FINAL SUMMARY REPORT

for

Benthos and Plankton within Waukegan Area of Concern: Potential for Further Local Restoration

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ABBREVIATIONS AND ACRONYMS

AOC	area of concern
ARCS	Assessment and Remediation of Contaminated Sediments
BUI	beneficial use impairment
CAS	Columbia Analytical Services
EPA	United States Environmental Protection Agency
PSD	particle size distribution
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
SOP	Standard Operating Procedure
TVS	total volatile solid
WPA	Waukegan Port Authority

1.0: INTRODUCTION

The Great Lakes Areas of Concern (AOCs) are severely degraded areas within the Great Lakes Basin where beneficial uses of water or biota have been listed as impaired or where environmental criteria have been exceeded and impairment is likely. Waukegan Harbor AOC is located in extreme northeast Illinois, within the City of Waukegan, on the western shore of Lake Michigan.

The Waukegan Harbor AOC has a list of beneficial use impairments (BUIs) that must be addressed to improve overall water quality. The BUIs include degradation of benthos, zooplankton, and plankton populations, fish and wildlife consumption, loss of fish and wildlife habitat, beach closings, and restrictions on dredging (http://www.epa.gov/lakeerie/buia/index.html#What%20Is). To address two of the BUIs (degradation of benthic invertebrates [benthic community] and degradation of phytoplankton and zooplankton populations) United States Environmental Protection Agency (EPA) has contracted Battelle to collect, analyze and characterize the benthic community and phytoplankton/zooplankton (plankton) communities of the Waukegan Harbor AOC.

In addition, in order to assess whether these communities are degraded in comparison to river and harbor areas that are not considered AOCs, an additional harbor, Port of Indiana, located in Portage, Indiana (hereafter referred to as Burns Harbor), was sampled as a reference site and the benthic and plankton communities were compared. Burns Harbor was selected by EPA as the reference site based on its proximity to Waukegan Harbor; similarity of climate; similarity of access to southern Lake Michigan; similarity of man-made creation; similarity of serving industrial ships or recreational boats; shared potential for periodic navigational dredging; and a contrasting dis-similarity that one is a designated AOC, while the other is not. The inclusion of the non-AOC site allowed comparison of the AOC site to a relatively-unimpacted or less-impacted control site with natural physical and chemical characteristics that were similar to that of the AOC.

1.1 Site Descriptions

The Waukegan Harbor AOC is located in extreme northeast Illinois, within the City of Waukegan, on the western shore of Lake Michigan. The AOC includes all of Waukegan Harbor, the new South Harbor marina area, and near-shore Lake Michigan from the North Ditch south to the mouth of the Waukegan River. Waukegan Harbor is a man-made, excavated harbor with limited natural water flow or sedimentation. Water flow is primarily due to a natural wind and wave driven exchange with Lake Michigan.

Samples were collected at five stations in the Waukegan AOC (the Outer Harbor [WH1], Entrance Channel [WH2], Inner Harbor and Private Slip [WH3], Marina [WH4], and North Harbor [WH5]) in order to characterize the plankton and benthic communities. Sediment samples were collected in parallel and analyzed for total volatile solids (TVS) and particle size distribution (PSD) to further assess the local environment of these communities.

In addition to the Waukegan site, Battelle and EPA identified a non-AOC reference location which was used for data comparison. The reference site, Burns Harbor, was chosen because it exhibited similar characteristics to Waukegan Harbor, including land use, drainage, geology, geography, soils, and climate. Burns Harbor is located in the town of Portage, Indiana. The Port of Indiana is a manmade, deep-draft commercial harbor with no tributary inflow. It was constructed in 1970, and is not known to have had any major environmental impacts. The coordinates for each of the two sites (harbor entrance) are provided in Table 1-1; Figure 1-1 shows their relative position to each other.

Table 1-1. Coordinates for Waukegan Harbor and Port of Indiana (Burns Harbor, Non-AOC Reference Site) Entrances

Name of Harbor	Approximate Location of Harbor Entrance	Site Description
Port of Indiana (Burns Harbor)	41° 38' 51" N, 87° 08' 37" W	Reference site for comparison
Waukegan Harbor	42° 21' 40" N, 87° 48' 38" W	Area of Concern

Figure 1-1. Entrance Locations for Waukegan Harbor and Port of Indiana (Burns Harbor, Non-AOC Reference Site)

The locations where sampling commenced within each site was decided by Battelle's lead investigator in the field during collection activities. Every attempt was made to avoid specific landmarks that could potentially bias the data, such as tributaries, outflows, or ditches. The criteria used to select a sampling location within each site included:

(1) Non-wadeable, >5ft, for ample depth to collect plankton samples.

(2) The sediments of the sampling locations were not coarser than sand (such as gravel or boulder), so that the Van Veen grab sampler could retrieve sufficient sample volume for analysis.

(3) The sampling locations were in areas of minimal boat traffic to minimize possible vandalism and disturbance of deployments used to capture macroinvertebrates.

(4) The sampling area was not located in designated navigational channels as much as possible to minimize the potential for disturbance of the sediment surface (i.e., prop wash or scouring due to vessels with deep drafts).

1.2 Objectives

The overall goal of this survey was to obtain benthic and plankton community samples that were representative of the AOC and non-AOC harbors to provide an overall community comparison for use as a baseline assessment of community conditions prior to implementation of any possible remedial action. To compare the current status of the Waukegan AOC to the reference site, the following null hypothesis was developed:

- The benthic and plankton communities in the AOC are not degraded in comparison to the communities in the non-AOC site.

In order to reject the null hypothesis for the Waukegan Harbor AOC, the benthic and plankton communities in each of the AOC sampling locations must be statistically different, with 95% confidence, from Burns Harbor. To test this hypothesis, benthic and plankton samples in the Waukegan Harbor AOC and Burns Harbor along the western shoreline of Lake Michigan were collected to provide a community assemblage. Metrics for each site based on the community assemblages were calculated and used for statistical analyses. These analyses were used to detect significant differences between the AOC and reference site.

The following tasks were performed to address the hypothesis:

(1) Sampled both the benthic and plankton communities in the Waukegan Harbor AOC; determined if the benthic and/or plankton communities were degraded.

(2) Sampled the benthic and plankton communities in Burns Harbor for a reference sample assemblage.

(3) The process followed to complete the tasks described:
   (a) Gathered legacy data
   (b) Collected community samples
   (c) Calculated community metrics
   (d) Analyzed community assemblage and metrics
   (e) Compared Waukegan Harbor to Burns Harbor.

The specific tasks that were implemented to complete the overall goal were: (1) to assess the health of the benthic and plankton communities in the Waukegan Harbor AOC; (2) to determine possible causes of impaired health, if found; and (3) to identify restorative projects that offer reasonable potential to improve benthic and plankton health. To address these questions, multiple lines of evidence were used including species richness, organism abundance, and species diversity. The similarity of the overall community composition between the AOC and the reference site was assessed. Whether the benthic and plankton communities in the AOC were significantly different from those in the reference site was determined by calculating community-based metrics that were capable of quantifying subtle differences between sampled communities. If no statistically significant difference between the sampled communities from an AOC location and a non-AOC location were found, the data were used as a benchmark community assemblage that could be utilized for future assessments.

1.3 Approach

To assess the degradation of the communities, multiple sample types were collected during two sampling events, one in July and one in August of 2012. At each sampling location, the sampling plan stated two types of plankton samples (plankton tow and depth profile) and two types of benthic samplers (Van Veen grab and artificial substrate sampler) would be collected (Battelle, 2012). The two methods of sample collection for each of the communities were necessary to obtain the most comprehensive community data possible. Plankton will move up and down the water column throughout the day based on depth variability of conditions such as water temperature, light penetration, and available nutrients. Vertical plankton tows using a 63-µm mesh plankton net will collect the large-cell zooplankton communities regardless of their depth during sampling. The plankton tows were conducted through the entire water column from 0.5 m above the sediment-water interface to the surface. Phytoplankton too small to be captured by a 63-µm plankton net were collected in whole water samples using a Van Dorn water bottle sampler at 1-m intervals over the entire depth of the water column down to 0.5 m above the sediment-water interface.

Each benthic species has habitat preferences with regards to site conditions such as sediment grain size and water current flow. The two forms of sampling devices that were used in the study targeted benthic communities that (1) occur naturally in the bed sediments of the harbors and could be collected in surface sediment using a Van Veen grab sampler, and (2) require a harder substrate to colonize and could be acquired via colonization on an artificial substrate sampler deployment. All methods for sample collection were based on Standard Operating Procedures (SOPs) presented in the Quality Assurance Project Plan (QAPP) (Battelle. 2012). Table 1-2 lists the sample location identification, the coordinates for each sample location, and the types of samplers that were used at each location. Figures 1-2 and 1-3 show the sampling locations for the July 2012 and August 2012 sampling events for Waukegan and Burns Harbors, respectively.

Sample collection and data analysis began during the week of July 9, 2012. During the July 2012 plankton sampling, both plankton tows and plankton depth profiles were conducted in Waukegan and Burns Harbors. In addition, the benthic community structure was sampled using Van Veen grab samplers. The artificial samplers were deployed on July 11 and remained in the water for approximately 30 days (see Table 1-3). The artificial substrate samplers were scheduled to be retrieved on August 13-14, 2012. The sampling events were separated by at least 30 days; every attempt was made to maintain temporal deployment consistency for each site between sampling events.

