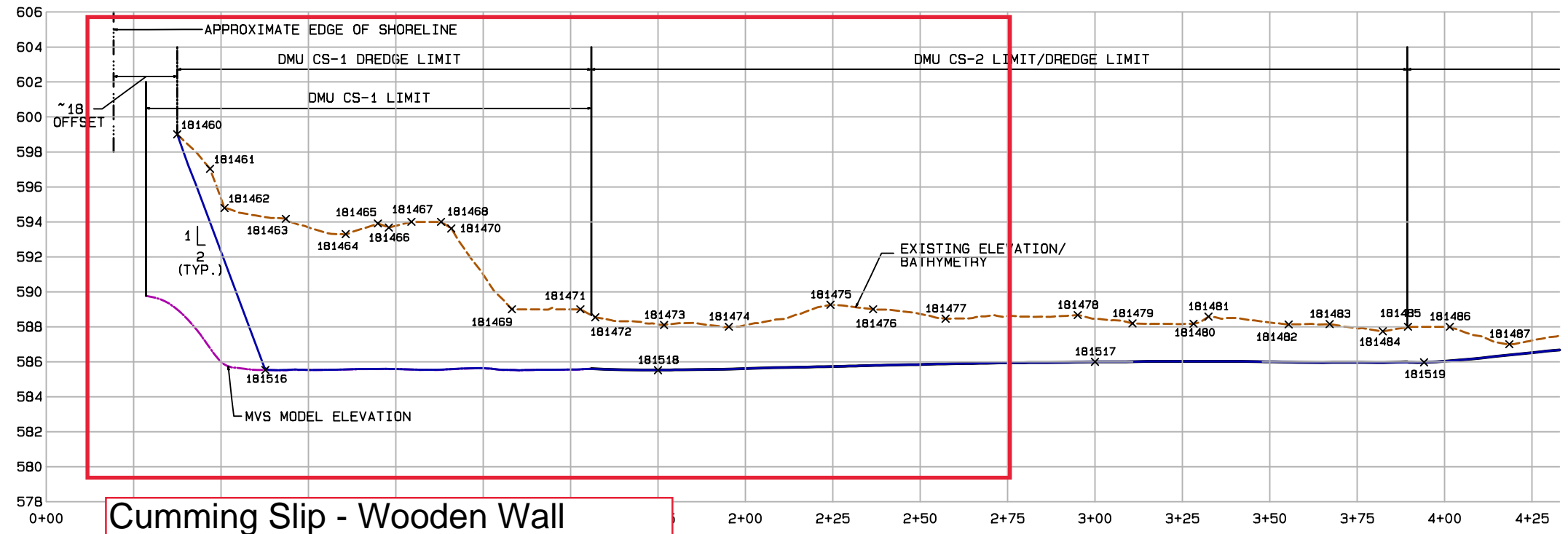


ARCADIS

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 PROJECT TITLE: HOWARDS BAY  
 PROJECT LOCATION: SUPERIOR, WI  
 PROJECT NO: 16935001.0000.00004  
 DATE: 03/28/17 BY: RLJ FILE: HB DREDGE PRISMS.PRO

FIGURE

8



DRAFT

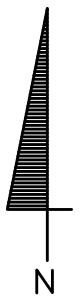
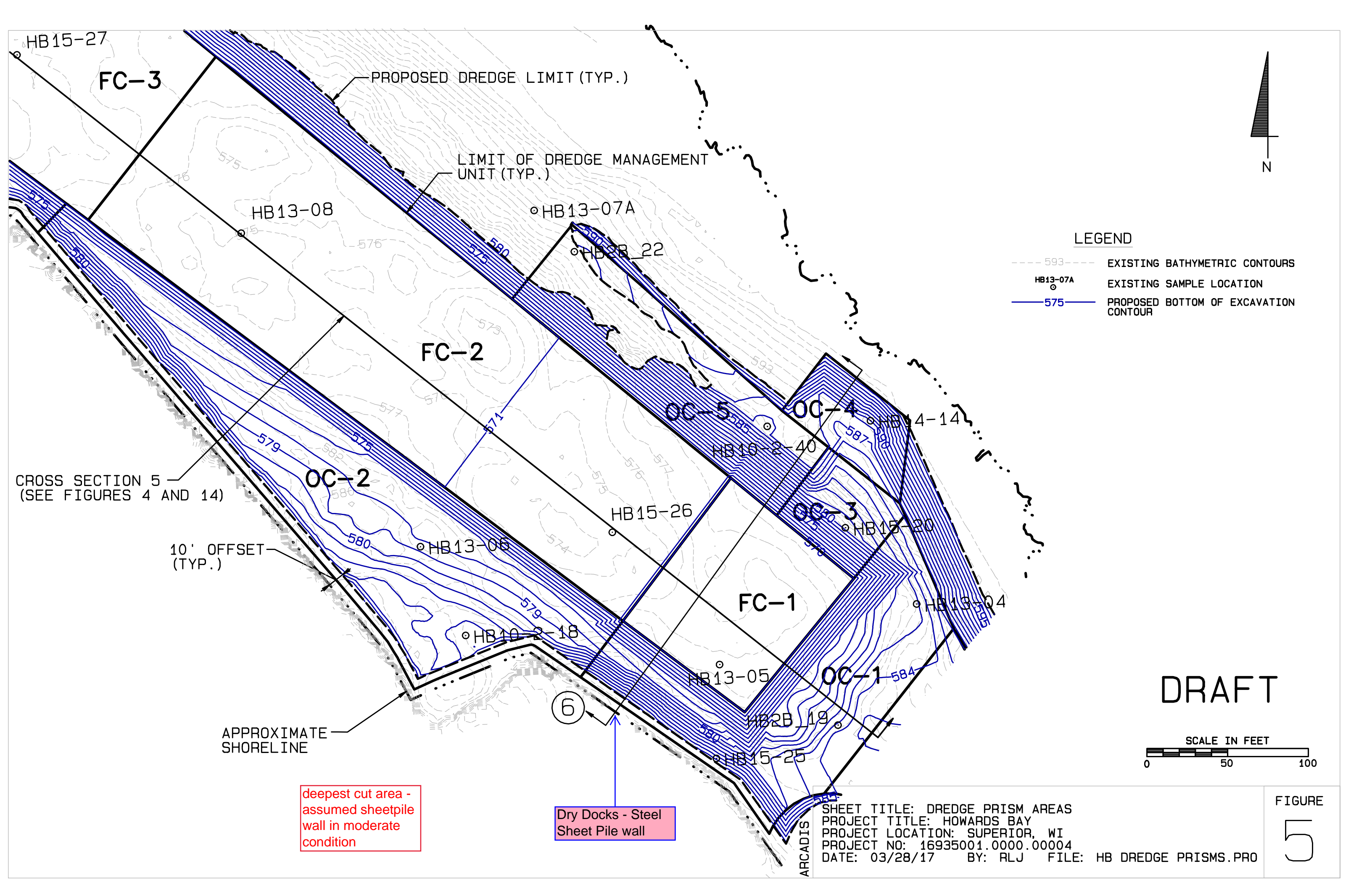
CUMMINGS SLIP  
DMUs CS-1/CS-2/CS-3/CS-5

ARCADIS

SHEET TITLE: DREDGE PRISM AREAS  
PROJECT TITLE: HOWARDS BAY  
PROJECT LOCATION: SUPERIOR, WI  
PROJECT NO: 16935001.0000.00004  
DATE: 03/31/17 BY: RLJ FILE: HB DREDGE PRISMS.PRO

FIGURE  
1 1

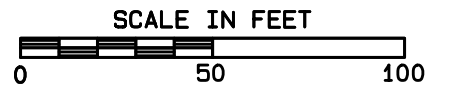




**LEGEND**

- 593 --- EXISTING BATHYMETRIC CONTOURS
- HB13-07A EXISTING SAMPLE LOCATION
- 575 — PROPOSED BOTTOM OF EXCAVATION CONTOUR

**DRAFT**



SHEET TITLE: DREDGE PRISM AREAS  
 PROJECT TITLE: HOWARDS BAY  
 PROJECT LOCATION: SUPERIOR, WI  
 PROJECT NO: 16935001.0000.00004  
 DATE: 03/28/17 BY: RLJ FILE: HB DREDGE PRISMS.PRO

FIGURE  
**5**

deepest cut area -  
 assumed sheetpile  
 wall in moderate  
 condition

Dry Docks - Steel  
 Sheet Pile wall

6

CROSS SECTION 5  
 (SEE FIGURES 4 AND 14)

10' OFFSET  
 (TYP.)

APPROXIMATE  
 SHORELINE

FC-3

PROPOSED DREDGE LIMIT (TYP.)

LIMIT OF DREDGE MANAGEMENT  
 UNIT (TYP.)

FC-2

FC-1

OC-2

OC-5

OC-4

OC-3

OC-1

HB15-27

HB13-08

HB13-07A

HB2B-22

HB4-14

HB10-2-40

HB15-26

HB15-20

HB15-04

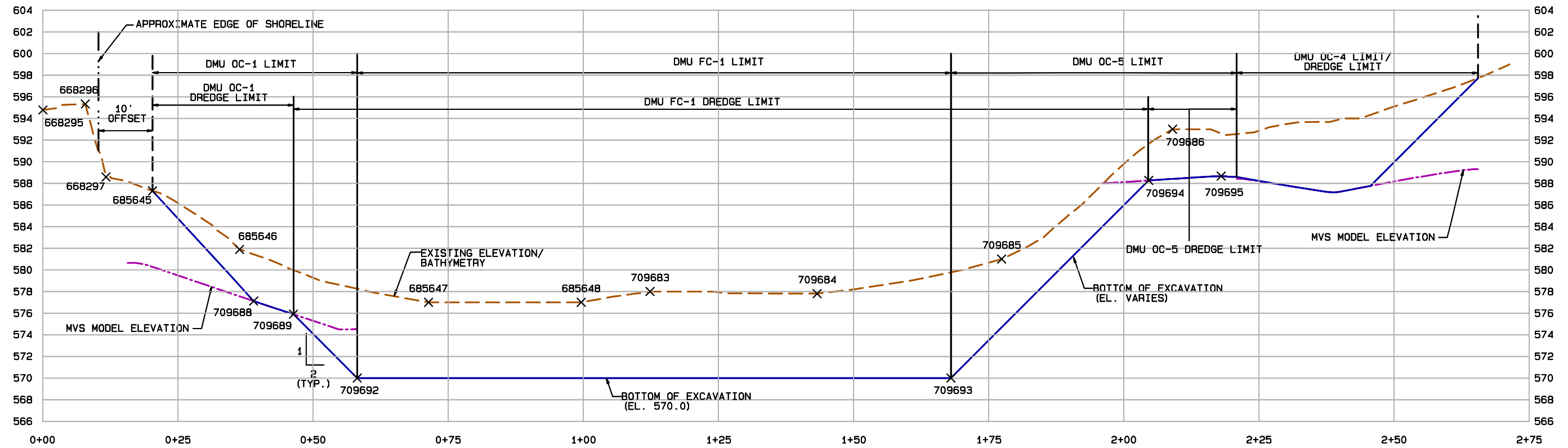
HB10-2-18

HB13-05

HB2B-19

HB15-25

ARCADIS



Dry Docks - Steel Sheet Pile Wall

CROSS SECTION 6  
VERTICAL EXAGGERATION = 2X

DRAFT

FEDERAL CHANNEL  
DMUs OC-1/FC-1/OC-5/OC-4

ARCADIS

SHEET TITLE: DREDGE PRISM AREAS  
PROJECT TITLE: HOWARDS BAY  
PROJECT LOCATION: SUPERIOR, WI  
PROJECT NO: 16935001.0000.00004  
DATE: 04/03/17 BY: RLJ FILE: HB DREDGE PRISMS.PRO

FIGURE  
15



# ATTACHMENT B

Gradation Results (including hydrometer) for Hughitt Slip



Location ID:	Sample Depth(Inches):	Date Collected:	% Clay	% Coarse Sand	% Fine Sand	% Fines (silt+clay)	% Gravel	% Medium Sand	% Sand	%Silt
HB10-1-28	0 - 12	10/17/10	21	0	19	80	0	1.2	20	59
HB10-1-28	12 - 36	10/17/10	28	0	18	80	0	1.6	19	52
HB10-1-28	36 - 60	10/17/10	33	0.1	7.3	91	0.9	0.9	8.3	58
HB10-1-28	60 - 84	10/17/10	41	0	14	84	0.6	1.6	16	43
HB10-1-28	60 - 96	10/17/10	43	0.4	31	67	0	1.5	33	24