Table 1-2. Sample Structure for the Assessment of Benthic and Plankton Communities

Sampling Site		Location	Plankton Tow (Total # of Samples)		Plankton Depth Profile (Total # of Samples)		Benthos Community Sample (Total # of Samples)		Artificial Substrate Sampler (Total # of Samples)		Particle Size Distribution/ Total Volatile Solids (TVS) (Total # of Samples)	
			July	Aug	July	Aug	July	Aug	July	Aug	July	Aug
Burns Harbor	BH1	41° 37' 58.8"N 87° 09' 36.8"W	1	1	3	3	1	1	NA	NA	1	1
	BH1 Dup	41° 37" 59.1"N 87° 09' 37.5"W	1	1	3	3	1	1	NA	NA	1	1
	BH2	41° 38' 21.5"N 87° 09' 37.0"W	NA	NA	NA	NA	1	1	NA	NA	1	1
	BH3	41° 38' 36.8"N 87° 09' 26.5"W	1	1	3	3	1	1	NA	NA	1	1
	BH4	41° 38' 27.1"N 87° 08' 56.1"W	NA	NA	NA	NA	1	1	NA	NA	1	1
	BH5	41° 38' 36.5"N 87° 08' 57.7"W	1	1	3	3	1	1	NA	NA	1	1
Waukegan Harbor	Outer Harbor (WH1)	42° 24' 44.8"N 87° 48' 43.2"W	1	1	3	3	1	1	NA	NA	1	1
	Entrance Channel (WH2)	42° 21' 39.9"N 87° 49' 09.0"W	NA	NA	NA	NA	1	1	NA	NA	1	1
	Inner Harbor (WH3)	42° 21' 49.6"N 87° 49" 22.1"W	1	1	3	3	1	1	NA	NA	1	1
	Inner Harbor Dup (WH3 Dup)	42° 21' 50.8"N 87° 49' 24.8"W	1	1	3	3	1	1	NA	NA	1	1
	Marina (WH4)	42° 21' 42.0"N 87° 49' 21.7"W	NA	NA	NA	NA	1	1	1[(1)]	NA	1	1
	North Harbor (WH5)	42° 21' 58.3"N 87° 49' 17.0"W	1	1	3	3	1	1	NA	NA	1	1

NA = Not Applicable
[(1)] = Sampler deployed but no sample collected

Figure 1-2. Actual Sampling Locations in Waukegan Harbor during the July and August 2012 Sampling Events

Figure 1-3. Actual Sampling Locations in Burns Harbor (Non-AOC Reference Site) during the July and August 2012 Sampling Events

Table 1-3. Field Event - Subtasks

Subtasks	Dates performed
Collection of plankton and benthos samples in Burns Harbor	July 9, July 12-13, 2012
Deployment of artificial samplers in Burns Harbor	Not deployed
Collection of plankton and benthos samples in Waukegan Harbor	July 10-11, 2012
Deployment of artificial samplers in Waukegan Harbor	July 11, 2012
Collection of plankton and benthos samples in Burns Harbor	August 13, 2012
Collection of plankton and benthos samples in Waukegan Harbor	August 14, 2012
Retrieval of artificial samplers in Waukegan Harbor	August 14, 2012(1)

(1) Artificial sampler was lost during the period of deployment; details are provided in Section 2.2.

Two types of plankton samples were collected: one using a tow net and the other using a Van Dorn water bottle sampler. The plankton tow sample was collected via a 63-µm mesh plankton net and was towed vertically from 0.5 m above the bottom of the channel to the surface. This sampling technique was utilized to capture the large-cell zooplankton, which can migrate throughout the water column depending on temperature and light penetration. The other plankton sample was an integrated water-depth profile sample using a Van Dorn style water sampler to collect a set of whole water samples at 1-m increments. The sampling began just below the surface of the water and continued to 0.5 m above the bottom of the channel in the sampling location.

Benthic samples were collected using a Van Veen grab for natural/in situ substrates. A Van Veen grab sampler was used to collect benthic samples at each site during each sampling event. Depending on substrate type, at least three subsamples were collected with the Van Veen grab sampler at each station and composited into a single benthic sample for the station, resulting in a total of five samples per site. An additional Van Veen grab sample was collected at each site for sediment PSD analysis and TVS to determine substrate size, type, and organic matter content at each location.

One artificial substrate sampler with three tandem wire mesh baskets was deployed at each site, attached to a concrete block and anchored to an immobile structure. These artificial substrate samplers were deployed during the first sampling event and left in the water for at least 30 days to allow adequate time for colonization. Modifications to this approach were made and are discussed in detail in Section 2.2.

The final assessment for each community at Waukegan and Burns Harbors was conducted on the entire plankton community from all sample collection methods; however, the samples from different sampling events, July versus August, remained separate. For example, the plankton community samples collected in July at Waukegan Harbor included all plankton identified in the plankton tow samples and the water depth profile sample from the July event, including large-cell zooplankton, soft algae phytoplankton, diatoms, and rotifers. This resulted in a total of four data sets for each site.

All methods for sample collection were based on reports published or used by EPA for large rivers and lakes, or are detailed in peer-reviewed papers which are publically available (and are detailed

in Section B2 of the QAPP (Battelle. 2012)). Every laboratory used by this project has SOPs in place for sample analysis and quality assurance (QA) practices.

In addition to the in-situ sampling, a background literature search was performed to determine similar studies that may have occurred historically in these sites or in other areas of the Great Lakes. At the start of this survey, historical sampling of the benthic and plankton communities was not known; therefore, historical data and reports for benthic and plankton communities in the study sites were investigated and an attempt was made to determine if a shift in the communities had occurred from previous sampling efforts. Where historical studies occurred in the selected sites, and the collection methods are comparable to those described here, the data from the reports were requested from the authors. In order to make comparisons between the various studies, the sampling methods, lab analytical methods, level of taxonomic resolution, and QA/quality control (QC) characteristics of the each study were verified.

2.0: SITE ASSESSMENT ACTIVITIES SUMMARY

This section presents the field activities completed in support of site characterization at the Waukegan Harbor AOC in Waukegan, Illinois. Site assessment activities were performed at five stations within the Waukegan and Burns Harbor sites including the marina areas and entrance channel. The site assessment activities consisted of three primary subtasks. A summary of each subtask, including the activities conducted to collect field data and environmental samples, is provided below. Subsequent sections of this report provide: (1) analytical results for both plankton and benthic samples; (2) a discussion and comparison of plankton and benthic communities within each harbor; (3) a description and comparison of the benthic structure within each harbor; and (4) an evaluation of the Waukegan Harbor and suggestions for future steps.

Each subtask was performed in accordance with the sampling design described in the QAPP (Battelle, 2012). The project subtasks were performed as a means of collecting data to accomplish the primary project objectives, which are detailed in the QAPP (Battelle, 2012). Methods used to achieve these objectives are detailed below. All samples were sent to two laboratories for benthic and plankton community description, PSD, and TVS analysis as shown in Table 2-1.

Table 2-1. Summary of Laboratories Performing Analyses and Analytical Parameters

Analytical Laboratory	Analysis
EnviroScience, Inc. EnviroScience 3781 Darrow Rd. Stow, OH 44224	Benthos Community Identification and Enumeration Large-Cell Zooplankton Soft-Algae Phytoplankton Diatoms Rotifers
CAS - Columbia Analytical Services 1317 South 13th Avenue Kelso, WA, 98626	TVS (160.4 Modified) PSD (ASTM D422)

2.1 Collection of Plankton Samples

At the plankton sampling stations, all types of plankton samples were collected, including large-cell zooplankton, soft-algae phytoplankton, diatoms and rotifers. The large-cell zooplankton samples were collected using a hand towed 63-µm plankton net, and the remaining plankton samples were collected using a Van Dorn water bottle sampler. All samples proposed in the QAPP were collected and analyzed, however the proposed sampling locations for plankton as outlined in the QAPP for Burns Harbor were modified to include sample stations at BH1 (and BH1 Dup), BH3 and BH5 for better spatial characterization at this site. Actual sample location coordinates were obtained by using a hand-held Garmin GPS 12 XL with 1 to 5 m accuracy (see Table 1-2).

Field sampling procedures were consistent with those described in the QAPP (Battelle, 2012). The research vessel Rogue served as the sampling platform for all plankton collection efforts. Photograph documentation, station logs, and field notes were recorded during the field survey. There were no corrective actions or other deviations from the sampling plan for field procedures. Station and plankton metadata log forms are provided in Appendix A. The plankton collection activity is discussed in more detail below.

Plankton samples were collected from three discrete sampling locations at both Burns and Waukegan Harbors. All plankton tow samples were conducted at a depth of 0.5 m above the sediment-water interface. Starting and ending flow meter readings, start and end time of tow, number of tows, number of water samples collected, sampling coordinates, water depth and collection date were recorded on log forms. After collection, all plankton samples were processed on board the research vessel Rogue, fixed with a 37% buffered formalin solution, and prepared for transfer to the analytical laboratory.

In addition to the 63-µm plankton sample, 1 L of water from each meter of depth was collected using a Van Dorn style sampler device for a maximum of 20 L of water at each site based on EPA-GLNPO SOP LG400, SOP for Phytoplankton Sample Collection and Preservation Field Procedures. The Van Dorn style sampler collected a water sample from a selected depth when the messenger was deployed to release the closures. The sampling began at the water surface and continued to 0.5 m above the sediment-water interface at each sampling location. The samples were composited into one container from which subsample aliquots were taken. The sampler was attached to a cable marked at 1-m increments to ensure accurate depth samples were collected. Several subsamples for separate analyses were taken from this integrated depth profile sample. One approximately 1-L aliquot was placed in a 1-L plastic bottle, preserved with a formalin solution (37% in water, at 20 mL per 1000 mL sample), and sent to EnviroScience, Inc. for soft algae phytoplankton identification and enumeration in accordance with GLNPO SOP LG 401, Phytoplankton Analysis. One 1-L aliquot was then placed in a 1-L plastic bottle, preserved with a formalin solution (37% in water, at 20 mL per 1000 mL sample), and sent to EnviroScience, Inc. for diatom identification and enumeration in accordance with GLNPO SOP LG 401 Phytoplankton Analysis. One 1-L aliquot of this water sample was sub-sampled and filtered through a 20 µm screen and placed in a 1-L plastic bottle, preserved with a formalin solution (37% in water, at 20 mL per 1000 mL sample), and sent to EnviroScience, Inc. for rotifer identification and enumeration in accordance with GLNPO SOP LG 402, SOP for Zooplankton Sample Collection and Preservation and Secchi Depth Measurement Field Procedures. A comparison between the two harbors was based on the enumeration and identification of the community structure of these samples, and the composition, structure, and abundance of the organisms found in the samples.