# ATTACHMENT C

Slope/W Outputs



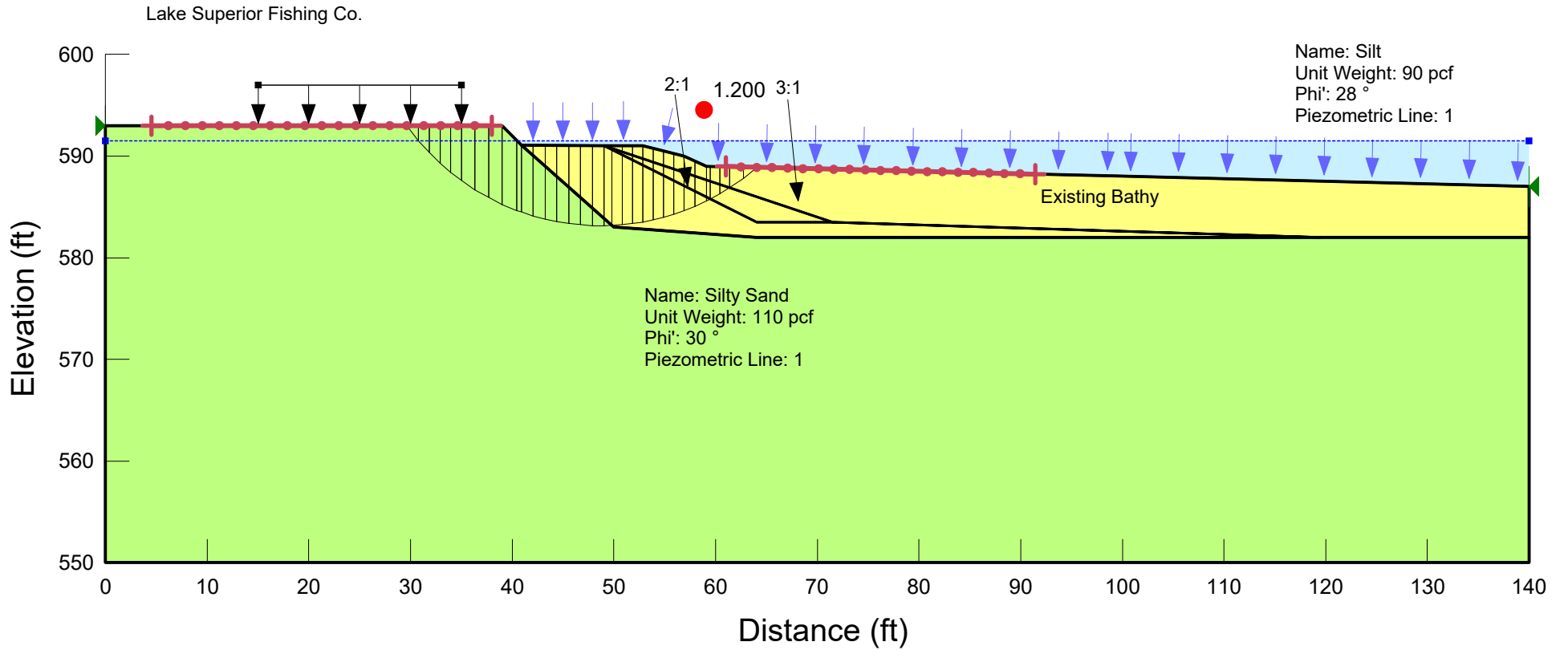
# Hughitt Slip

Lake Superior Fishing Co. Building



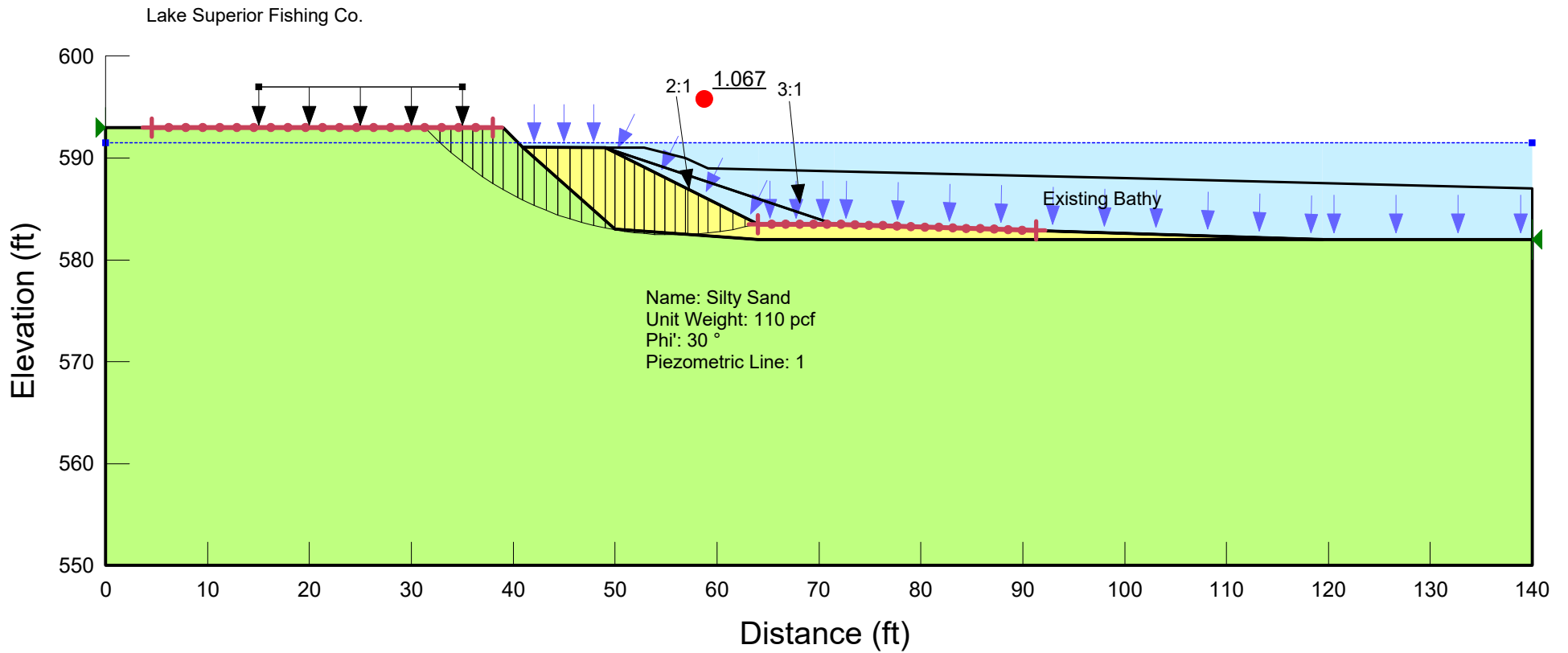
File Name: Howards Bay\_HS\_West Side\_04022017.gsz  
Created By: Warren, Kyle  
Description: West Side - Lake Superior Fishing Co. Building  
Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



File Name: Howards Bay\_HS\_West Side\_04022017.gsz  
Created By: Warren, Kyle  
Description: West Side - Lake Superior Fishing Co. Building  
Date: 4/3/2017

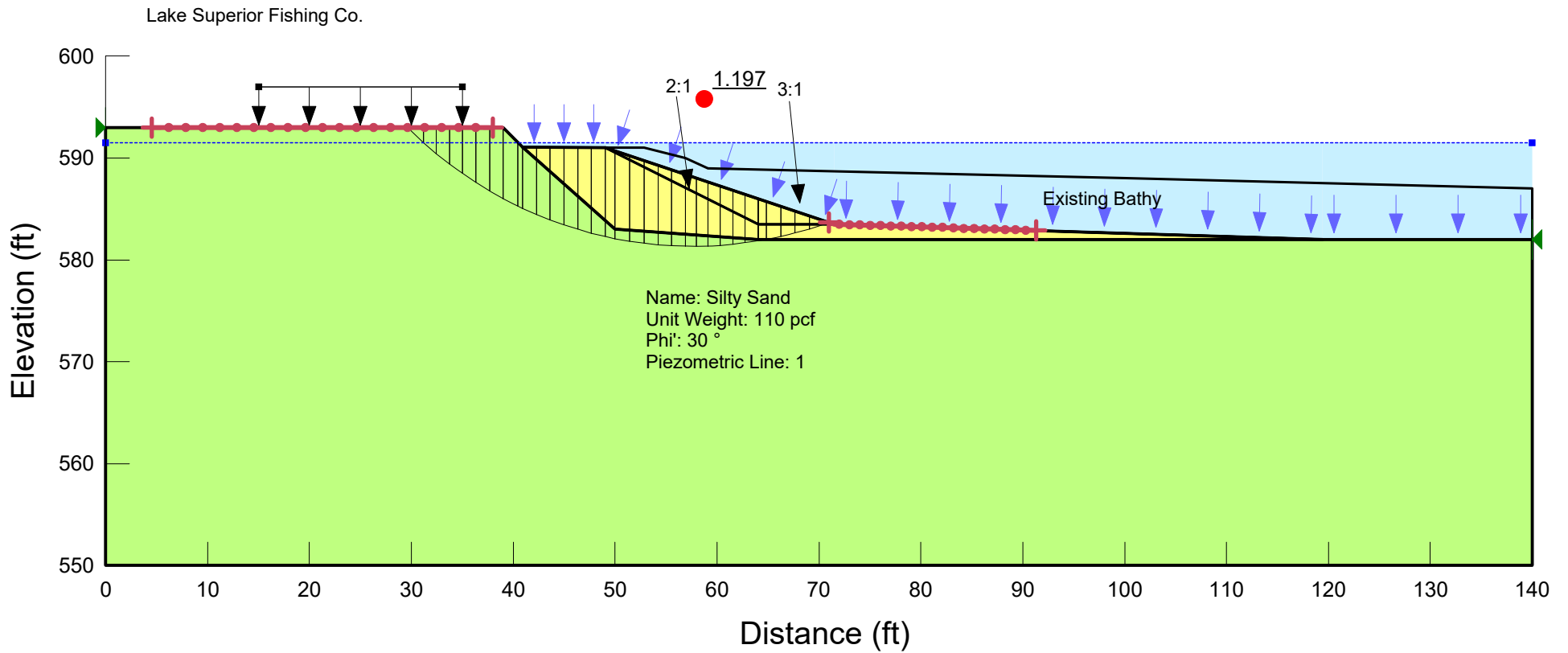
Method: Spencer  
Slip Surface Option: Entry and Exit





File Name: Howards Bay\_HS\_West Side\_04022017.gsz  
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Description: West Side - Lake Superior Fishing Co. Building  
Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



# Cumming Slip

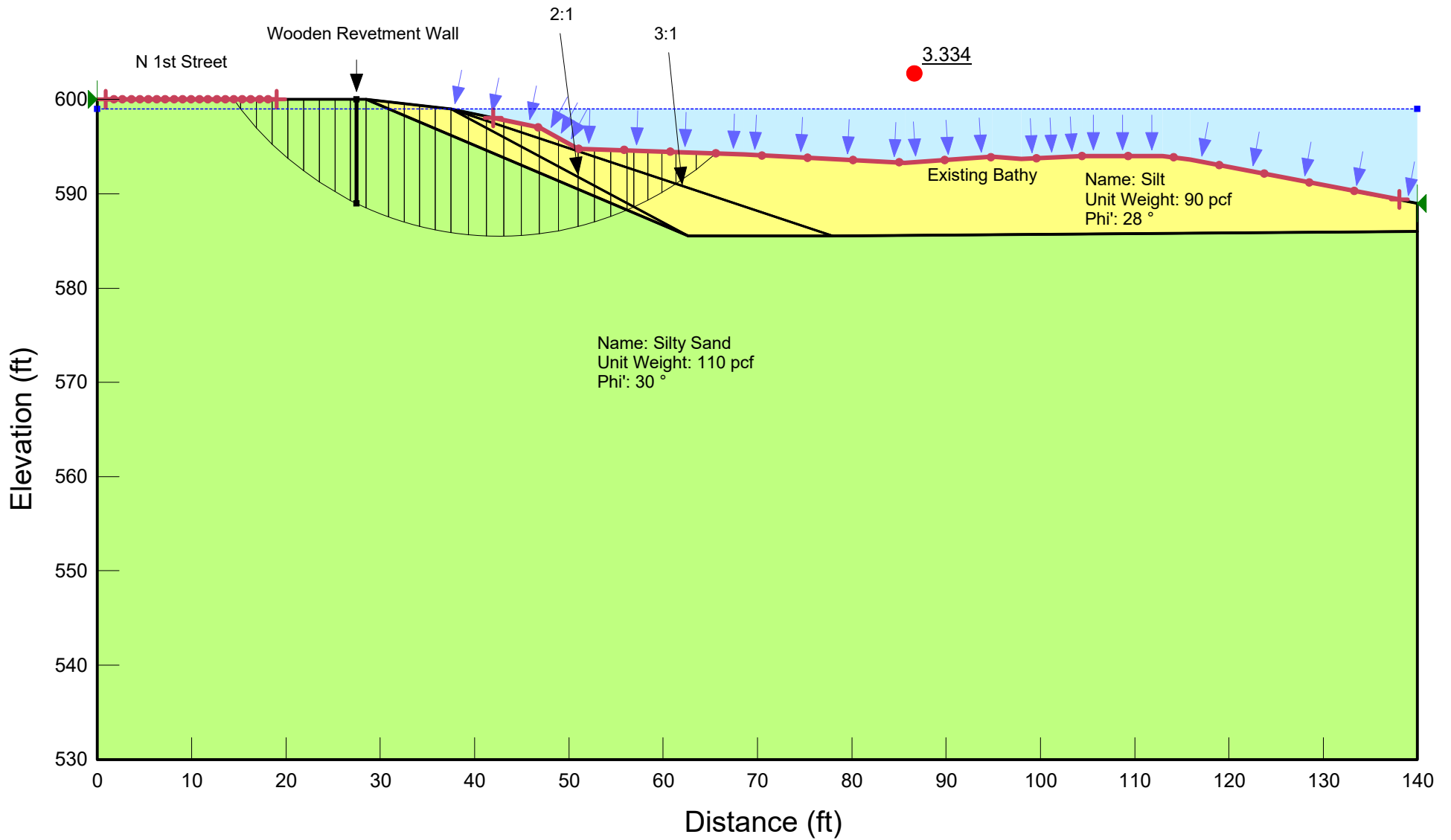
Wooden Wall



File Name: Howards Bay\_CS\_South End\_040217.gsz  
Created By: Warren, Kyle  
Description: South End  
Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit

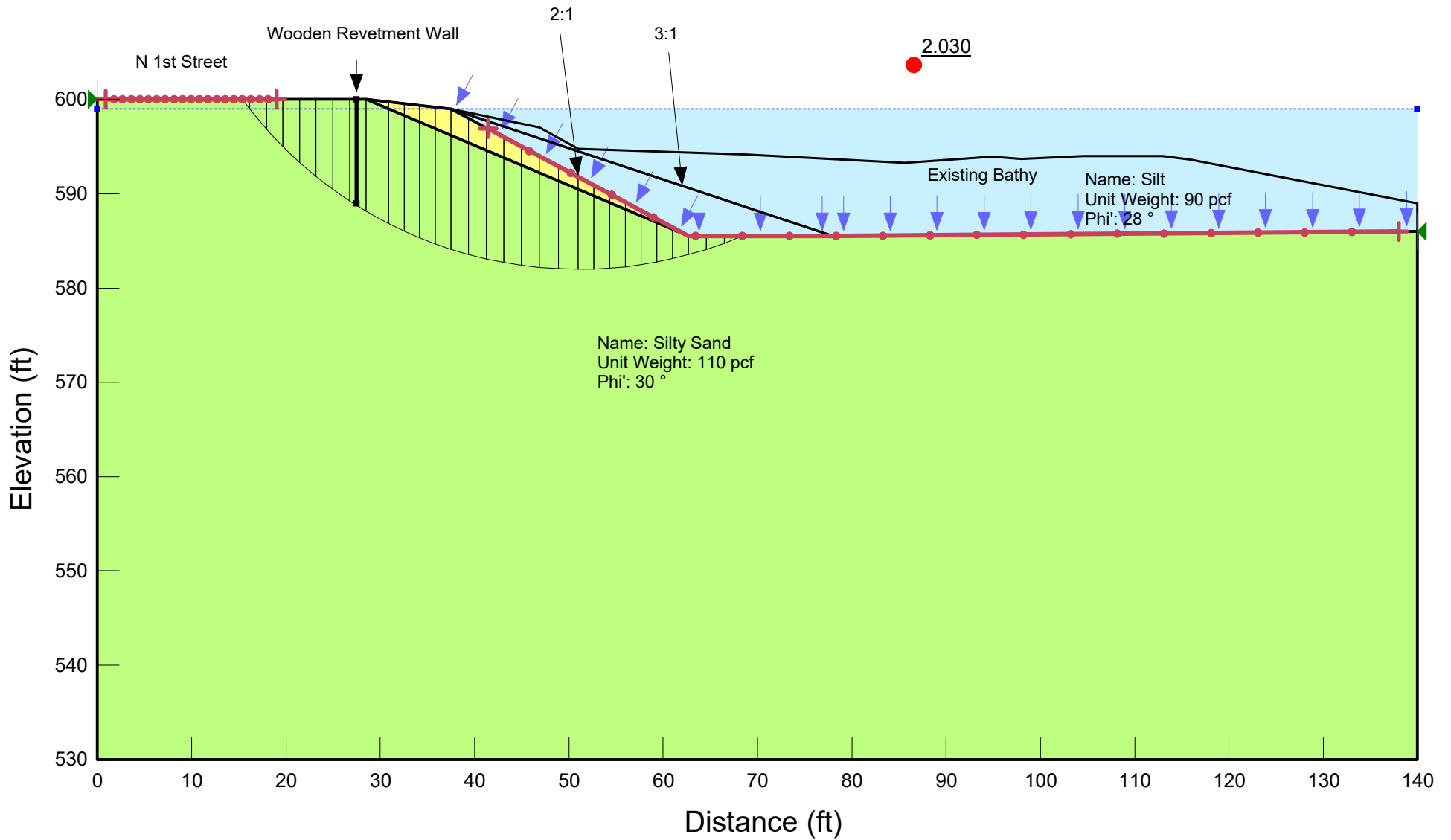
Representative of Deepest Cut in Cumming Slip



File Name: Howards Bay\_CS\_South End\_040217.gsz  
Created By: Warren, Kyle  
Description: South End  
Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit

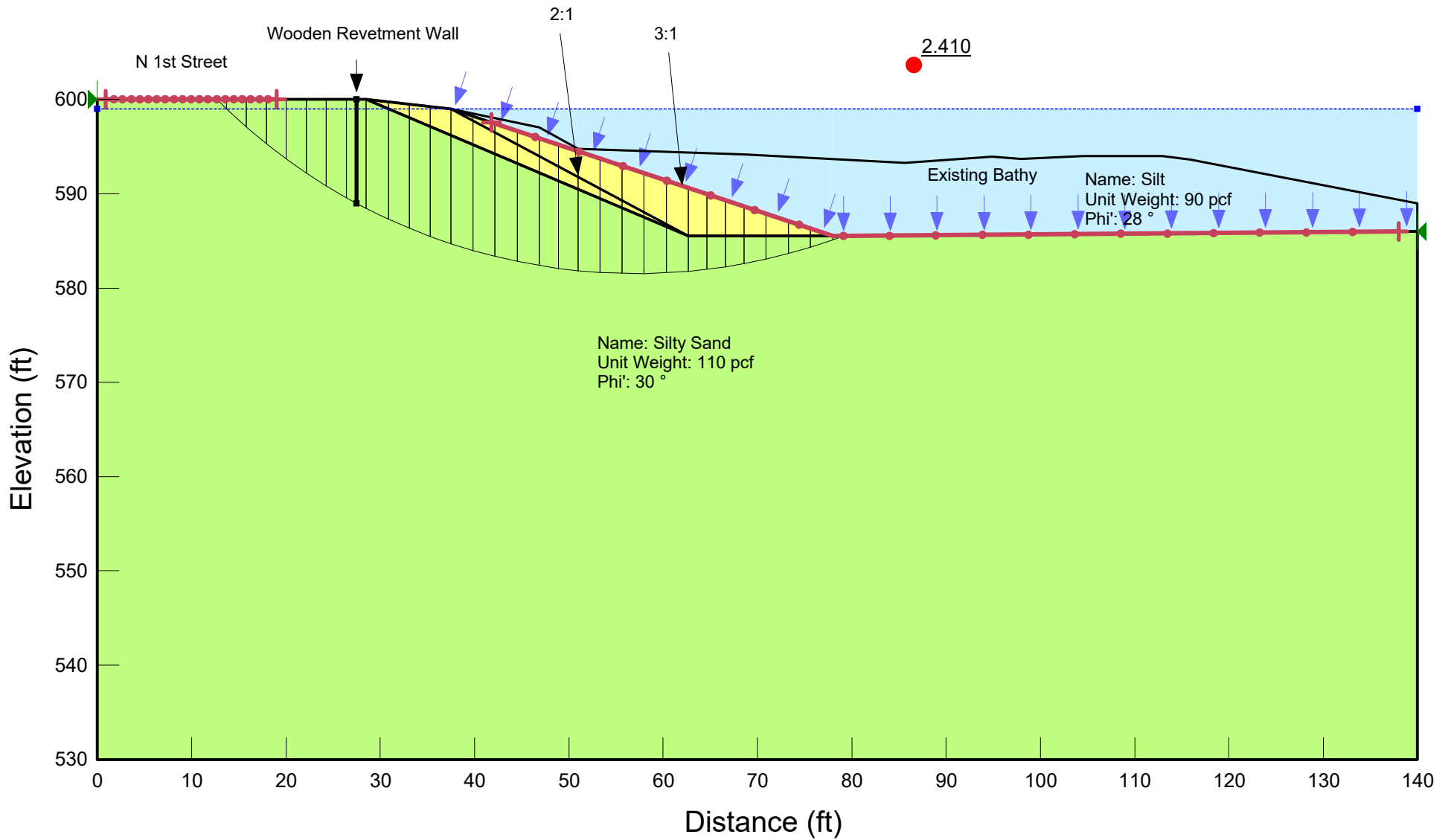
Representative of Deepest Cut in Cumming Slip



File Name: Howards Bay\_CS\_South End\_040217.gsz  
Created By: Warren, Kyle  
Description: South End  
Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit

Representative of Deepest Cut in Cumming Slip



# Dry Docks

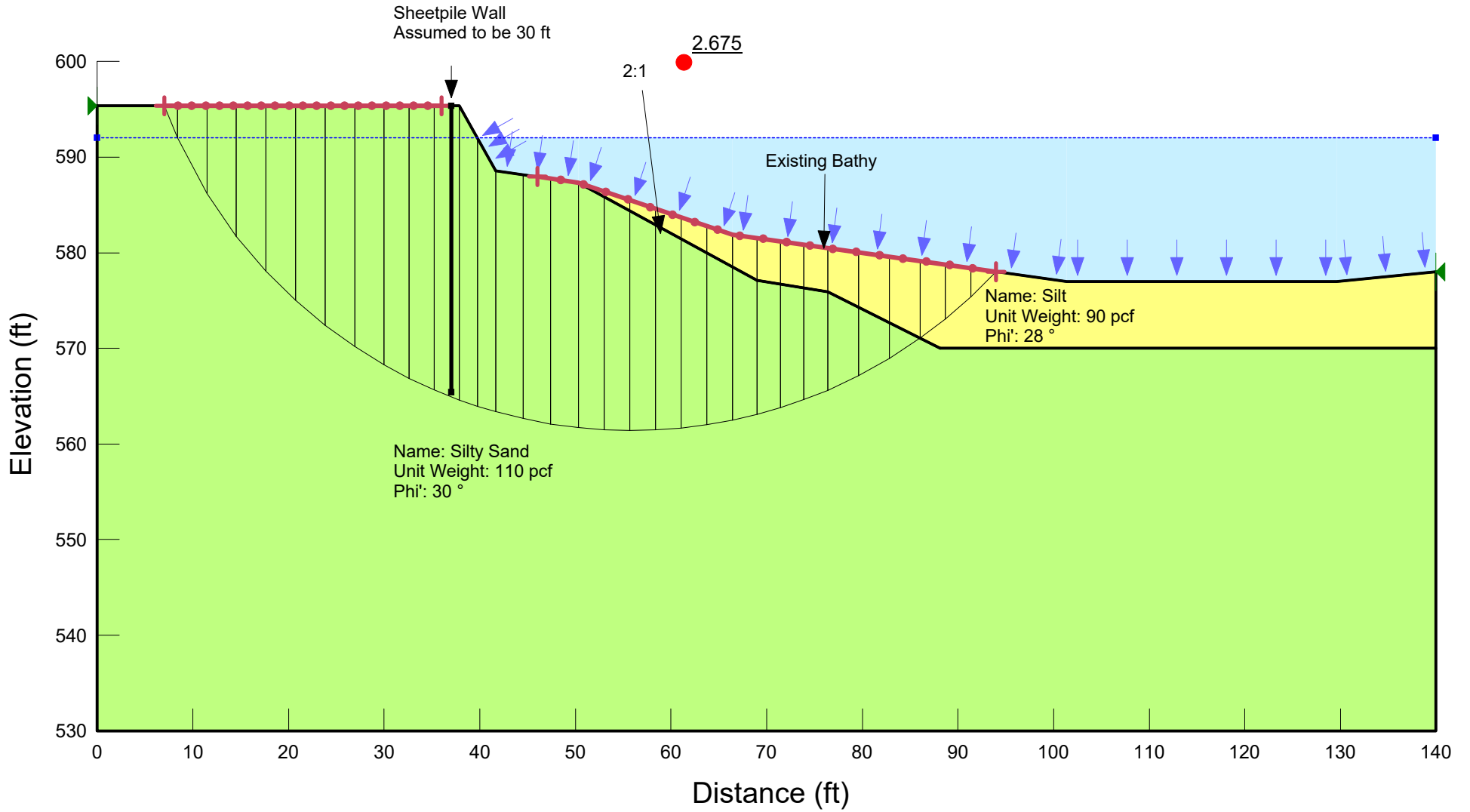
Steel Sheet Pile Wall





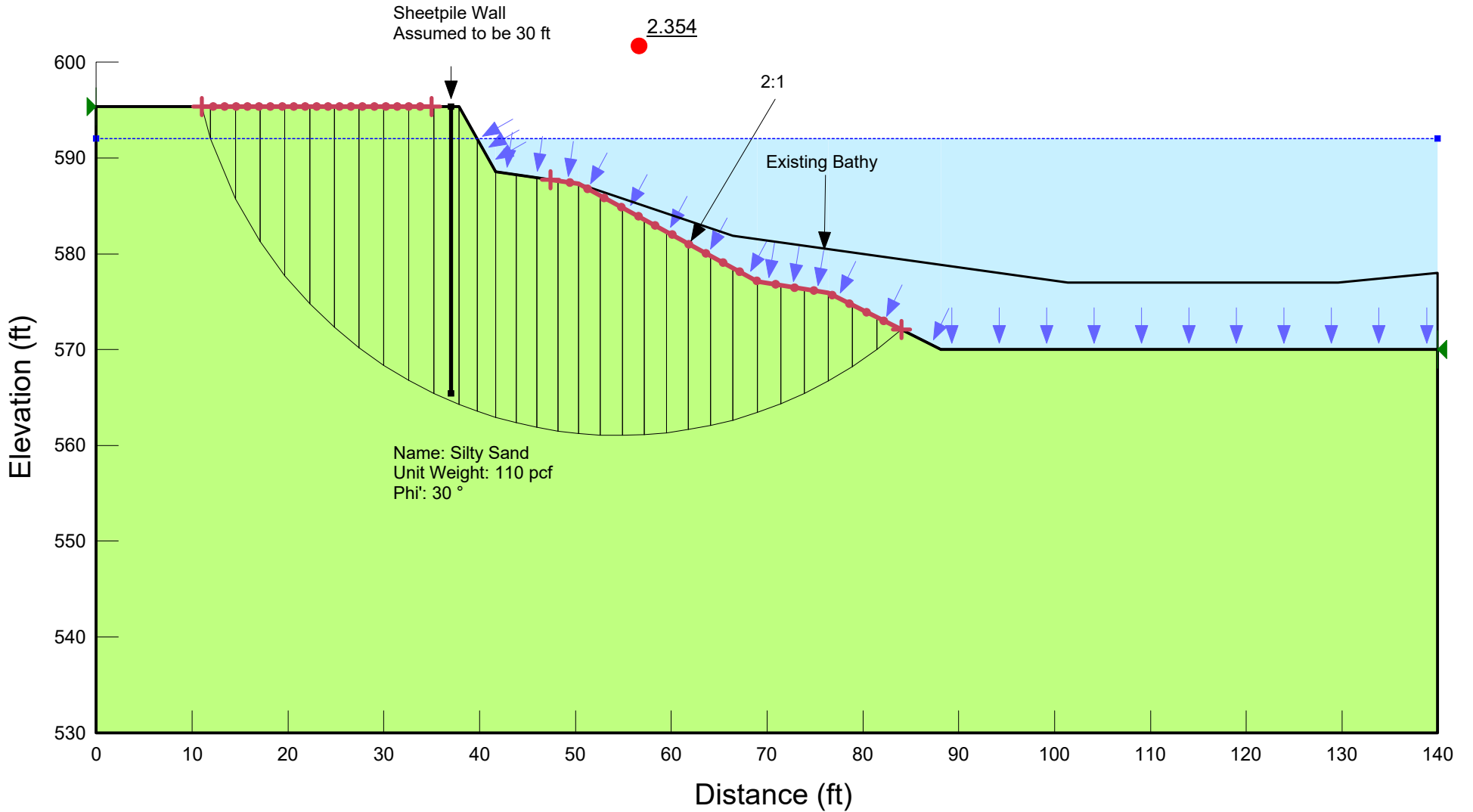
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Created By: Warren, Kyle  
Description: South End  
Date: 4/4/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



File Name: Howards Bay\_Dry Dock\_040317.gsz  
Created By: Warren, Kyle  
Description: South End  
Date: 4/4/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



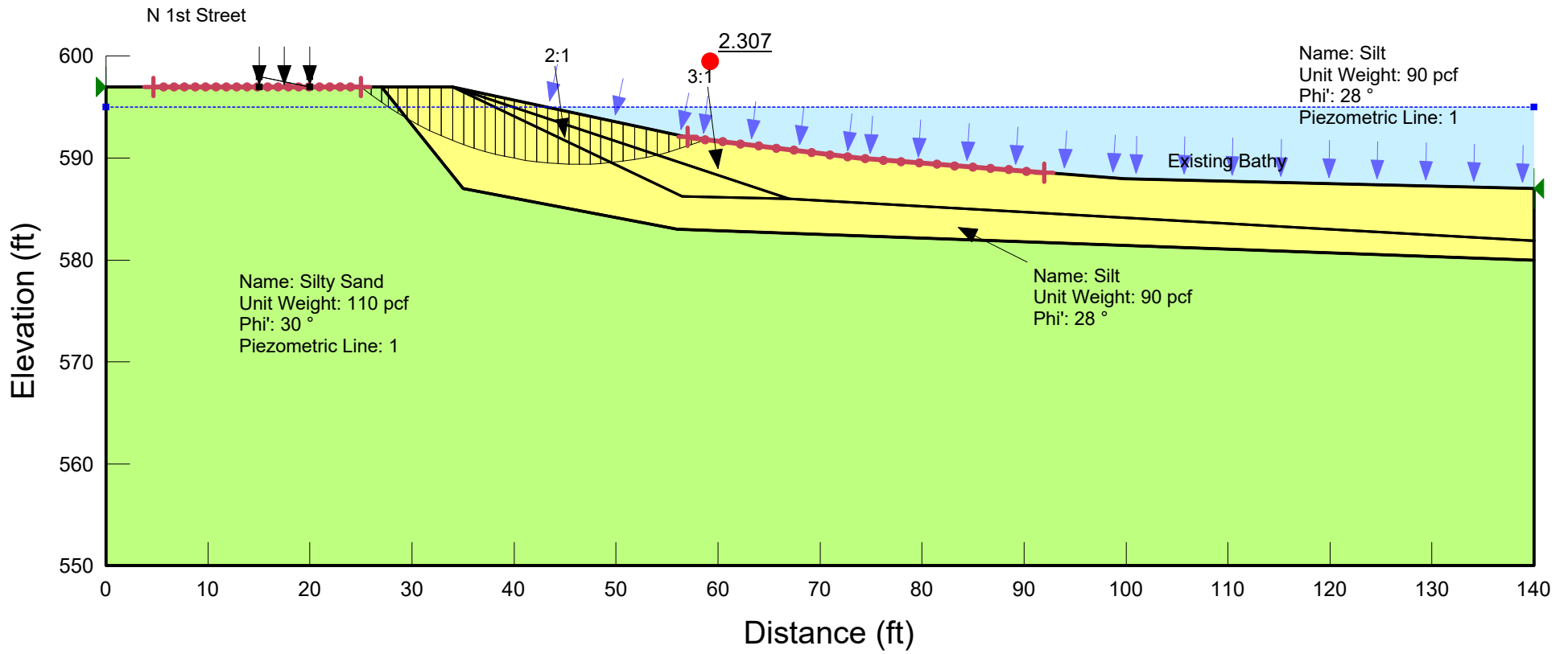
# Hughitt Slip

Typical Section



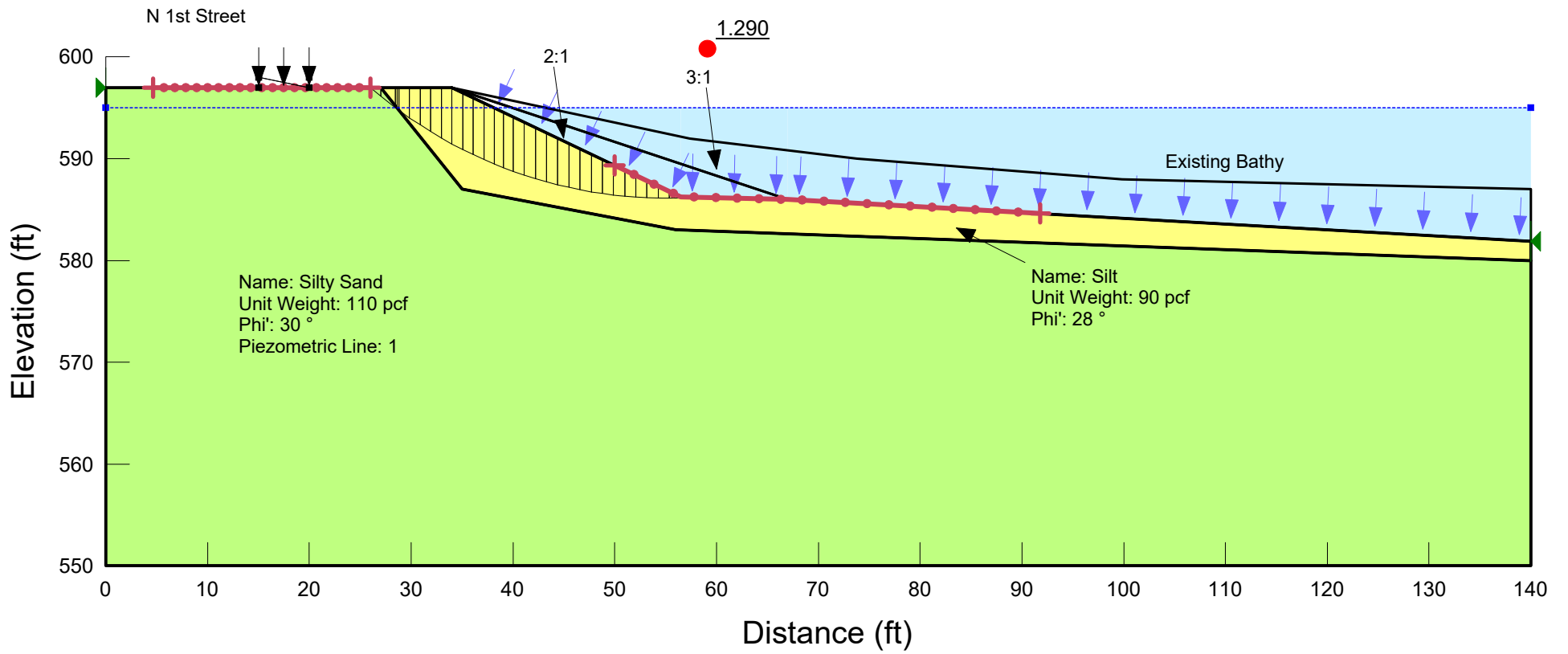
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Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



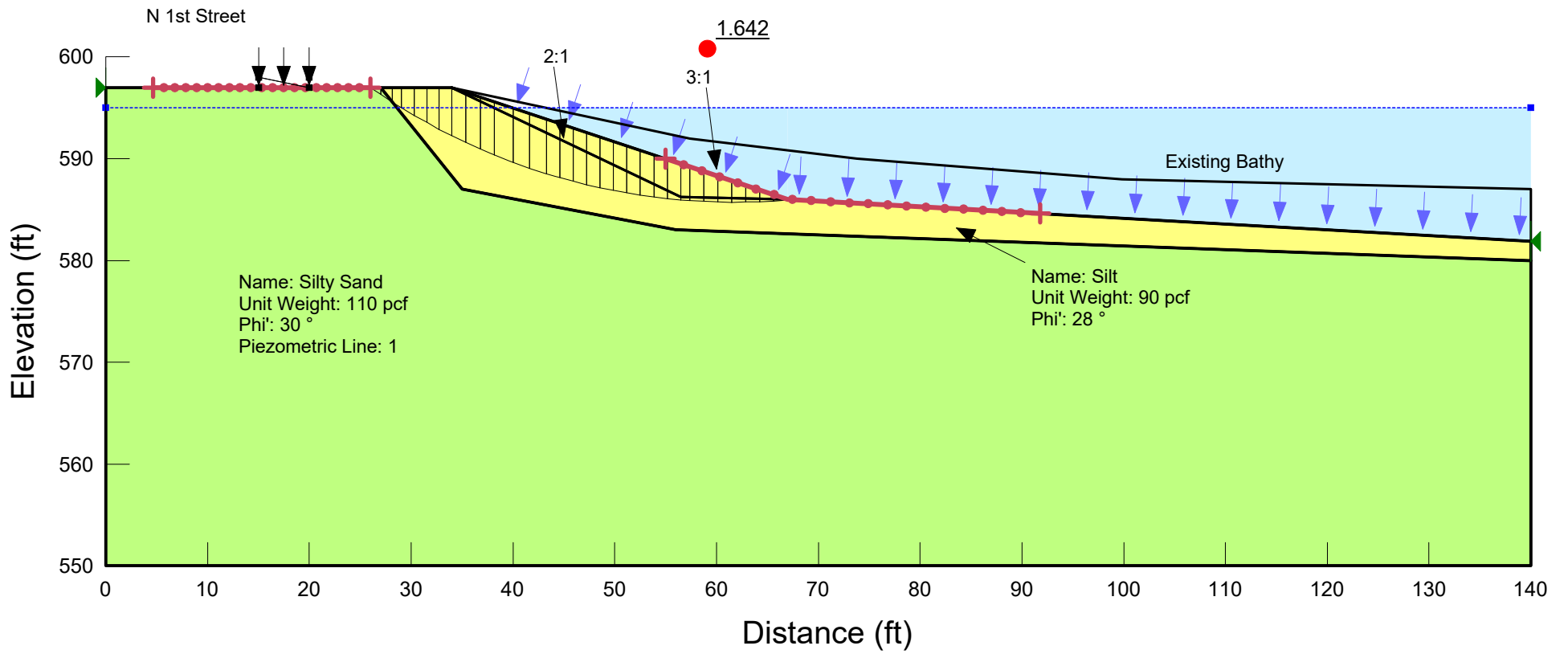
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Created By: Warren, Kyle  
Description: South End  
Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



File Name: Howards Bay\_HS\_South End\_040217.gsz  
Created By: Warren, Kyle  
Description: South End  
Date: 4/3/2017