2.2 Collection of Benthic Data

All Van Veen grab samples for benthic community analysis were collected as proposed in the QAPP (Battelle, 2012). Deployment of one artificial substrate sampler per harbor was also proposed, however, due to numerous issues, the samples were not successfully collected. In July 2012, during the first sampling trip, no artificial substrate samplers were deployed in Burns Harbor due to the commercial nature of the harbor and the inability to receive the appropriate approvals from the harbor management. In Waukegan Harbor, the QAPP stated the artificial substrate sampler would be deployed at the Inner Harbor site, however, conditions in the field required that the sampler instead be deployed at the Marina location. At the Marina location, the sampler was deployed and attached to a pier managed by the Waukegan Port Authority (WPA). Due to dredging activities in the area, a number of piers in this area were removed, including the pier with the deployment attached. After discussion with the crew working on removing the piers for the dredging activities, it was determined that the sampler deployed in July was disposed of by the WPA. During the August sampling trip following extensive discussion with the project team, no samplers were redeployed in either harbor.

Field sampling procedures were consistent with those described in the QAPP (Battelle, 2012). The research vessel Rogue served as the sampling platform for all benthic sample collection efforts. Photograph documentation, station logs, and field notes were recorded during the field survey. There were no additional corrective actions or deviations from the sampling plan for field procedures. Station log forms are provided in Appendix A. The benthic community collection activity is discussed in more detail below.

Benthic community samples were collected at five discrete sampling locations at both the Burns Harbor and Waukegan Harbor sites. The sampling method was based on the EPA Assessment and Remediation of Contaminated Sediments (ARCS) Program — Assessment Guidance Document, Chapter 7: Assessment of Benthos Community Structure (Illinois EPA, 1994a; 1999). The methods described in this document are comparable to current methods used by other researchers such that the data collected here may be compared to other studies within and around the western shore of Lake Michigan.

The field method involved taking a grab sample of the bottom sediment using a Van Veen grab sampler (part number 1725-F50, available from WildCo). The Van Veen grab samples were collected from the surface sediment to a depth of approximately 9 to 12 cm within a 23 cm by 23 cm area of sediment collected to achieve an approximate sample volume of 5,290 mL. A Van Veen grab sampler was used to collect benthic samples at each site during each sampling event; three subsamples were collected at each station and composited into a single benthic sample. Three subsamples were collected and composited to minimize the costs of analyzing multiple benthic samples for each location. Although EPA's ARCS did not require more than one sample per station, the project team felt that a composite sample would more accurately reflect the communities present (see http://www.epa.gov/reg3hscd/risk/eco/faqs/composite.htm for more information), per statement of work dated April 11, 2012.

After collection, all benthos community samples were processed on board the research vessel Rogue, fixed with a 10% formaldehyde solution, and prepared for transfer to the analytical labs. For processing, the Battelle team elutriated the composited grab sample to remove debris, larger sand and inorganic particles and rinsed with native site water to remove finer sediment through a 500-µm wash frame (part number 188-E50 available from WildCo). The sample was then transferred into a collection jar and preserved with 10% formaldehyde before submission to EnviroScience, Inc. for identification and enumeration in accordance with GLNPO SOP LG 407, Invertebrate Analysis.

The benthos identification and enumeration for the Van Veen grab samples was performed by EnviroScience, Inc., based on the methods detailed in FS/14 (Picking Benthic Invertebrates from Samples) and FS/13 (Identification of Benthic Invertebrates) in accordance with GLNPO SOP LG 407, Invertebrate Analysis. The samples from the Van Veen grab samplers were prepared in the field according to Section B2.

2.3 Collection of Sediment Sample

A Van Veen grab sampler was used to collect sediment samples at each site during each sampling event; one sample was collected at each station. From this sample, a 16-oz glass jar was filled with sediment and sent to Columbia Analytical Services (CAS) in Kelso, Washington, for PSD analysis, and loss-on-ignition TVS (Particle-Size Analysis of Soils – ASTM D422 and Total Volatile Solids, Modified for Matrix – 160.4 Modified, respectively) to determine substrate size and organic matter content. These samples were stored on ice during shipment to the analytical laboratory (see Table 2-1).

3.0: BASELINE CHARACTERIZATION AND SITE COMPARISON RESULTS

A summary of the field and laboratory results collected as part of this baseline characterization effort are presented in this section. Supporting information is provided in appendices to this report as follows:

Appendix A – Field Logs and Chains of Custody
Appendix B – Site Photos
Appendix C – Plankton Data
Appendix D – Benthos Community Data
Appendix E – Benthic Sediment Data
Appendix F − Stastical Outputs

3.1 Plankton Community

A total of 64 plankton samples, 16 plankton tow samples and 48 plankton depth profile samples were collected over the duration of the project, four discrete samples were collected from three stations at each site (Waukegan and Burns Harbors), and one set of duplicate samples was collected at an additional duplicate station from each site during each sampling event (July 2012 and August 2012) (see Table 1-2). The four plankton samples from each site were analyzed for several components of the plankton community, including large-cell zooplankton, rotifers, soft algae phytoplankton, and diatoms. The suite of plankton samples taken at each station provided an overall community assessment, describing the taxonomic breakdown of the plankton community at each site (see Appendix C for full data set). The plankton community at both sites, Waukegan and Burns Harbors, was dominated by soft algae phytoplankton and diatoms in both July 2012 and August 2012 (Table 3-1). A comparison of the Shannon-Weaver Diversity Index (Equation 1), a measure of species diversity calculated for each site, demonstrated a significantly greater overall diversity in the plankton community at Waukegan Harbor in both July 2012 and August 2012 ($p = 0.04$ and $p = 0.003$) (Table 3-2 and Figure 3-1). In addition, the diversity of the soft algae phytoplankton and diatom community in Waukegan Harbor had significantly higher diversity during both sampling trips, July 2012 and August 2012 ($p = 0.04$ and $p = 0.003$, respectively) (Table 3-3 and Figure 3-2). In July, the diversity of large-cell zooplankton was found to be significantly greater at Waukegan Harbor ($p = 0.048$) (Table 3-4 and Figure 3-3) than at Burns Harbor; however, the diversity of the rotifer community did not differ between the two sites ($p = 0.42$) (Table 3-5 and Figure 3-4). The diversity of the remaining two fractions of the plankton community large cell zooplankton and rotifers did significantly differ between the two sites in August ($p = 0.07$ and $p = 0.29$, respectively) (Tables 3-4 and 3-5; Figures 3-3 and 3-4).

The mean diversity index was then calculated for each station, where the sampling site and the duplicate site were averaged together to obtain one value for the two sites.

$$\text{Equation 1: } H' = \frac{N \ln N - \Sigma\,(n_i \ln n_i)}{N}$$

where H' is the Shannon-Weaver diversity index for a given station, N is the total number of species identified at a station, and n_i is the number of individuals of species i.

Two population matrices are used to calculate the Shannon-Weaver diversity, species richness (the number of species at a site) and species evenness (a measure of how close in numbers each species at a given site is to each other). Therefore, the Shannon-Weaver diversity index doesn't take overall abundance directly into consideration. In fact sites can have significantly higher abundance of

organisms within a specific community but the calculated Shannon-Weaver diversity index can still be lower if the higher abundance is driven by one species or a relatively small number of species, meaning the site has high abundance but low evenness.

Burns Harbor had a greater abundance of phytoplankton compared to the community in Waukegan Harbor during both sampling events. While the abundance in Burns Harbor was higher, the diversity index in Waukegan Harbor was significantly higher; this can be attributed to both matrices used to calculate a diversity index. The higher abundance at Burns Harbor was primarily driven by the one organism in the phytoplankton community, identified as an *Unknown Cyanophyte Pseudanabaenaceae*, while the phytoplankton community in Waukegan Harbor was more evenly distributed (Figure 3-5). In addition to the abundance of phytoplankton being driven by one organism in Burns Harbor, Waukegan Harbor also had a greater number of species than Burns Harbor in both July and August, 129 and 133 identified in Waukegan Harbor and 88 and 113 in Burns Harbor, respectively.

Table 3-1. Summary of the Abundance of the Plankton Community at Both the Waukegan Harbor AOC and Burns Harbor Reference Sites

Site	Station	Zooplankton (#/m^3) of Families		Rotifers (#/m^3)		Phytoplankton and Diatoms (#/m^3)	
		July	Aug	July	Aug	July	Aug
Burns Harbor	BH1[(1)]	9,554	2,274	17,500	85,500	510,815,056	1,372,544,923
	BH3	3,149	1,322	18,000	132,000	459,216,065	942,402,784
	BH5	21,561	1,734	58,000	39,000	405,760,770	500,133,647
	Mean (± S.E.)	**11,421 (±5,397)**	**1,777 (±276)**	**31,167 (±13,417)**	**85,500 (±26,847)**	**458,597,297 (±30,328,138)**	**938,360,451 (±251,851,553)**
Waukegan Harbor	Outer Harbor (WH1)	2,392	11,202	14,000	97,000	428,376,899	183,730,233
	Inner Harbor (WH3)[(2)]	2,255	42,227	6,500	78,000	194,309,105	94,834,024
	North Harbor (WH5)	1,261	66,032	7,000	13,000	122,884,957	344,687,341
	Mean (± S.E.)	**1,969 (±356)**	**39,820 (±15,874)**	**9,167 (±2,421)**	**62,667 (±25,432)**	**248,523,654 (±92,260,039)**	**207,750,533 (±73,119,539)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

Table 3-2. The Shannon-Weaver Diversity Index for the Entire Plankton Community at Each Site for the Two Sampling Periods

Site	Station	Shannon-Weaver Diversity Index	
		July	Aug
Burns Harbor	BH1[(1)]	1.89	1.54
	BH3	2.32	1.26
	BH5	1.78	1.64
	Mean (± S.E.)	**1.99 (±0.16)**	**1.48 (±0.11)**
Waukegan Harbor	Outer Harbor (WH1)	2.39	2.79
	Inner Harbor (WH3)[(2)]	2.82	3.42
	North Harbor (WH5)	3.06	3.12
	Mean (± S.E.)	**2.76 (±0.20)**	**3.11 (±0.18)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