Method: Spencer  
Slip Surface Option: Entry and Exit





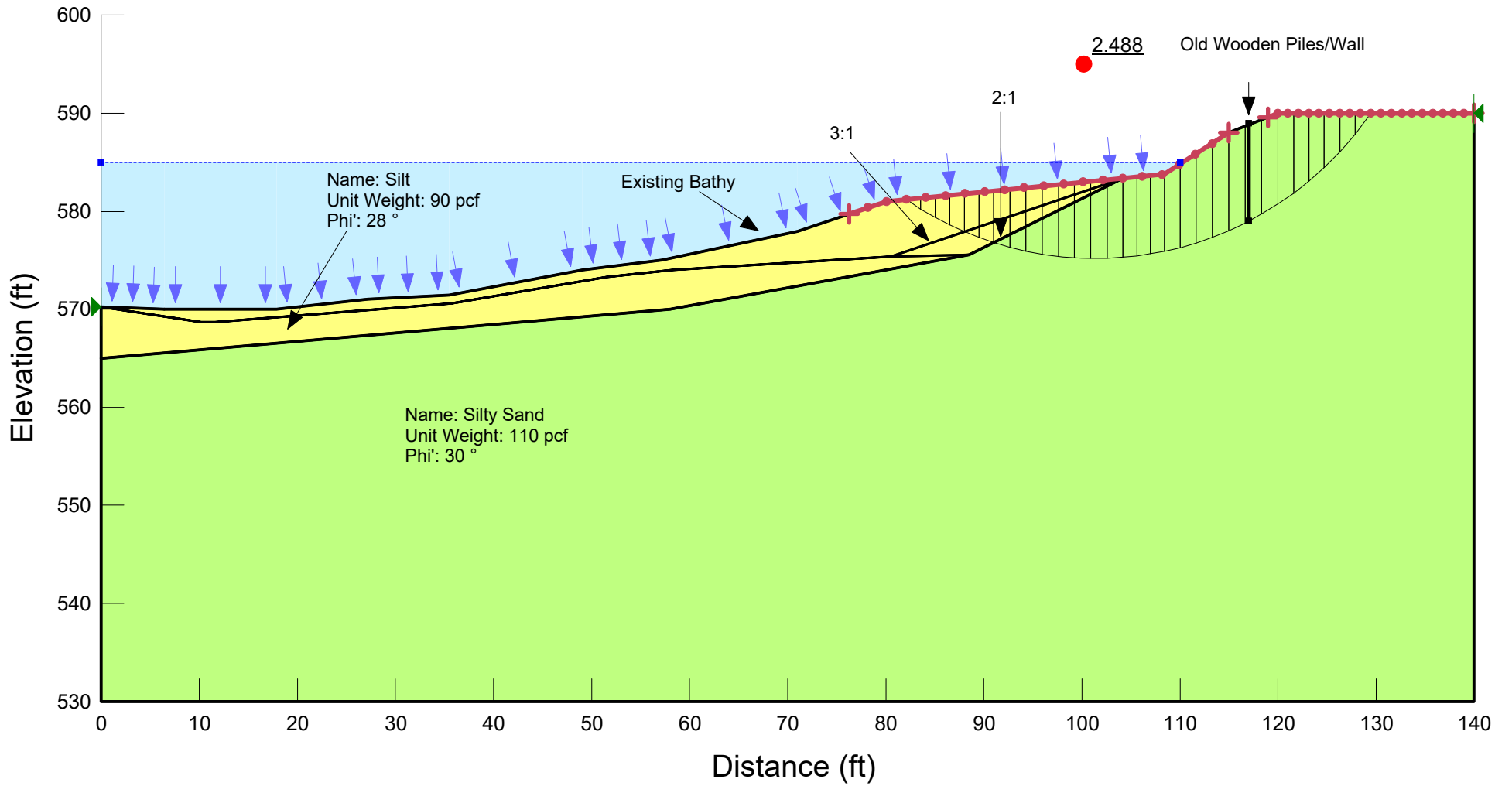
# Hughitt Slip

North End



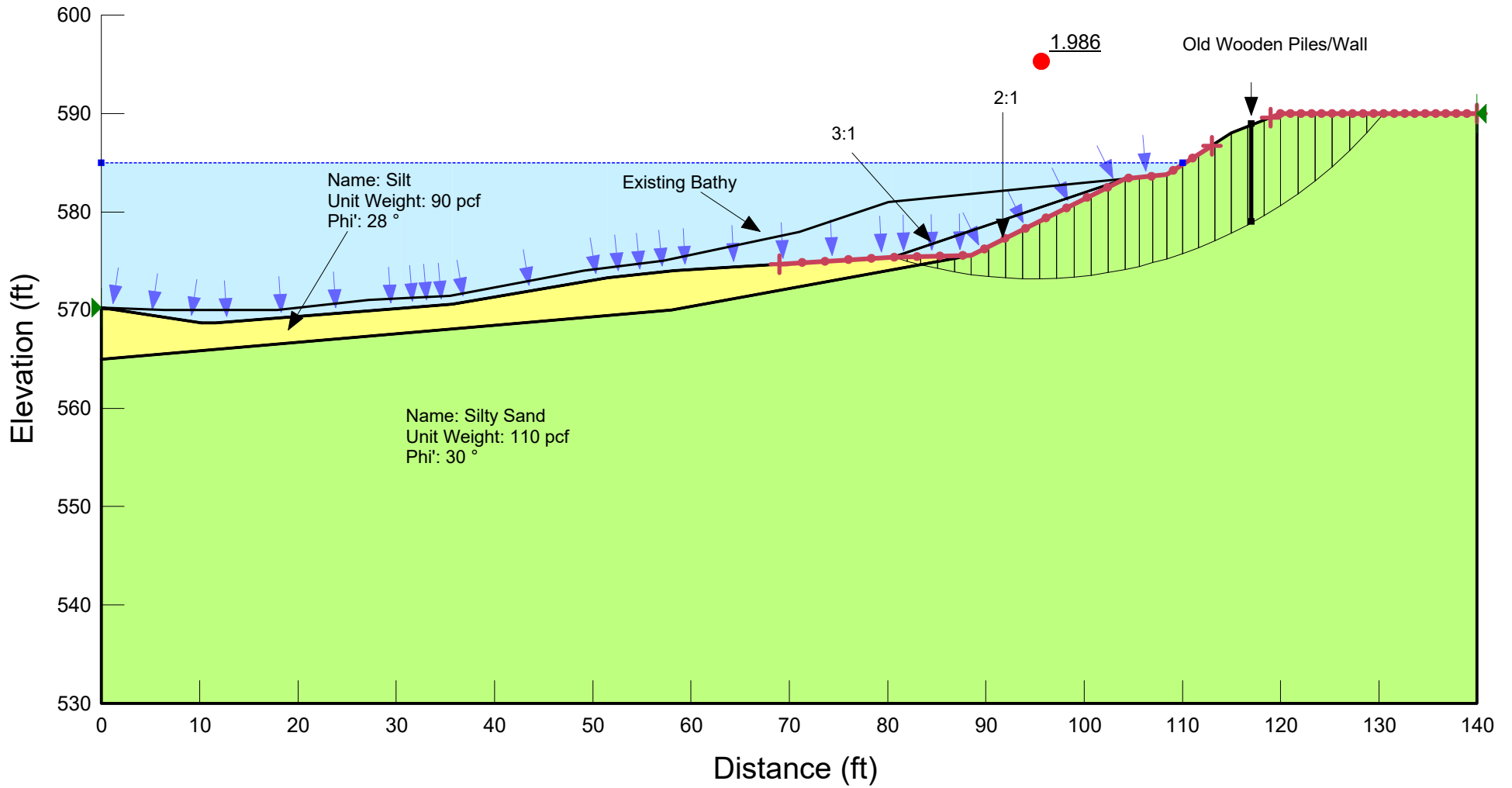
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Created By: Warren, Kyle  
Description: North End  
Date: 4/4/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



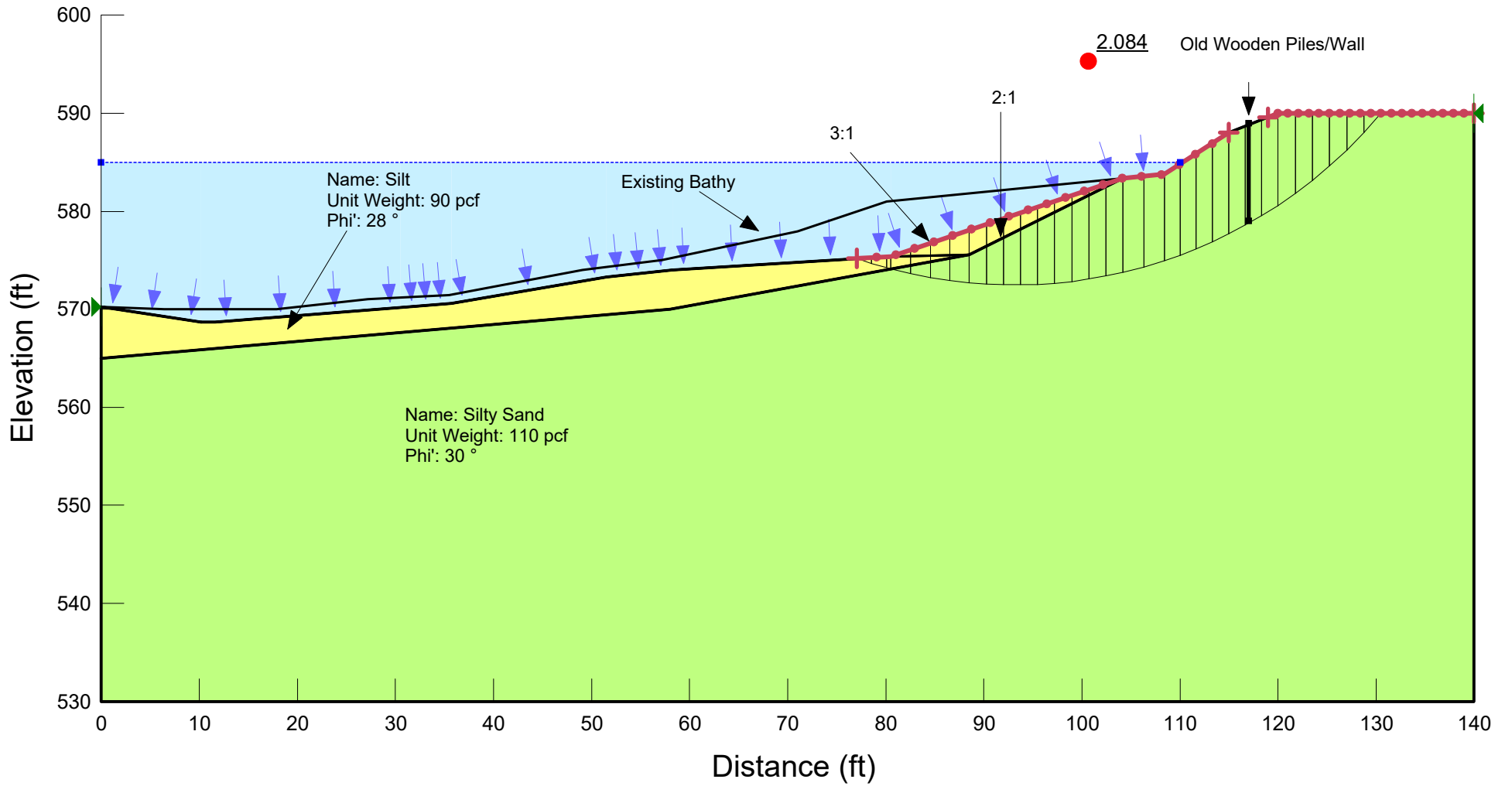
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Created By: Warren, Kyle  
Description: North End  
Date: 4/4/2017

Method: Spencer  
Slip Surface Option: Entry and Exit



File Name: Howards Bay\_HS\_North End\_04042017.gsz  
Created By: Warren, Kyle  
Description: North End  
Date: 4/4/2017

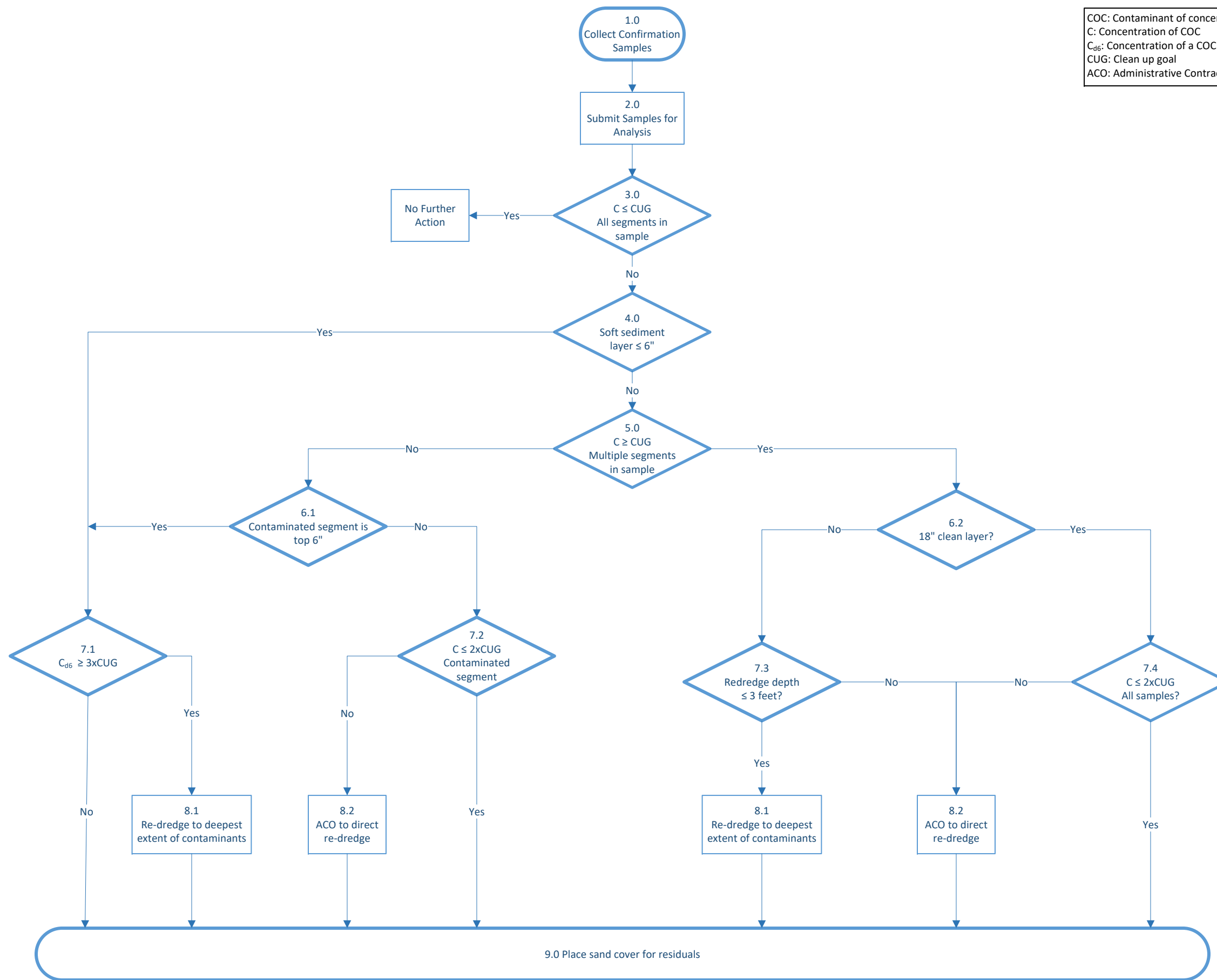
Method: Spencer  
Slip Surface Option: Entry and Exit



# APPENDIX D

## Decision Tree





COC: Contaminant of concern  
 C: Concentration of COC  
 C<sub>d6</sub>: Concentration of a COC in the top 6" of core sample  
 CUG: Clean up goal  
 ACO: Administrative Contracting Officer

1.0 – Collect samples in accordance with approved Confirmation Sampling Plan Submittal (Section 35 20 23.53, Paragraph "Confirmation Sampling")

2.0 – Submit samples for analysis in accordance with approved Confirmation Sampling Plan (Section 35 20 23.53)

3.0 – Are the contaminant of concern concentrations below the clean up goal for every segment in the core sample?

4.0 – Is the thickness of the top layer of soft sediment (sediment other than native clay) less than or equal to six inches measured from the surface?

5.0 – Does more than one segment in the sample have contaminant of concern concentrations exceeding the clean up goal?

6.1 – Is the top six inch segment of the sample where contaminant of concern concentrations exceed the clean up goal?

6.2 – Is there at least 18 inches of clean material on top of the segments where the contaminant of concern concentrations exceed the clean up goal?

7.1 – Do the contaminant of concern concentrations exceed three times the clean up goal in the top six inches of the core sample?

7.2 – Is the concentration of the contaminated segment less than or equal to two times the clean up goal?

7.3 – Would it require three or less feet of re-dredging to reach bottom of the contaminated segment?

7.4 – Are the concentrations of the contaminated segments less than or equal to two times the clean up goal?

8.1 – Re-dredge the area represented by the confirmation sample to the bottom elevation of the deepest segment with contaminant of concern concentrations above the clean up goal. Re-dredging must be performed in accordance with Section 35 20 23.53

8.2 – Re-dredge the area represented by the confirmation sample to a target elevation as directed by the Administrative Contracting Officer. Re-dredging must be performed in accordance with Section 35 20 23.53.

9.0: Place sand cover in each area in accordance with the contract drawings and specifications. Sand cover must not be placed until dredging is complete in adjacent dredge management units (including any necessary re-dredge).



# APPENDIX E

Technical Review Documentation



## SUMMARY OF 95% DESIGN ITR REVIEW

The following questions and comments were provided during the 95% Design ITR review. This review was conducted during a live meeting on November 9, 2018 to allow team discussion and real-time feedback. The bullets below capture discussion points and the resolution. The review focused on the drawings, construction schedule, costs, specifications, and corresponding assumptions. Meeting attendees included Eric Dievendorf, Mark Gravelding, Amanda Kohler, Nadeem Banda, Sarah Hill, Lance Ketcham, and Rob Glazewski.

**Comments provided during the meeting were incorporated in the design as discussed unless otherwise noted.**

Drawings:

- Update the cover sheet date to November 2018
- Missing drawings? Set is complete, but USACE is providing the navigation design drawings, and those are not incorporated into the package.
- General comments:
  - Some of the legends are missing the line types and we need an acronym page.
  - Notes are repeated on different pages for clarity.
- CN002: Note 1 needs to be re-written to be clearer. Note indicates that we may take action on slope stability analyses, but it is more related to No Action areas. Note 3 indicates upper 2 feet, but does not match Drawing CN303. Need to clarify the surface and subsurface cover. Add key map. Increase font sizes for call-outs to help reader – this applies to all drawings.
- CN200: Identify the building footprints or add to legend. Grey existing grades for the staging area, change line type to be consistent. Show/identify access roads in/out of staging area. Do we need to show a preliminary layout and/or erosion controls? No, will all be left to the contractor.
- CN201: Note the staging area to help reader orient and tie to CN200. Add bold lines for haul routes. Do we need any grades or details for Vonco? No, private landfill and the owner will decide where to place/spread material. Confirm the specifications are clear on the contractor's responsibilities.
- CN206: Dashed line identifying the DMU boundaries was shifted.
- CN212: Trim dredge extent at northern shore.
- CN215: Confirm existing bathy/dredging elevation are that close in some areas of the cross section.
- CN217: Design Team noted that the plan has been updated per Project Partner feedback.
- CN221: Title block needs to be re-formatted.
- CN301: Check topo and limit of grading line type/thickness. Add limit of consolidated fill to legend.
- CN303: Subsurface cover, remove 0-X feet and just note it varies.
- CN400: Change stakes to both sides versus through the composite sock. Change RECM references. Move 'circle' for sock to above ground surface to not appear imbedded. Typo on stone and reference 3-6" diameter (to avoid confusion with thickness of 18"). Add a note indicating that these are the details and the contractor should install as needed. Reference the lamp hole and connect to the detail and add notes on use.
- CN401: Discussion regarding whether asphalt is considered impervious and elimination of the liner and specify 2" base and 1.5" top. Run asphalt over berms. Specify asphalt type/DOT reference in specifications and confirm specs require maintenance. Change the decon pad

should be asphalt as well. Design Team confirmed the Project Partners specifically requested eliminating liner if using asphalt. Language also updated in specs, including specific asphalt type

#### Schedule:

- Discussion regarding whether the work can be done on one season. Would need two dedicated crews. Reviewed general notes to understand when work can and cannot be performed.
- Clarify in notes 14 and 15 the specific operation each note applies to.

#### Cost:

- Started review with excel table.
- Confirm quantities in the MII file match the Excel file. Some of the items in MII roll up a little differently than how we are showing in the Excel file for the Project Partners, so some of these numbers may not exactly match between the files.
- Discussion regarding the bulked versus non-bulked quantities, and this is specified in MII.
- Material dewatering unit cost (~\$20/cy) seems high. Team reviewed details in MII cost sheet and assumptions/estimates looked reasonable.
- Change escalation to July 2020.
- Design Team reviewed the Erie Pier costs, and determined that the costs should be revised to grade by acre and also include a cost to load out materials.
- Discussion of cost change between previous estimate and current estimate.
- Confirm that the MII database is pulling the correct project area.
- Overall, team feels costs are appropriate.

#### Specifications:

- Discussion regarding surveying and contractor requirements.
- M&P section: Check payment line items.
- Section 01330, pre-construction submittals: There are submittals referenced in other specifications that are not included in this list. List updated.
- Inconsistent references to AutoCAD and Microstation (and associated file extensions). Deleted file extension references. Remaining CAD references are to general computer-aided design, not AutoCAD or other specific software.
- H&S qualifications for the site H&S officer experience level of 1 year? Updated to 3 years. Similarly, adjusted Safety and Health Manager to 5 years (from 3 years).
- Section 026600: Construction tolerances section does not list tolerance. Add minimum/maximum grades.
- Section 031000: Define or clarify 'unused dewatered sediment'. Check Section 3.1.2 text. Reworded to remove "unused dewatered sediment" and updated to "dewatered sediment unsuitable for placement or in excess of allowed volume at WPL."

I certify that the above comments were provided during the 95% Design ITR review process and that the responses are acceptable.

Robert J. Glazewski – Vice President

A handwritten signature in black ink, appearing to read "Robert J. Glazewski". The signature is fluid and cursive, with a prominent loop at the end.

Lance S. Ketcham, P.E. – Principal Engineer

A handwritten signature in black ink, appearing to read "Lance S. Ketcham". The signature is cursive and somewhat stylized.

Mark O. Gravelding, P.E. – Senior Vice President

I certify that the above comments were provided during the 95% Design ITR review process and that the responses are acceptable.



Robert J. Glazewski – Vice President

Lance S. Ketcham, P.E. – Principal Engineer

Mark O. Gravelding, P.E. – Senior Vice President

# APPENDIX F

During Construction Adjustment  
Documentation





**F-1 : Hughitt Slip RFI and Backfill Design**





US Army Corps  
of Engineers

# Request for Information Report (RFI)

RFI NO.  
RFI-0002

PAGE NO.  
Page 1 of 1

CONTRACT NO.  
W911XK20C0017 NA  
H7001249

CONTRACT TITLE  
Howards Bay SND & GLLA Dredging

PRIME CONTRACTOR  
J. F. Brennan Company, Inc.

## Contractor's Request for Information

REQUESTED BY Nick Chyko	DATE REQUESTED August 04, 2021	POTENTIAL COST IMPACT Yes	POTENTIAL SCHEDULE IMPACT Yes
RFI SUBJECT	Stable Side Slopes		
SPECIFICATION SECTIONS	35 20 23.53		
DRAWINGS			
SUBCONTRACTOR			

### Information Requested

See attachment

### Contractor Recommendation

Stable side slope tolerances should be outlined in the specifications for environmental dredging. Side slope tolerance should follow the industry standard of one vertical (1V) on three horizontal (3H) . Omitted side slope in design provided to contractor should be deemed payable yards.

### Contractor Attachments

Document Package: August 04, 2021  
RFI-0002 - RFI-02 Stable Side Slopes Submit.pdf

## Government Response

ANSWERED BY TITLE	DATE RECEIVED August 05, 2021	DATE ANSWERED
----------------------	----------------------------------	---------------

### Government Response to Contractor

COR/ACO has not approved this government response

### Government Attachments

NOTE: THE RFI SYSTEM IS INTENDED TO PROVIDE AN EFFICIENT MECHANISM FOR RESPONDING TO CONTRACTOR'S REQUESTS FOR INFORMATION. IT DOES NOT PROVIDE AUTHORITY TO PROCEED WITH ADDITIONAL WORK. IF THE CONTRACTOR CONSIDERS THE RFI RESPONSE A CHANGED CONDITION, PROVIDE WRITTEN NOTICE TO THE CONTRACTING OFFICER'S REPRESENTATIVE IN ACCORDANCE WITH CONTRACT PROVISIONS.

QA REVIEWER'S SIGNATURE

DATE

<b>RFI # 02</b>  DATE: 08/04/2021	<h1>REQUEST FOR INFORMATION</h1>						
<b>CONTRACT TITLE:</b> <b>HOWARDS BAY SND &amp; GLLA DREDGING DOUGLAS COUNTY SUPERIOR, WI</b>							
<b>PRIME CONTRACTOR: JF Brennan</b>							
<b>SUBCONTRACTOR / SUPPLIER: N/A</b>							
<b>CONTRACT DOCUMENTS AFFECTED BY THIS RFI (DRAWINGS, DETAILS, SPECS, ETC.):</b> <table><tr><td><b>SPEC SECTION: 35 20 23.53</b></td><td><b>DETAIL: 1.8.3</b></td></tr><tr><td><b>DRAWING:</b></td><td><b>COST IMPACT: Yes</b></td></tr><tr><td><b>SPEC PARA:</b></td><td><b>SCHEDULE IMPACT: Yes</b></td></tr></table>		<b>SPEC SECTION: 35 20 23.53</b>	<b>DETAIL: 1.8.3</b>	<b>DRAWING:</b>	<b>COST IMPACT: Yes</b>	<b>SPEC PARA:</b>	<b>SCHEDULE IMPACT: Yes</b>
<b>SPEC SECTION: 35 20 23.53</b>	<b>DETAIL: 1.8.3</b>						
<b>DRAWING:</b>	<b>COST IMPACT: Yes</b>						
<b>SPEC PARA:</b>	<b>SCHEDULE IMPACT: Yes</b>						

**INFORMATION REQUIRED:**

J.F. Brennan is seeking clarification regarding achieving safe side slopes during environmental dredging. Section 35 20 23.53 detail 1.8.3 indicates that “Dredging for sides slopes outside DMUs shall be minimized to the extent required for stable slopes.” See highlighted *Attachment A* for side slope paragraph.

Brennan is inquiring about what is deemed stable side slope. *Attachment B* from dredge design provided to the contractor in DMU HS-1 contains a 10-foot dredge cut with no side slope accounted for along the DMU boundary line closest to the shoreline.

Brennan will not proceed in this dredge cut until further clarification.

**ANSWER PROVIDED BY ENGINEER:**

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

# Attachment A

Howards Bay SND and GLLA Dredging  
AS AWARDED

the tolerances listed below. Tolerances are measured perpendicular to the indicated neatlines. Dredging shall meet the tolerances below at over 90% of the placement area as measured by bathymetric survey. Extreme limits of the tolerances given shall not be continuous for an area greater than 400 square feet.

NEATLINE TOLERANCES		
	ABOVE NEATLINE (inches)	BELOW NEATLINE (inches)
Environmental Dredge Target Elevation	0	6

## 1.8.2 Overdepth Dredging

To cover unavoidable inaccuracies of dredging processes, material actually removed to the dredging tolerance and within the dredging limits will be measured and paid for at full contract price. Any dredging below the allowed tolerance will be considered as excessive dredging and for which payment will not be made.

## 1.8.3 Side Slopes

Dredging on side slopes within the DMUs shall follow, as closely as practicable, the lines indicated or specified. An allowance for the specified dredging tolerances will be made for dredging beyond the indicated or specified side slopes, except as provided herein. Dredging for sides slopes outside the DMUs shall be minimized to the extent required for stable slopes.

## 1.8.4 Excessive Dredging

Materials taken from beyond the limits specified in Subparagraphs OVERDEPTH DREDGING and SIDE SLOPES, will be excluded from the computed total amount dredged as excessive channel dredging or excessive side slope dredging and for which payment will not be made. The final determination of the amounts of excessive dredging will be based wholly on the surveys made for final examination and acceptance. See Paragraph entitled FINAL EXAMINATION AND ACCEPTANCE.

## 1.9 PERMIT

The Contractor shall comply with conditions and requirements of the Corps of Engineers Permit and other State or Federal permits. The Contracting Officer will secure the permit for dredging and disposal of material as indicated. The Contractor shall make arrangements with the City of Superior to access Wisconsin Point Landfill for disposal of dredged sediments and shall make arrangements with an appropriately licensed disposal facility for excess dredged sediments and debris.