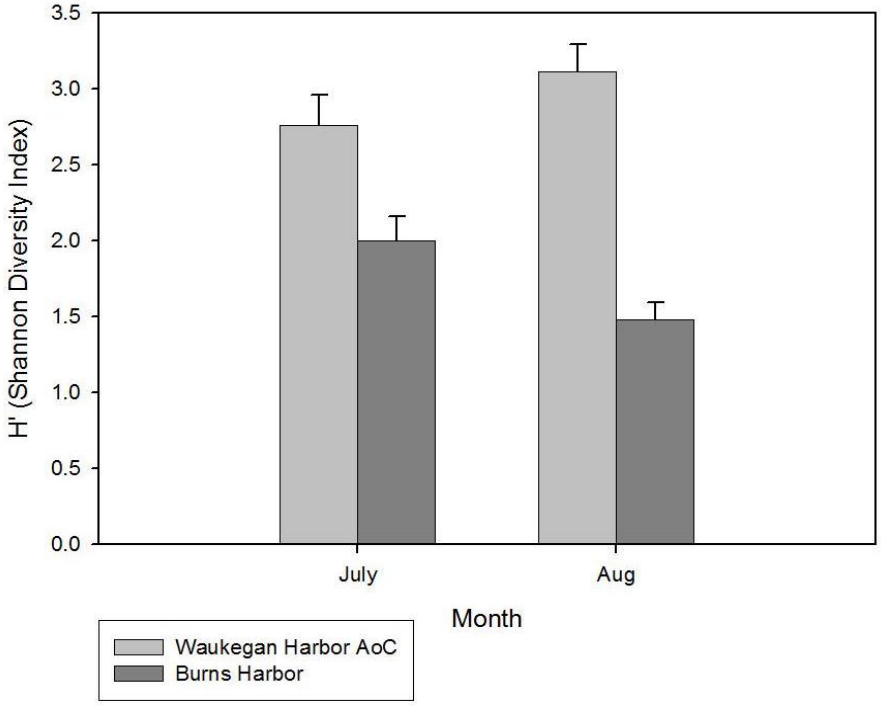

Figure 3-1. The Shannon-Weaver Diversity Index for the Entire Plankton Community at Each Site for the Two Sampling Periods

Table 3-3. The Shannon-Weaver Diversity Index for the Phytoplankton Community at Each Site for the Two Sampling Periods

Site	Station	Shannon-Weaver Diversity Index	
		July	Aug
Burns Harbor	BH1[(1)]	1.89	1.54
	BH3	2.32	1.26
	BH5	1.77	1.64
	Mean (± S.E.)	**2.00 (±0.17)**	**1.48 (±0.11)**
Waukegan Harbor	Outer Harbor (WH1)	2.39	2.78
	Inner Harbor (WH3)[(2)]	2.82	3.42
	North Harbor (WH5)	3.06	3.12
	Mean (± S.E.)	**2.76 (±0.20)**	**3.10 (±0.18)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

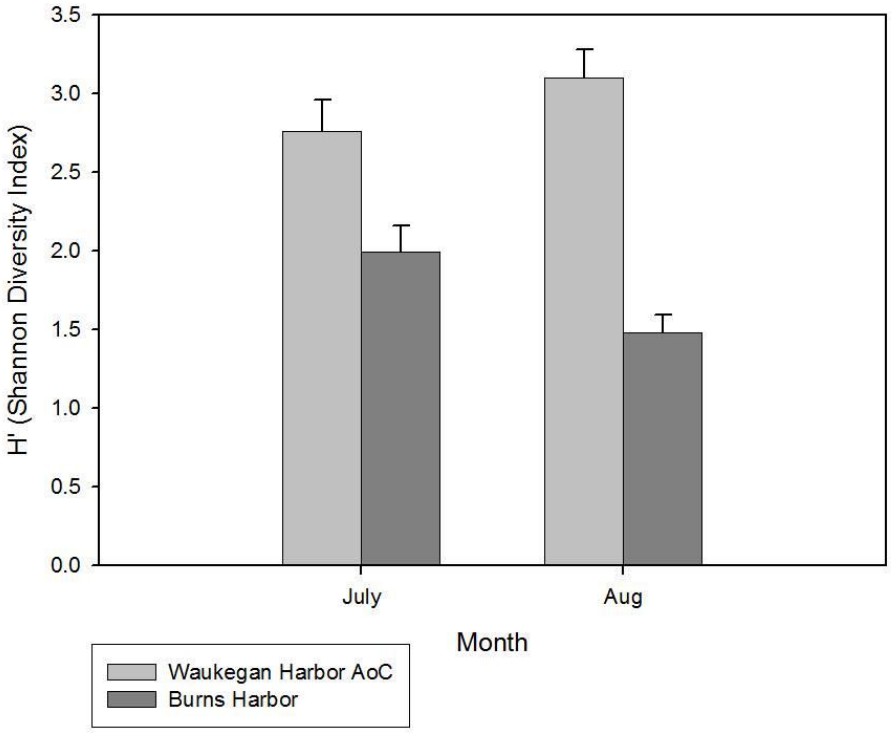

Figure 3-2. The Shannon-Weaver Diversity Index for the Phytoplankton Community at Each Site for the Two Sampling Periods

Table 3-4. The Shannon-Weaver Diversity Index for the Large-Cell Zooplankton Community at Each Site for the Two Sampling Periods

Site	Station	Shannon-Weaver Diversity Index	
		July	Aug
Burns Harbor	BH1[(1)]	0.38	0.9
	BH3	0.2	1.41
	BH5	0.39	1.89
	Mean (± S.E.)	**0.32 (±0.06)**	**1.4 (±0.29)**
Waukegan Harbor	Outer Harbor (WH1)	0.84	0.26
	Inner Harbor (WH3)[(2)]	1.49	0.84
	Marina (WH4)	1.64	0.46
	Mean (± S.E.)	**1.32 (±0.25)**	**0.52 (±0.17)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

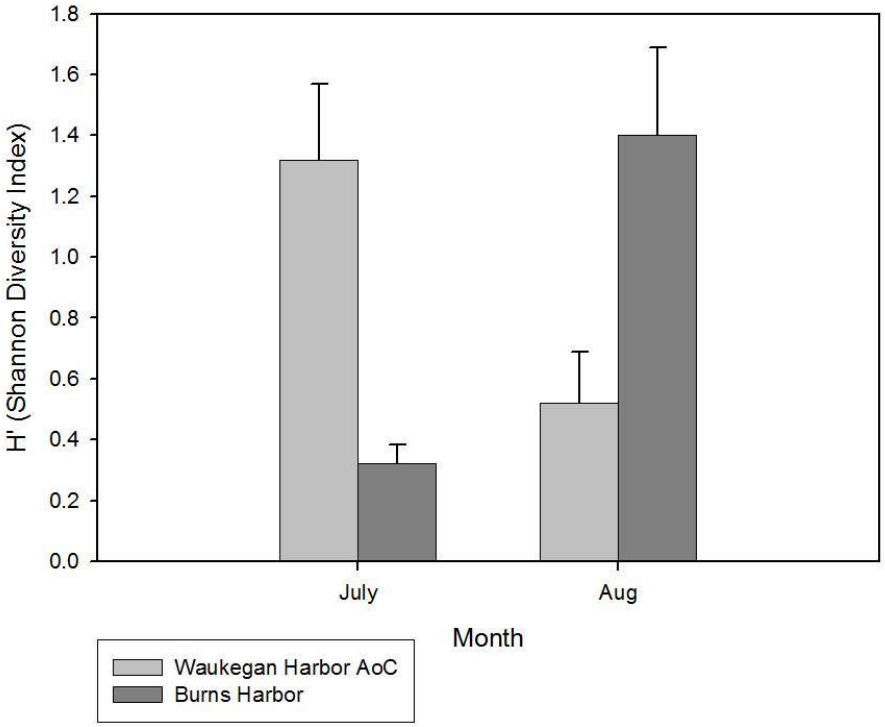

Figure 3-3. The Shannon-Weaver Diversity Index for the Large-Cell Zooplankton Community at Each Site for the Two Sampling Periods

Table 3-5. The Shannon-Weaver Diversity Index for the Rotifer Community at Each Site for the Two Sampling Periods

Site	Station	Shannon-Weaver Diversity Index	
		July	Aug
Burns Harbor	BH1[(1)]	1.12	0.86
	BH3	0.83	0.75
	BH5	1.14	1.10
	Mean (± S.E.)	**1.03 (±0.10)**	**0.90 (±0.10)**
Waukegan Harbor	Outer Harbor (WH1)	1.23	0.89
	Inner Harbor (WH3)[(2)]	0.94	1.09
	North Harbor (WH5)	1.35	1.35
	Mean (± S.E.)	**1.17 (±0.12)**	**1.11 (±0.13)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

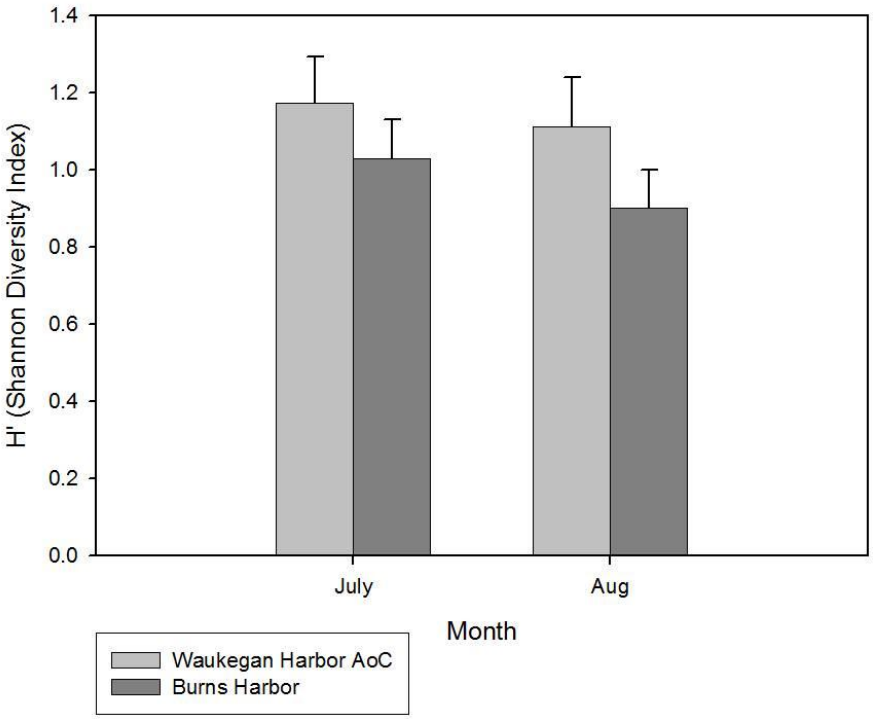

Figure 3-4. The Shannon-Weaver Diversity Index for the Rotifer Community at Each Site for the Two Sampling Periods

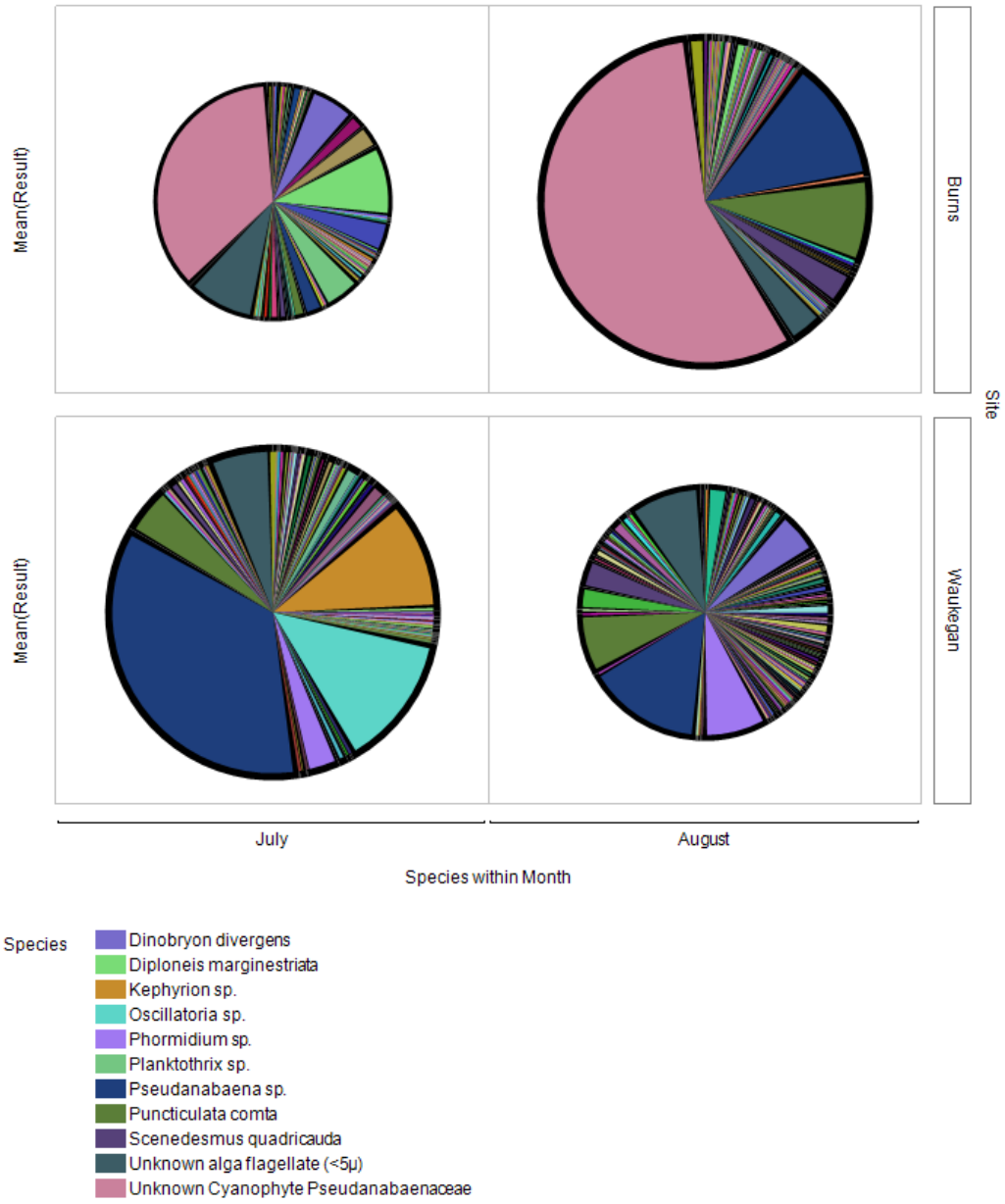

Figure 3-5. Distribution of the 11 Most Abundant Species of Phytoplankton at Waukegan and Burns Harbors in July and August 2012
(Pie chart size proportional to overall abundance of phytoplankton.)

3.2 Benthic Community

A total of 24 sediment grabs were collected over the duration of the project, five discrete samples at each site and an additional duplicate from each site collected at one station during each sampling event (see Table 1-2). The grab samples provided an overall community assessment describing the taxonomic breakdown of the benthic community at each station; see Table 3-6 for a summary and Appendix D for the full data set. The number of families identified in the samples from the reference site and the impacted AOC site ranged from just two families at a number of stations in both harbors in July 2012 and August 2012 to a high of nine families found at the North Harbor station in Waukegan Harbor in August (Table 3-6). The species richness varied between the two sites, with the greatest number of species, 23, being found at the North Harbor Station, in Waukegan Harbor in August, and smallest number of species, 2, being found in August at station BH5, in Burns Harbor (Table 3-6).

The abundance data assembled from the benthic grab samples, collected in July 2012 and August 2012, were utilized to calculate a Shannon-Weaver diversity index for each station (Table 3-7).

The Shannon-Weaver diversity index ranged from 0.64 in August at BH5 in Burns Harbor to 2.13 at the Inner Harbor station in Waukegan Harbor in August. Comparison of the diversity index calculated for the benthic community in Waukegan Harbor AOC and Burns Harbor showed no significant difference between the two sites in July ($p = 0.8$) (Table 3-7 and Figure 3-6). The same pattern result was obtained when the diversity indices from August were compared by a t-test, ($p = 0.09$) (Table 3-7 and Figure 3-6).

Howmiller and Scott (1977) developed an environmental pollution index based on the relative abundance of specific species' of oligochaetes, trophic condition. The trophic condition index assesses the environmental conditions of a site, classifying it as most likely oligotrophic, mesotrophic, or extremely eutrophic (high in organic pollution) based on the presence of specific oligochaetes. The index calculates the condition of the habitat based on the conditions where the various species of oligochaetes are characteristically found (Table 3-8). Based on the characteristic habitats of the oligochaetes, the various species are assigned to specific groups and then the overall abundance of the species within these groups at a given site is used to calculate the trophic index using Equation 2 (Howmiller and Scott, 1977).

$$\text{Equation 2: } Trophic\ Condition\ = \frac{\Sigma n_1\ +\ 2\Sigma n_2}{\Sigma n_0 + \Sigma n_1 + \Sigma n_1}$$

where the trophic index for a given station, n_0 is the number of individuals of species which are typically restricted to oligotrophic habitats, n_1 is the number of individuals of species which are typically characteristic of habitats defined by mesotrophic or slightly enriched conditions, and restricted to oligotrophic habitats, and n_2 is the number of individuals of species which are typically characteristic of habitats defined by eutrophic conditions or extreme organic pollution.

The oligiochaete community from both Burns and Waukegan Harbors differed significantly in trophic condition (trophic condition = 1.84 and 1.33, Waukegan and Burns Harbors, respectively), in August. However, the trophic conditions (1.67 and 1.41, Waukegan and Burns Harbors, respectively) of the two harbors did not differ significantly in July ($p = 0.10$), and the values suggested a mesotrophic condition in both harbors (Howmiller and Scott, 1977) (Table 3-9).

The trophic index is a useful tool in assessing the potential organic pollution of a site, but it has some limitations. The list of oligochaetes is limited and does not necessarily include all oligochaetes found at a site. In addition, oligochaetes that cannot be identified down to species, or some cases genus, cannot be assigned a trophic group and are therefore left out of the trophic index condition calculation. In

this study, only 40 and 42% of the oligochaetes collected at Burns Harbor were included in the calculations in July and August, respectively. In Waukegan Harbor the numbers were even lower with only 17 and 33, July and August, respectively, percent of individuals being included.

The benthic community results are based solely on the data from the grab samples collected in Burns and Waukegan Harbors. The lack of data from the artificial substrate samplers biases the data collected to be dominated by infaunal organisms and under samples the epibenthic community in this area. The lack of a hard substrate sampler leads to an under sampling of the epibenthic community and potentially skews the results while not providing an accurate representation of the entire benthic community.

Table 3-6. Summary of the Abundance of the Benthic Community at Both the Waukegan Harbor AOC and Burns Harbor Reference Sites

Site	Station	# of Families		# of Genus		# of Species		# of Individuals	
		July	Aug	July	Aug	July	Aug	July	Aug
Burns Harbor	BH1[1]	3	2	6	3	8	3	75	6
	BH2	2	2	6	3	11	3	169	3
	BH3	3	3	8	7	12	10	253	104
	BH4	5	4	7	9	10	12	706	172
	BH5	2	2	3	2	5	2	9	3
	Mean (± S.E.)	**2.9 (±0.56)**	**2.6 (±0.4)**	**6 (±0.84)**	**4.8(±1.36)**	**9.2 (±1.24)**	**6 (±2.07)**	**242.4 (±123.07)**	**57.6 (±34.54)**
Waukegan Harbor	Outer Harbor (WH1)	5	3	13	5	17	9	395	1813
	Entrance Channel (WH2)	2	4	9	7	13	11	3069	780
	Inner Harbor (WH3)[2]	4	4	12	15	15	20	194	404
	Marina (WH4)	5	4	9	11	13	16	1094	1116
	North Harbor (WH5)	3	9	8	20	9	23	886	864
	Mean (± S.E.)	**3.8 (±0.58)**	**4.8 (±1.07)**	**10.2 (±0.97)**	**11.6 (±2.71)**	**13.4 (±1.33)**	**15.8 (±2.63)**	**995.4 (±511.71)**	**1127.6 (±234.14)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

Table 3-7. The Shannon-Weaver Diversity Index for the Benthic Community for Each Site for the Two Sampling Periods