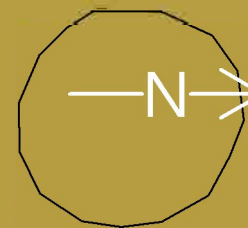
## 1.10 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain during the life of the contract, environmental protective measures. Also, provide environmental protective measures required to correct conditions, such as oil spills or debris, that occur



# Attachment B

## 210720 Howards Bay Hughitt Slip HS1 Update vs Design



HS-1

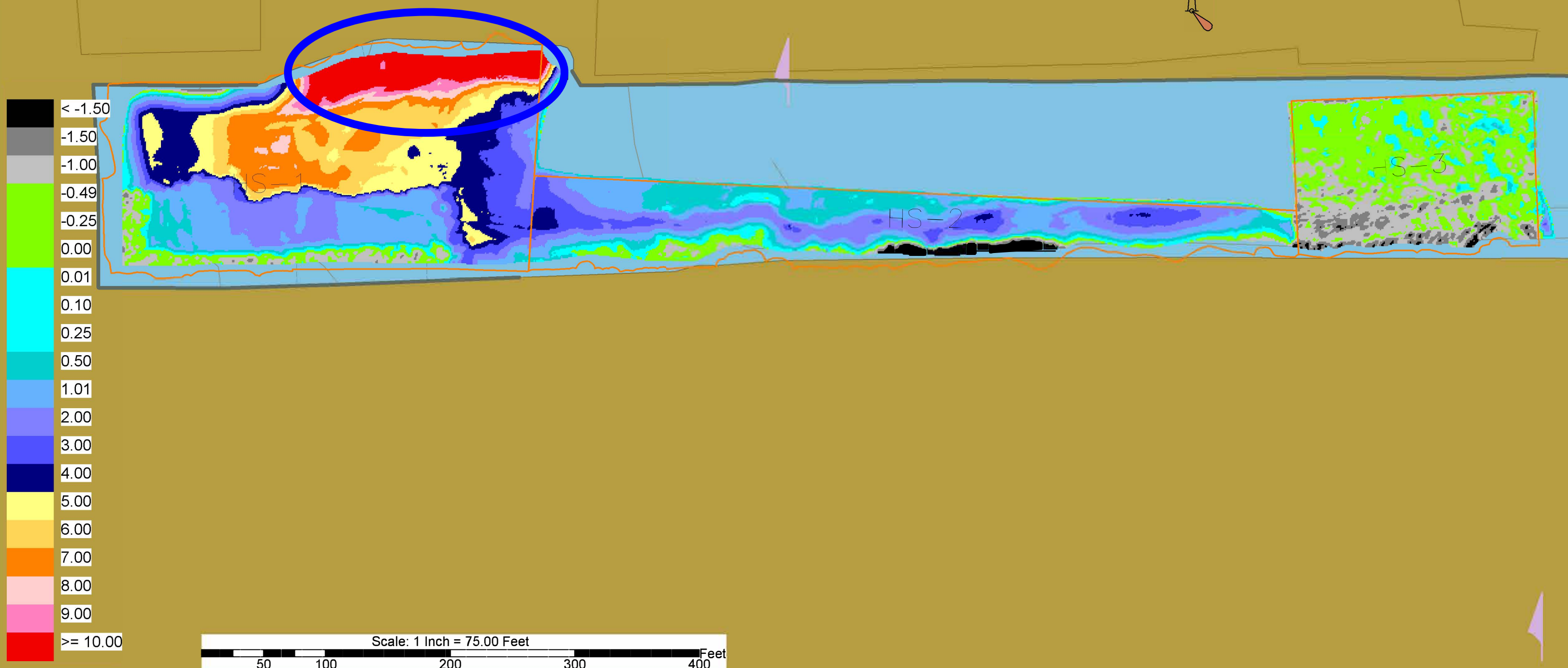
Volume Removed From Previous Survey: 1,049 CY

Volume Removed to Design: 2,002 CY

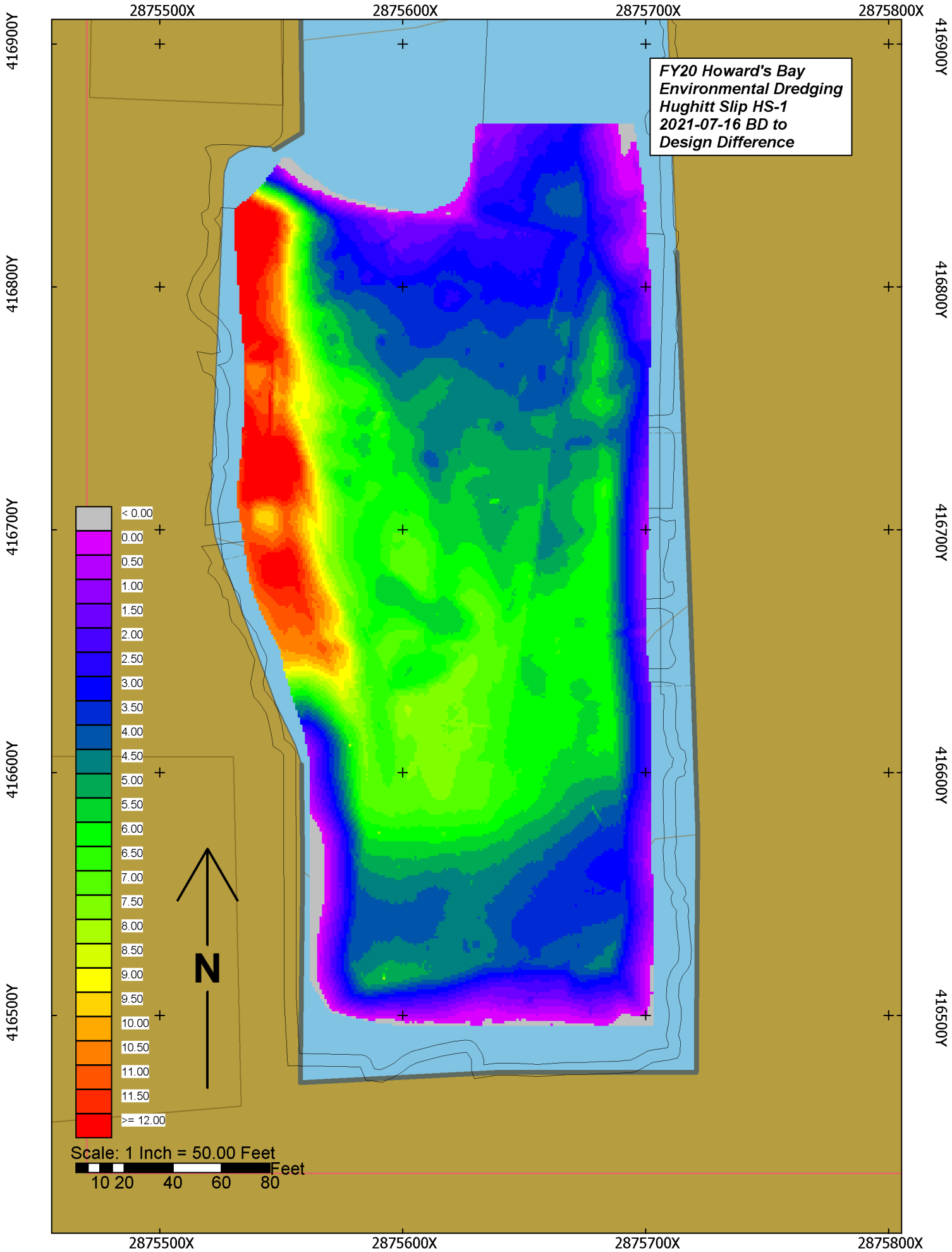
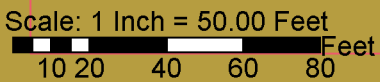
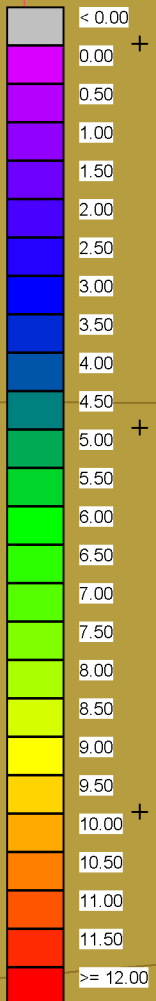
Volume Removed to OD: 2,045 CY

Volume Remaining to Design: 8,750 CY

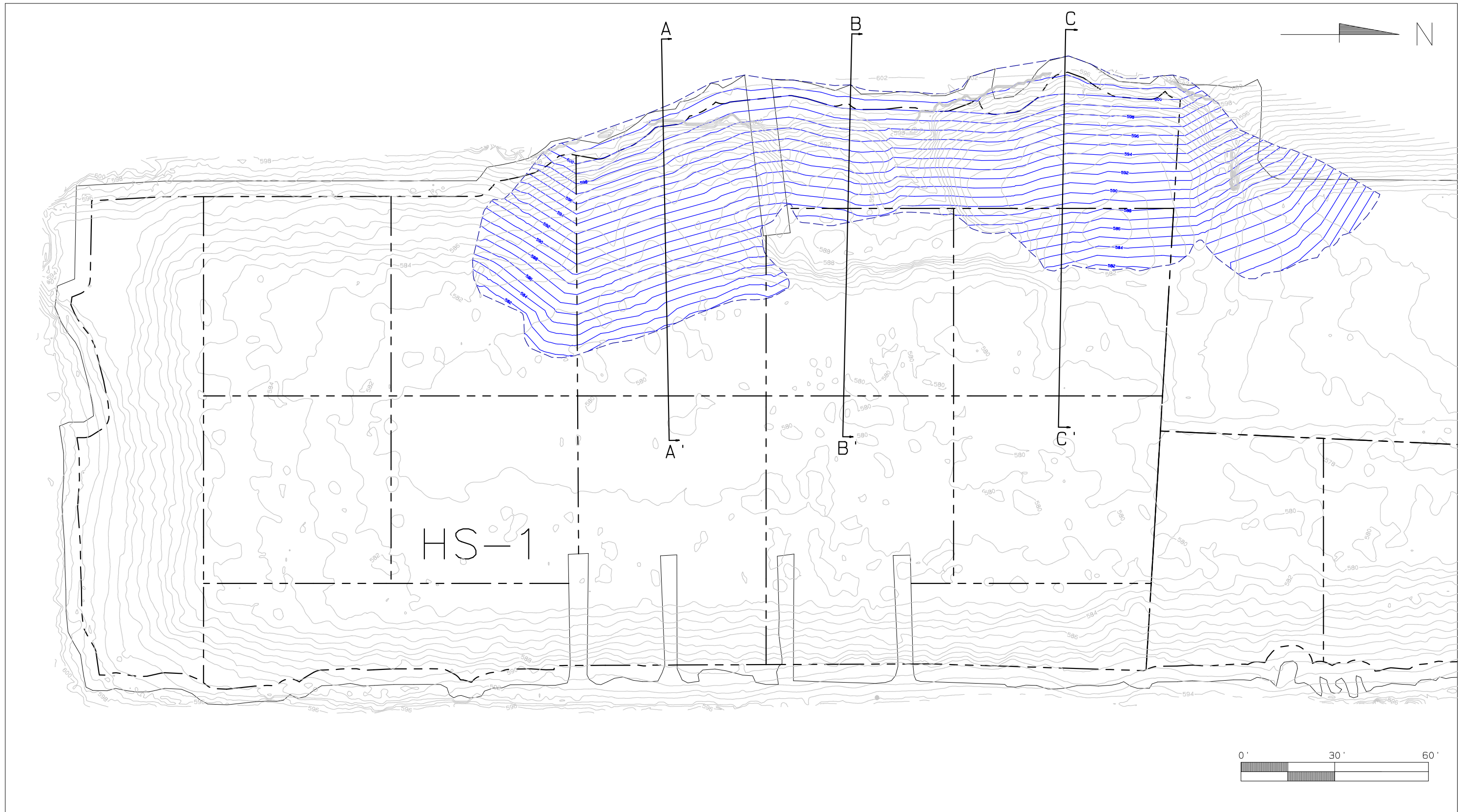
Volume Remaining to OD: 9,639 CY



*FY20 Howard's Bay  
Environmental Dredging  
Hughitt Slip HS-1  
2021-07-16 BD to  
Design Difference*



## **RFI Response: Backfill Design**



LEGEND:

- CURRENT GRADE CONTOUR (1' INTERVAL) (SEE NOTE 1)
- DMU LIMITS
- BULKHEAD/SHORE LINE LIMITS
- CONCEPTUAL FINAL GRADE CONTOUR (1' INTERVAL)
- CONCEPTUAL LIMIT OF GRADING

NOTES:

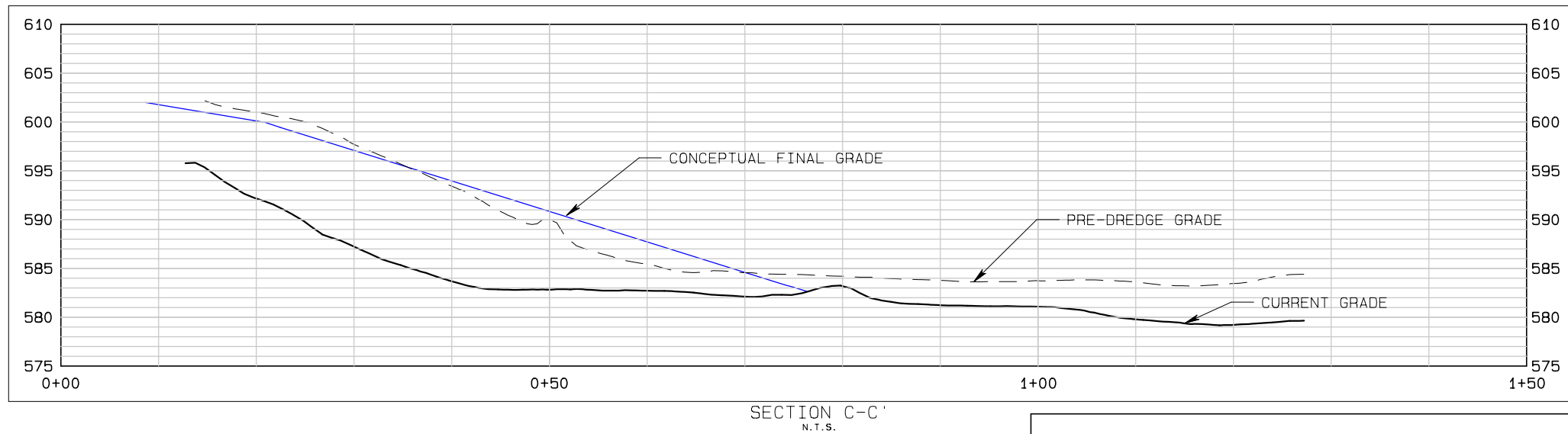
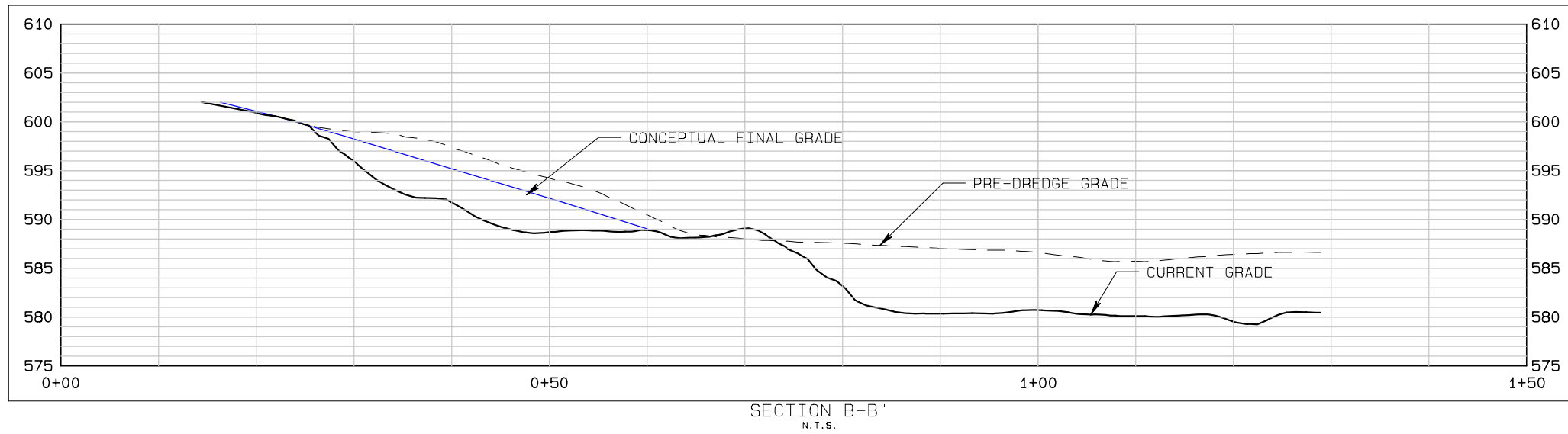
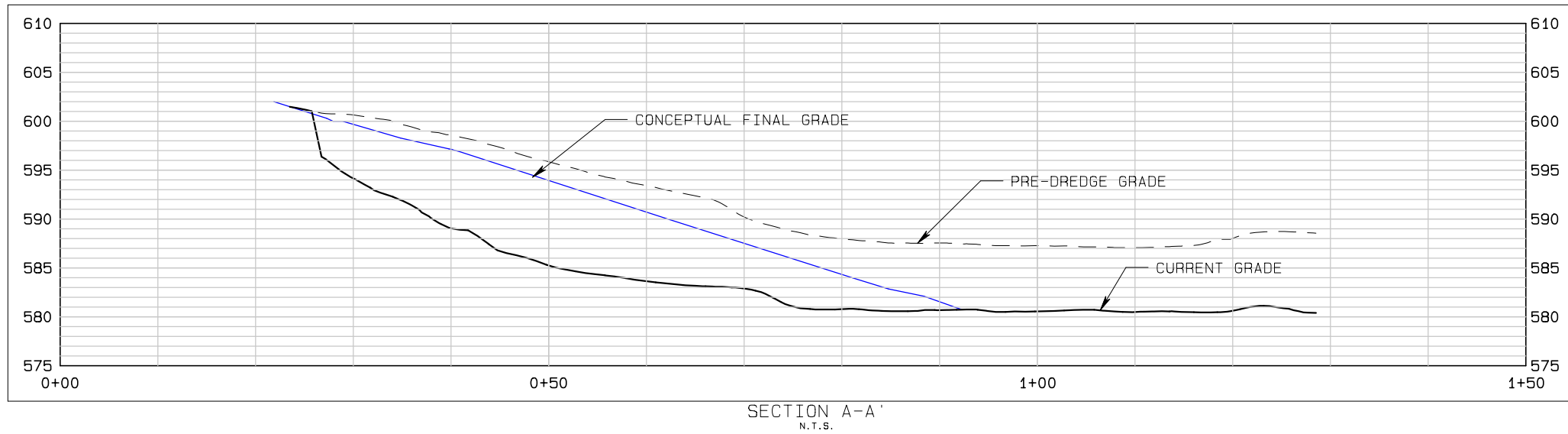
1. CURRENT GRADE CONTOURS ARE BASED ON SURVEY DATA PROVIDED BY J. F. BRENNAN COMPANY INC., DATED OCTOBER 2021.
2. ELEVATIONS ARE REFERENCED TO THE NAVD88 VERTICAL DATUM.

ARCADIS

USACE - DETROIT  
 HOWARDS BAY EDC MODIFICATION  
 HS-1 CONCEPTUAL FINAL GRADING  
 DATE: 10/19/21 BY: KMG

FIGURE

1



ARCADIS  
 USACE - DETROIT  
 HOWARDS BAY EDC MODIFICATION  
 HS-1 CONCEPTUAL CROSS SECTIONS  
 DATE: 10/19/21 BY: KMG

**F-2: Confirmation Sampling Location Update Figures from WDNR**







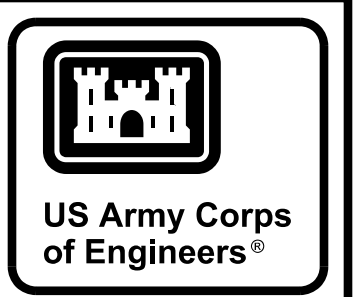


GENERAL SHEET NOTES

- SAMPLING COLLECTION AND ANALYSIS SHALL BE CONDUCTED IN ACCORDANCE WITH THE DECISION TREE (SPECIFICATION SECTION 35 20 23.53 ATTACHMENT A).

LEGEND

- REQUIRED SAMPLING POINTS AND APPROXIMATE GRID
- REQUIRED POST-SND OR OFFSET SAMPLING POINT
- PROPERTY LINE
- RAILROAD TRACKS



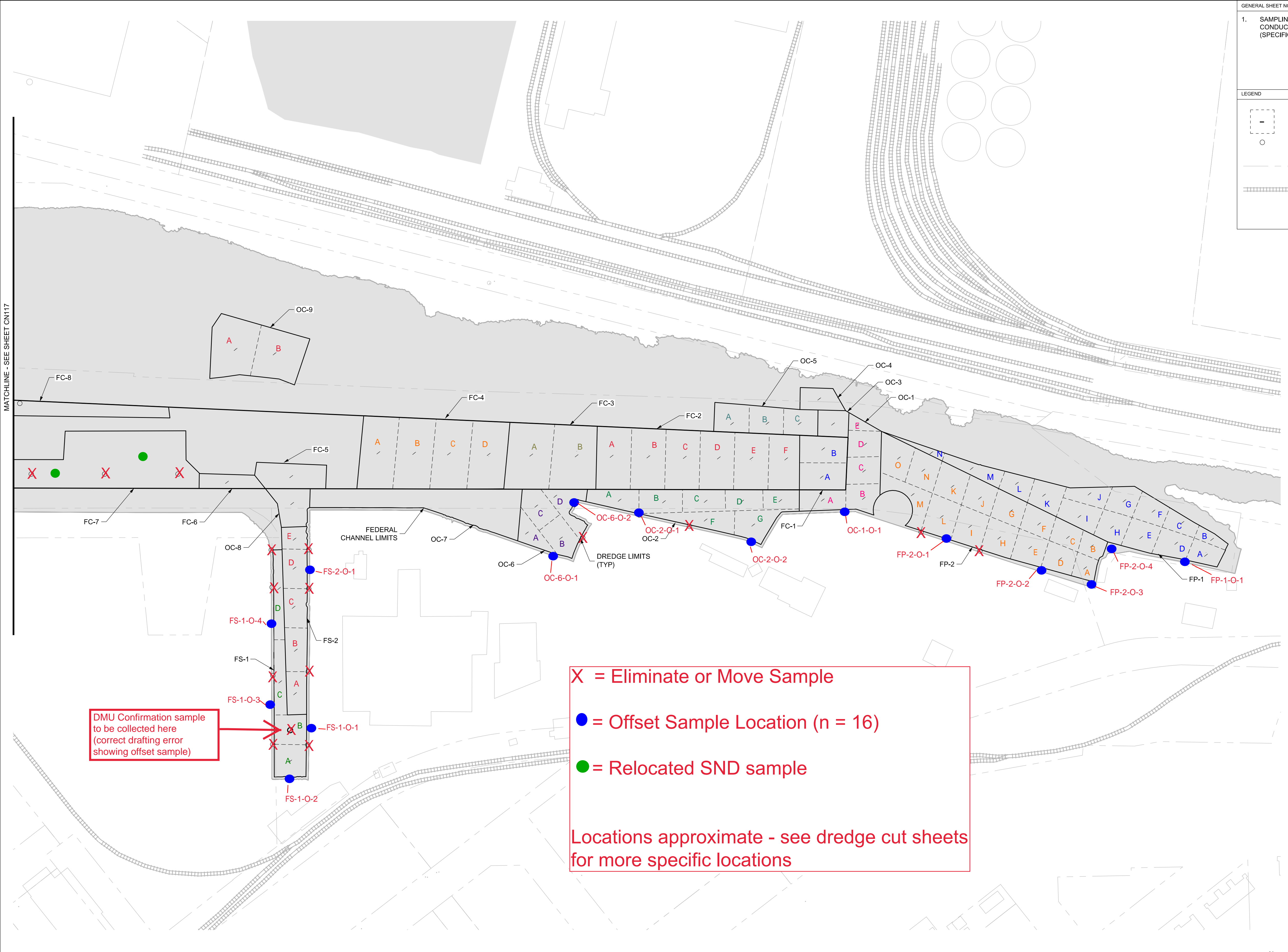
MARK	DESCRIPTION	DATE

DESIGNED BY: M. GRAVELDING	ISSUE DATE: 15 AUG 2020
DRAWN BY: S. HILL	PROJECT NO. (CN): 1911XK200017
CHECKED BY: E. DIEVENDORF	CONTRACT NO.:
SUBMITTED BY: S. HILL	W811XK200017
SIZE: ANSI D	CN221.dgn

U.S. ARMY CORPS OF ENGINEERS  
DETROIT DISTRICT  
477 MICHIGAN AVENUE  
DETROIT, MICHIGAN 48226

DOUGLAS COUNTY  
SUPERIOR WISCONSIN  
HOWARDS BAY S/D  
AND GLLA DREDGING

SOUTHERN SAMPLING POINT MAP



DMU Confirmation sample to be collected here (correct drafting error showing offset sample)

X = Eliminate or Move Sample

● = Offset Sample Location (n = 16)

● = Relocated SND sample

Locations approximate - see dredge cut sheets for more specific locations

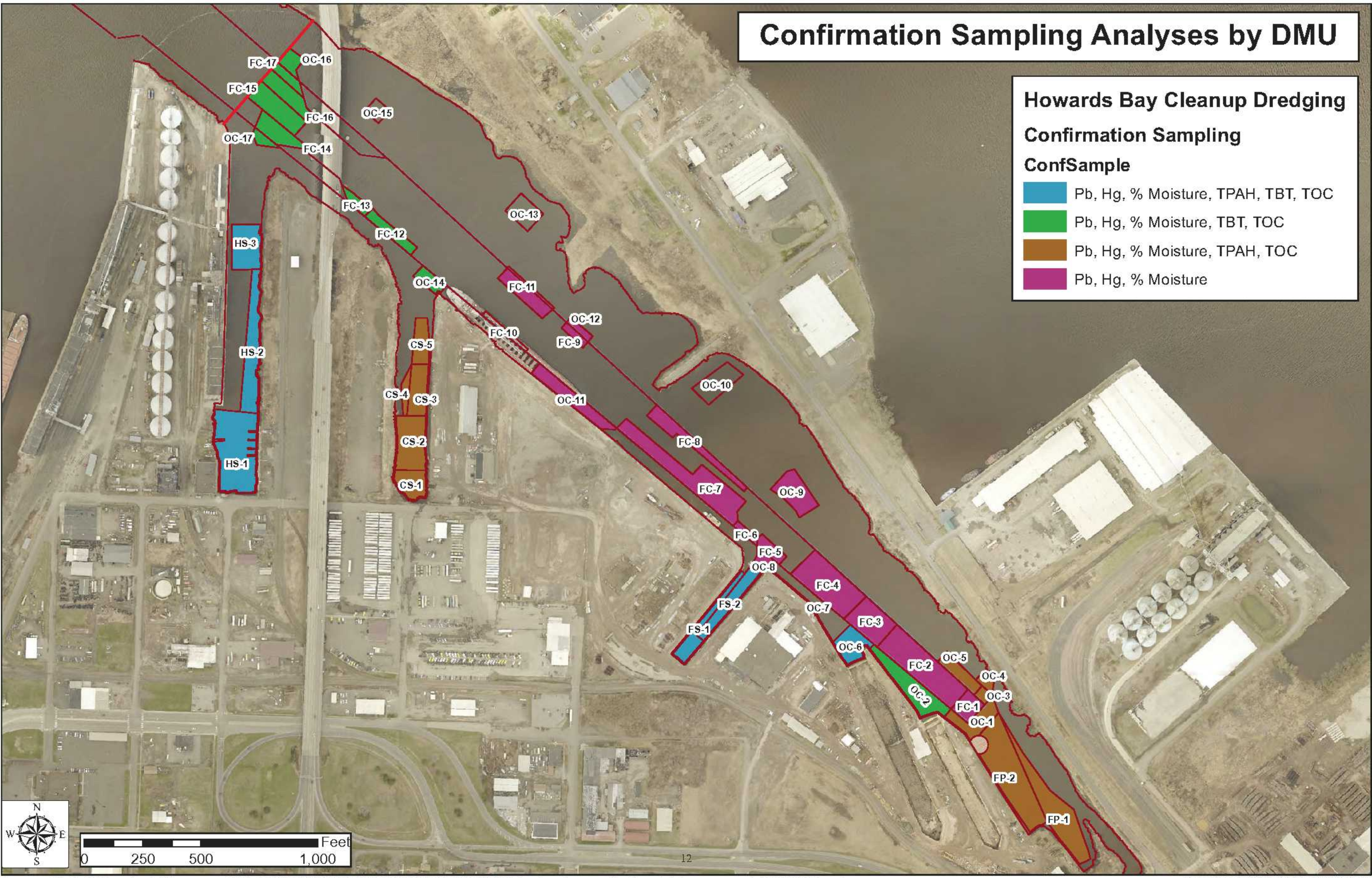


# Confirmation Sampling Analyses by DMU

**Howards Bay Cleanup Dredging Confirmation Sampling**

**ConfSample**

- Pb, Hg, % Moisture, TPAH, TBT, TOC
- Pb, Hg, % Moisture, TBT, TOC
- Pb, Hg, % Moisture, TPAH, TOC
- Pb, Hg, % Moisture





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