Site	Station	Shannon-Weaver Diversity Index	
		July	Aug
Burns Harbor	BH1[(1)]	1.45	0.65
	BH2	1.40	1.10
	BH3	1.67	1.56
	BH4	1.49	1.60
	BH5	1.43	0.64
	Mean (± S.E.)	**1.49 (±0.05)**	**1.11 (±0.21)**
Waukegan Harbor	Outer Harbor (WH1)	1.78	1.19
	Entrance Channel (WH2)	1.42	1.45
	Inner Harbor (WH3)[(2)]	1.81	2.13
	Marina (WH4)	1.17	1.42
	North Harbor (WH5)	1.06	2.01
	Mean (± S.E.)	**1.45 (±0.15)**	**1.64 (±0.18)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

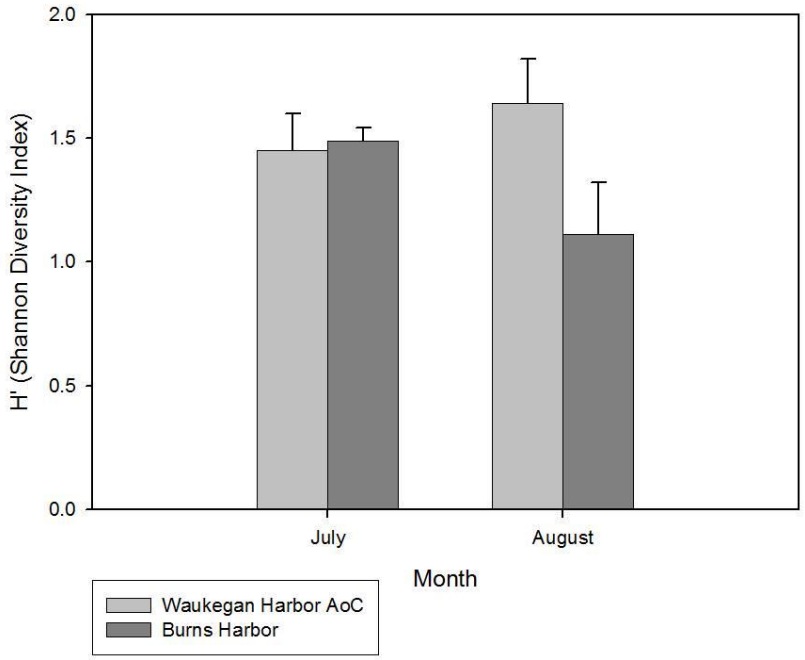

Figure 3-6. The Shannon-Weaver Diversity Index for the Benthic Community for Each Site for the Two Sampling Periods

Table 3-8. A Classification of Oligiochaete Species According to the Degree of Enrichment of the Environments In Which They Are Characteristically Found

Group 0: Species which are typically restricted to oligotrophic habitats	**Group 1**: Species which are typically characteristic of habitats defined by mesotrophic or slightly enriched conditions, and restricted to oligotrophic habitats	**Group 2**: Species which are typically characteristic of habitats defined by eutrophic conditions or extreme organic pollution
Stylodrilus heringianus	*Peloscolex ferox*	*Limnodrilus angustipenis*
Peloscolex variegates	*P. freyi*	*L. cervix*
P. superiorensis	*Ilyodrilus templetoni*	*L. claparedeianus*
Limnodrilus profundicola	*Potamothrix moldaviensis*	*L. hoffmeisteri*
Tubifex kessleri	*P. vejdovskyi*	
Rhyacodrilus coccineus	*Aulodrilus spp.*	*L. maumeensis*
	Arcteonais lomondi	
	Dero digitata	*Peloscolex multisetosus*
	Nais elinguis	
R. montana	*Slavina appendiculata*	*Tubifex tubifex*
	Uncinais uncinata	

Reproduced from Howmiller and Scott (1977).

Table 3-9. The Trophic Condition Index for the Benthic Community for Each Site for the Two Sampling Periods

Site	**Station**	**Shannon-Weaver Diversity Index**	
		July	**Aug**
Burns Harbor	BH1[(1)]	1.54	1.25
	BH2	1.53	1.00
	BH3	1.52	1.26
	BH4	1.47	1.81
	BH5	1.00	NA[(3)]
	Mean (± S.E.)	**1.41 (±0.10)**	**1.33 (±0.17)**
Waukegan Harbor	Outer Harbor (WH1)	1.92	1.78
	Entrance Channel (WH2)	1.68	1.89
	Inner Harbor (WH3)[(2)]	1.36	1.81
	Marina (WH4)	1.73	1.82
	North Harbor (WH5)	1.64	1.88
	Mean (± S.E.)	**1.67 (±0.09)**	**1.84 (±0.02)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.
(3) No oligochaetes found at BH5 in August 2012.

3.3 Benthic Sediments

A total of 24 sediment grabs were collected over the duration of the project; five discrete samples and an additional duplicate from each site were collected during each sampling trip (see Table 1-2). The PSD is summarized in Tables 3-10 and 3-11; the sediment at both Burns and Waukegan Harbors were generally dominated by the silt, clay, and sand fractions. Comparison of the Burns and Waukegan Harbors demonstrated that Waukegan Harbor was significantly siltier than Burns Harbor ($p = 0.01$ and $p < 0.0001$, respectively) (Tables 3-10 and 3-11) in both July 2012 and August 2012. While Waukegan Harbor was shown to be significantly siltier than Burns Harbor, further comparisons demonstrated that Burns Harbor was significantly sandier than Waukegan Harbor ($p = 0.048$ and $p = 0.003$, respectively) (Tables 3-10 and 3-11). Comparison of the TVS in the benthic sediments collected in July 2012 and August 2012 from Burns and Waukegan Harbors identified no significant difference in the TVS, as a measure of organic content of the sediment ($p = 0.13$ and $p = 0.11$, respectively) (Table 3-12).

Table 3-10. Particle Size Distribution Summary for Burns Harbor

Site	Burns Harbor									
Station	**BH1**[(1)]		**BH2**		**BH3**		**BH4**		**BH5**	
Fraction of Sediment	**July**	**August**	**July**	**August**	**July**	**August**	**July**	**August**	**July**	**August**
Gravel, Medium (%)	0.365	0	0	0	0	0	0	0	0	0
Gravel, Fine (%)	0.305	0.08	0	0.04	0	0	0.05	0.24	1.60	1.99
Gravel, Total (%)	**0.67**	**0.08**	**0**	**0.04**	**0**	**0**	**0.05**	**0.24**	**1.60**	**1.99**
Sand, Very Coarse (%)	1.1	0.30	0.06	0.14	0.16	0.05	0.25	0.28	1.96	1.69
Sand, Coarse (%)	1.68	1.05	0.27	0.73	0.84	0.44	0.59	1.85	3.13	2.24
Sand, Medium (%)	1.41	10.64	0.96	4.38	2.23	1.70	1.45	7.93	2.56	1.73
Sand, Fine (%)	37.565	53.09	21.87	38.30	22.42	21.45	46.88	45.06	7.88	7.08
Sand, Very Fine (%)	4.27	2.13	2.20	2.02	4.55	4.52	6.54	5.82	1.85	0.74
Sand, Total (%)	**46.03**	**67.19**	**25.36**	**45.57**	**30.20**	**28.16**	**55.71**	**60.94**	**17.38**	**13.48**
Silt (%)	**27.10**	**16.72**	**38.48**	**32.03**	**29.87**	**40.75**	**29.91**	**27.63**	**23.62**	**32.66**
Clay (%)	**20.71**	**15.62**	**31.81**	**23.16**	**41.61**	**30.87**	**14.32**	**10.51**	**58.67**	**53.12**

(1) Average of BH1 and BH1 Dup.

Table 3-11. Particle Size Distribution Summary for Waukegan Harbor Area of Concern

Site	Waukegan Harbor									
Station	**Outer Harbor (WH1)**		**Entrance Channel (WH2)**		**Inner Harbor[(1)] (WH3)**		**Marina (WH4)**		**North Harbor (WH5)**	
Fraction of Sediment	**July**	**August**	**July**	**August**	**July**	**August**	**July**	**August**	**July**	**August**
Gravel, Medium (%)	0	0	0	0	0.03	0.00	0	0	0	0
Gravel, Fine (%)	0.01	0	0.17	0.01	0.19	0.00	0.08	0.02	0.07	0
Gravel, Total (%)	**0.01**	**0**	**0.17**	**0.01**	**0.22**	**0.00**	**0.08**	**0.02**	**0.07**	**0**
Sand, Very Coarse (%)	0.03	0.06	0.26	0.06	2.31	0.20	0.08	0.14	0.10	0.08
Sand, Coarse (%)	0.07	0.11	0.20	0.08	4.87	0.48	0.24	0.24	0.21	0.44
Sand, Medium (%)	0.25	0.25	0.33	0.49	4.04	0.99	0.48	0.51	0.43	1.98
Sand, Fine (%)	15.39	12.13	2.16	3.13	15.87	7.07	3.12	3.50	16.39	21.47
Sand, Very Fine (%)	7.20	6.29	3.50	1.26	6.80	2.45	2.78	1.89	3.88	6.61
Sand, Total (%)	**22.94**	**18.84**	**6.45**	**5.02**	**33.88**	**11.18**	**6.70**	**6.28**	**21.01**	**30.58**
Silt (%)	**67.42**	**76.07**	**83.31**	**84.23**	**59.25**	**67.41**	**80.28**	**79.00**	**64.14**	**54.19**
Clay (%)	**5.10**	**4.38**	**9.09**	**12.24**	**10.00**	**21.73**	**11.39**	**14.54**	**13.54**	**15.40**

(1) Average of Inner Harbor and Inner Harbor Dup.

Table 3-12. Summary of Total Volatile Solids from Waukegan and Burns Harbor in July 2012 and August 2012

Site	Station	Total Volatile Solids	
		July	**Aug**
Burns Harbor	BH1[(1)]	2.68	2.83
	BH2	4.66	3.45
	BH3	5.41	4.78
	BH4	4.54	3.84
	BH5	5.34	6.22
	Mean (± S.E.)	**4.53 (±0.49)**	**4.23 (±0.59)**
Waukegan Harbor	Outer Harbor (WH1)	4.2	2.66
	Entrance Channel (WH2)	4.48	5.94
	Inner Harbor (WH3)[(2)]	7.96	10.01
	Marina (WH4)	6.79	9.06
	North Harbor (WH5)	10.2	15.9
	Mean (± S.E.)	**6.73 (±1.12)**	**8.7 (±1.12)**

(1) Average of BH1 and BH1 Dup.
(2) Average of Inner Harbor and Inner Harbor Dup.

4.0: CONCLUSIONS

The results provided in this report represent the current status of the plankton community, the benthic community, and the PSD and TVS of the sediment in both Burns Harbor and the Waukegan Harbor AOC. In addition, this biological and geophysical information will help to support future remedial action decision making.

4.1 Waukegan Harbor AOC vs. Burns Harbor

One of the sampling objectives was to compare the status of the plankton and benthic communities of the Waukegan Harbor AOC and the reference site, Burns Harbor. The communities in these harbors were compared based on diversity and pollution tolerance indices to determine how the AOC compared to the relatively unimpacted reference site. The sampling stations at each site were chosen to provide a comprehensive evaluation of both harbors. The exact locations of the stations were chosen to provide the most representative data set possible, thereby accurately reflecting the current status of the targeted communities within both Waukegan and Burns Harbors. Therefore, the community structure of these stations can serve as a valid proxy for the overall status of the current state of the benthic and plankton communities within the Waukegan Harbor AOC.

- The Shannon-Weaver diversity index calculated for the Waukegan Harbor AOC demonstrated a plankton community consisting of large-cell zooplankton, rotifers, soft-algae phytoplankton, and diatoms with significantly greater diversity than similar communities sampled in Burns Harbor (Table 3-2 and Figure 3-1). The Shannon-Weaver diversity index calculated for Waukegan Harbor suggests that not only is the community diverse, having a large number of species, but that it has a high evenness value, indicating the relative abundance of rare and common species.
- The plankton communities of both Waukegan and Burns Harbors were dominated by phytoplankton and diatoms (Table 3-1), with that fraction of the plankton community significantly more abundant than any other fraction of the plankton community (Appendix C). Phytoplankton and diatoms compose the majority of primary production in these systems so their relative dominance is an expected result. However, again, the Shannon-Weaver diversity index calculated for this fraction of the plankton community was significantly greater in Waukegan Harbor AOC than in Burns Harbor in July and August ($p = 0.04$ and $p = 0.003$, respectively) (Table 3-3 and Figure 3-2). The reason for differences in phytoplankton communities of the two harbors was not investigated during this study.
- A comparison of the zooplankton communities in Waukegan and Burns Harbors demonstrated that the community in Waukegan Harbor was significantly more diverse than the community sampled in Burns Harbor in July. During sampling in August, the communities did not differ in the diversity represented by the calculated Shannon-Weaver diversity index ($p = 0.048$ and $p = 0.42$, respectively) (Table 3-4 and Figure 3-3).
- The final fraction of the plankton community in both Waukegan and Burns Harbors was rotifers. The calculated diversity for the rotifer fraction of the plankton community demonstrated no significant difference in the metric between the two harbors in either July or August (Table 3-5 and Figure 3-4).
- In July and August, the Shannon-Weaver diversity index for the infaunal benthic community calculated for Waukegan and Burns Harbors did not differ significantly,

suggesting no significant difference exists between the infaunal benthic communities of the two sites ($p = 0.8$ and $p = 0.09$, respectively).

- The trophic index, a measure of the potential level of organic pollution based on the relative abundance of specific species of oligochaetes, revealed differences in the potential levels of pollution in Burns and Waukegan Harbors. In August, the trophic index suggested the level of potential pollution was significantly higher in Waukegan Harbor than Burns Harbor ($p = 0.013$); the trophic index of the two sites suggested that the levels of pollution would fall in the mesotrophic (1.33), to eutrophic range (1.84) for Burns and Waukegan Harbors, respectively (Howmiller and Scott, 1977) (Table 3-9). The results of this analysis in July suggested a slightly different level of potential pollution. In July, both Burns and Waukegan Harbors scored more in the mesotrophic range based on trophic index, 1.41 and 1.67 for Burns and Waukegan Harbors, respectively (Table 3-9).
- In both July and August, in conjunction with characterizing the biologic community of Waukegan and Burns Harbors, the PSD and the TVS of the benthic sediment was investigated. Both sites were dominated by the smallest fraction of benthic sediments, silt and clay. The comparisons of the individual components of the benthic sediments revealed that while both sites had similar sediment composition overall, Burns Harbor was found to be significantly sandier than Waukegan Harbor; by comparison, Waukegan Harbor was significantly siltier than Burns Harbor (Tables 3-10 and 3-11). The TVS of the sediment at both sites did not differ significantly during either sampling trip, July or August ($p = 0.13$ and $p = 0.11$, respectively) (Tables 3-12).
- The differences in the benthic community could potentially be attributed to differences in the habitat present at Waukegan and Burns Harbors, as both sites were dominated by small-grained particles. The difference in the dominant particle size (sand vs. silt) potentially explains some of the differences in the infaunal benthic community. Additionally, if differences in water flow exist outside the scope of this project, it could further explain some of the difference in the benthos. However, while differences in the PSD and potential differences in water help explain the differences in the benthic community, the two sites lacking a significant difference in the organic content of the sediment is consistent.

4.2 Waukegan Harbor AOC vs. Historical Data

The second objective of this sampling effort was to compare the status of the plankton and benthic communities of the Waukegan Harbor AOC to any available historic data. The available historic data were limited in scope and applicability; however, some data provide insight into the current condition of the benthic community in Waukegan Harbor compared to past conditions.

- The Illinois EPA collected benthic community samples in Waukegan Harbor in 1972 and again in 1996. During both of these studies, the samples were dominated by Oligochaeta, aquatic worms, and organisms known to have a high pollution tolerance. During the current study, the benthic community samples collected in Waukegan Harbor were also dominated overwhelmingly by Oligochaeta (Appendix D) (Illinois EPA, 1994, 1999).
- In the 1996 study, Oligochaeta made up 88% of the total collected organisms. In this study, they made up 93% and 91%, in July 2012 and August 2012, respectively, of the total collected organisms.

- The Illinois EPA studies also found that these sites within Waukegan Harbor were characterized by low biodiversity in the benthic community, with only 10 major groups of organisms being found at 10 stations. This study demonstrated the same with an average of 13 and 16 species being found at each station within Waukegan Harbor in July and August, respectively (Table 3-6).

5.0: REFERENCES

Battelle. 2012. *Quality Assurance Project Plan (QAPP) for Benthos and Plankton within Waukegan Area of Concern; Potential for Further Local Restoration*.

Howmiller, R.P. and M.A. Scott. 1977. *Journal of the Water Pollution Control Federation*, Vol. 49, Issue 5, 809-815.

Illinois Environmental Protection Agency (Illinois EPA). 1994a. *Final Stages I and II Report Waukegan Harbor Remedial Action Plan*. Waukegan: Illinois.

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APPENDIX A

FIELD LOGS AND CHAINS OF CUSTODY

Waukegan AoC Benthos and Plankton BUI's

June 2012

Battelle Project No. 100012578	**Date:** 9-July-12	**Recorder:** PDS, RSC
Vessel: *Battelle Pontoon*	**Equipment used:** Grab, Van Dorn Bottle, Plankton Net	**Staff initials:** PDS/RSC

Station ID: ~~BH1~~	**Time On Station** (local): 1130	**Sample Time** (local):	
Latitude 41° 37' 59.7"	**Longitude** 87° 09' 36.4"	All coordinates in: NAD83 UTM Zone 16N (meters)	**DGPS Accuracy Estimate (ft):**
Water depth (ft): 31.7	**Waypoint number:** BH1	**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted:	**Number of grabs collected:**		
Number of tows conducted:	**Sample ID:**		

Comments / Observations: Sunny, 5-10N,

Start - 490261, END - 490539
12:14:44 12:15:30

PDS
9-July-12

Station ID: BH1	**Time On Station** (local): ~~9~~ 1226	**Sample Time** ~~(local)~~: Time off 1529	
Latitude 41° 37' 58.8"	**Longitude** 87° 09' 36.8"	All coordinates in: NAD83 UTM Zone 16N (meters)	**Latitude** 83,84,85,86 pictures
Water depth (ft): 31.4	**Waypoint number:** BH1A	**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted: 1 / MAG-001	**Number of grabs collected:** 3 1-10cm 3-10cm 2-10cm		

Number of tows conducted: # of Water Samples - 10 Casts, MAG-004: Rotifer; BMAG-006 TOC/PS 1400

Comments / Observations: Start 12:30:39 490538 End 12:31:34 490834 MAG-002 SAP, ~~MAG-003: Diatom~~

Depth Profile ~~S-1254~~ S-1320 E-1350 ~~TOC~~ Grab S-1422 E-1518 MAG-005 Benthos

Station ID: BH1DUP	**Time On Station** (local): 1536	**Sample Time** ~~(local)~~: Time off	
Latitude 41° 37' 59.1"	**Longitude** 87° 09' 37.5"	All coordinates in: NAD83 UTM Zone 16N (meters)	**Latitude** 87,88,89,90 pictures
Water depth (ft): 30.3	**Waypoint number:** BH1DUP	**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted: 1/MAG-007	**Number of grabs collected:**		

Number of tows conducted: Start - 490848, 15:42:06 END - 15:43:00, 491082 MAG-007

Comments / Observations: PDP - start: 1553, END 1614, MAG-008 SAP; MAG-009 Diatom MAG-010 Rotifer, 10-15N, Sunny

PDP - 10 Water Samples

(X') All gravel

~~Mot~~ Harbor entrance all gravel moved Station 4, no station at harbor entrance due to gravel bottom

All large Gravel, no Sediment

Battelle Project No. 100012578	Date: 13-JULY-12	Recorder: PDS/RSC
Vessel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/RSC

Station ID: BH4	Time On Station (local): 1143	Sample Time (local): Off; 1250

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	DGPS Accuracy Estimate (ft):
N41° 38' 27.1"	W 87° 08' 56.1"		

Water depth (ft): 34.2	Waypoint number: BH4	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected: 3 S-1144 E 1200	
Number of tows conducted:	Sample ID:	

Comments / Observations:
Sunny, 0-5 kts South Pictures - 0150-0153
Benthos-MAG-063/41245 ①10cm ②10cm ③10cm
~~TOC-MAG-064/1204 * PSD-MAG-055 1205 *~~

TOC-MAG-054 1204
PSD-MAG-055 1205

Station ID:	Time On Station (local):	Sample Time (local):

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude

Water depth (ft):	Waypoint number:	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected:	
Number of tows conducted:		

Comments / Observations:

Station ID:	Time On Station (local):	Sample Time (local):

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude

Water depth (ft):	Waypoint number:	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected:	
Number of tows conducted:		

Comments / Observations:

* Label needs correcting

Battelle Project No. 100012578	**Date:** 13-Aug-12	**Recorder:** PDS/JMW
Vessel: *Battelle Pontoon*	**Equipment used:** Grab, Van Dorn Bottle, Plankton Net	**Staff initials:** PDS/JMW

Station ID: BH1	**Time On Station** (local): 840	**Time Off Station** (local): 1100	
Latitude 41° 37' 59.1"	**Longitude** 87° 09' 37.3"	All coordinates in: NAD83 UTM Zone 16N (meters)	Pictures: 154 155 156 157
Water depth (ft): 31.1	**Waypoint number:** BH1	**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler PDS 13-Aug-12	
Number of tows conducted/Sample ID: 1/MAG-070 0908	**Number of grabs collected/Sample ID:** 3 -MAG-074/1028 1-9cm 2 10cm 3 9cm	**Number of water samples conducted/Sample ID:** 10/MAG-071-SAP 0959 MAG-072-Diatoms 1000 MAG-073 Rotifer 1002	
End Flowmeter /Time: 493786 / 090738	**TVS/PSD Sample ID:** MAG-075/1035		
Start Flowmeter /Time: 493570 / 090642			

Comments / Observations: Cloudy + overcast, 0-5 Kts. slight sheen in Grab samples/No odor

Station ID: BH1DUP	**Time On Station** (local): 1110	**Time Off Station** (local): 1250	
Latitude 41° 37' 58.4	**Longitude** 87° 09' 37.7"	All coordinates in: NAD83 UTM Zone 16N (meters)	**Pictures:** 158, 159, 160, 161
Water depth (ft): 29.8	**Waypoint number:** BH1DUP	**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted/Sample ID: 1-MAG-076 11:18	**Number of grabs collected/Sample ID:** 3/MAG-080/1252 1 9cm 2 9cm 3 9cm	**Number of water samples conducted/Sample ID:** 10 SAP-MAG-078/1146 Diatoms-MAG-077/1147 Rotifer-MAG-079/1149	
End Flowmeter /Time: 493937 / 11:15:29	**TVS/PSD Sample ID:** MAG-081/1219		
Start Flowmeter /Time: 494197 / 11:16:29			

Comments / Observations: Cloudy, overcast, 0-5 Kts, light drizzle

Battelle Project No. 100012578	Date: 13-Aug-12	Recorder: PDS/JMW
Vessel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/JMW

Station ID: BH2	Time On Station (local): 1304	Time Off Station (local): 1350

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Pictures: 162 163, 164, 165
41° 38' 20.5"	87° 09' 36.8"		

Water depth (ft): 28.5	Waypoint number: BH2	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, (Benthos Grab), (Sediment Grab), Artificial Substrate Sampler
Number of tows conducted/Sample ID:	Number of grabs collected/Sample ID: MAG-082 / 1340 10cm, 10cm, 10cm 3 Grabs	Number of water samples conducted/Sample ID:
End Flowmeter /Time: /	TVS/PSD Sample ID: MAG-083 1325	
Start Flowmeter /Time: /		

Comments / Observations: Overcast/Cloudy 0-5 KTS

Station ID: BH3	Time On Station (local): 1403	Time Off Station (local): 1514

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Pictures: 166 167, 168, 169
41° 38' 35.8"	87° 09' 26.4"		

Water depth (ft): 31.4	Waypoint number: BH3	Samples collected (circle all that apply): (Plankton Tow), (Plankton Depth Profile), (Benthos Grab), (Sediment Grab), Artificial Substrate Sampler
Number of tows conducted/Sample ID: 1 / MAG-084 1408	Number of grabs collected/Sample ID: MAG-088 / 3 / 1518 10, 10, 10	Number of water samples conducted/Sample ID: 10 SAP MAG-085 1431 Diatoms MAG-087 1433 Rotifer MAG-086 1436
End Flowmeter /Time: 494206 / 14:06:30	TVS/PSD Sample ID: MAG-089 1452	
Start Flowmeter /Time: 494453 / 140712		

Comments / Observations: Cloudy/overcast 0-5 KTS

Battelle Project No. 100012578	Date: 1521 13-Aug-12	Recorder: PDS/JMW
Vessel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/JMW

Station ID: BH4	Time On Station (local): 1521	Time Off Station (local):

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Pictures: 170,171, 172,173
41° 38' 27.1"	87° 08' 56.411		

Water depth (ft): 31.3	Waypoint number: BH4	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted/Sample ID:	Number of grabs collected/Sample ID: MAG-090 3; 9cm, 10cm, 10cm 1558	Number of water samples conducted/Sample ID:
End Flowmeter /Time: /	TVS/PSD Sample ID: MAG-091 1545	
Start Flowmeter /Time: /		

Comments / Observations: Cloudy/overcast, 0-5 kts
Slight Drizzle

Station ID: BH5	Time On Station (local): 1620	Time Off Station (local):

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Pictures: 174,175,176, 177
41° 38' 37.2	87° 08' 58.4		

Water depth (ft): 30.3	Waypoint number: BH5	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted/Sample ID: 1/MAG-092 1429	Number of grabs collected/Sample ID: 3 MAG-096 1727 10, 10, 10	Number of water samples conducted/Sample ID: 10 MAG-093 SAP 1650 D; 40ms MAG-094 1654 Rotifer MAG-095 1657
End Flowmeter /Time: 4944727 / 142359	TVS/PSD Sample ID: MAG-097 1710	
Start Flowmeter /Time: 4944480 / 142250		

Comments / Observations: Cloudy/overcast; 0-5 kts;

Battelle Project No. 100012578	Date: 14-Aug-12	Recorder: PDS/JMW
Vessel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/JMW

Station ID: WH1	Time On Station (local): 1046	Time Off Station (local): 1205

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Pictures: 178, 179 180, 181
42° 21' 44.0"	87° 48' 43.6"		

Water depth (ft): 16.9	Waypoint number: WH1	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted/Sample ID: 1/MAG-098/11:10	Number of grabs collected/Sample ID: 3/MAG-102 4cm, 4.5, 40 1159	Number of water samples conducted/Sample ID: 5 Samples SAP-MAG-099: 1122 Diatoms-MAG-100: 1125 Rotifer-MAG-101: 1131
End Flowmeter /Time: 494829/11:05:17 Start Flowmeter /Time: 494723/11:04:55	TVS/PSD Sample ID: MAG-103 1141	

Comments / Observations: Sunny, 0-5 kts, seas less than 1ft large amounts of hydrilla, making grabbing sampling very difficult; 12 Grabs collected 3 kept

Station ID: WH2	Time On Station (local): 1208	Time Off Station (local): 1306

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Pictures: 184, 185 186, 187
42° 21' 40.6"	87° 49' 07.9"		

Water depth (ft): 18.3	Waypoint number: WH2	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted/Sample ID:	Number of grabs collected/Sample ID: MAG-104 / 10cm, 12.5, 10cm, 10cm	Number of water samples conducted/Sample ID:
End Flowmeter /Time: / Start Flowmeter /Time: /	TVS/PSD Sample ID: MAG-105 1225	

Comments / Observations: Sunny, 0-5 kts, <1 ft seas

Battelle Project No. 100012578	Date: 14-Aug-12	Recorder: PDS/JMW
Vessel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/JMW
Station ID: WH3	Time On Station (local): 1313	Time Off Station (local): 1446
Latitude: 42° 21' 49.5"	Longitude: 87° 49' 21.5"	All coordinates in: NAD83 UTM Zone 16N (meters)
Pictures: 188, 189, 190, 191		
Water depth (ft): 21.6	Waypoint number: WH3	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted/Sample ID: MAG-106/1/1331	Number of grabs collected/Sample ID: MAG-110/3/1444	
End Flowmeter /Time: ~~13:27:51~~ / ~~13:20:24~~ End 494992	~~4.5, 35~~, 10cm, 20, 9.0	Number of water samples conducted/Sample ID: 6
Start Flowmeter /Time: ~~494824~~ / ~~13:11:50~~ Start 494903/13: ~~27:17~~ 27:59	TVS/PSD Sample ID: MAG-111, 14:12	SAP: MAG-107: 1341 Diatoms MAG-108: 1345 Rotifer MAG-109: 1348
Comments / Observations: Sunny, 0-5 kts, seas <1ft		
~~collected~~		
16 Grabs collected; 3 kept		
Station ID: WH3DUP	Time On Station (local): 1452	Time Off Station (local):
Latitude: 42° 21' 51.0"	Longitude: 87° 49' 24.3"	All coordinates in: NAD83 UTM Zone 16N (meters)
Pictures: 192, 193, 194, 195		
Water depth (ft): 23.81	Waypoint number: WH3DUP	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted/Sample ID: 1/MAG-112/1456	Number of grabs collected/Sample ID: 3 MAG-116: 1554 10, 9, 10	Number of water samples conducted/Sample ID: 7
End Flowmeter /Time: 495044/145547	TVS/PSD Sample ID: MAG-117 15:40	SAP MAG-113: 1518 Diatoms MAG-114: 1519 Rotifer MAG-115: 1523
Start Flowmeter /Time: 494936/145453		
Comments / Observations: Sunny, 0-5 kts, seas <1ft,		

Battelle Project No. 100012578	**Date:** 14-Aug-12	**Recorder:** PDS/JMW
Vessel: *Battelle Pontoon*	**Equipment used:** Grab, Van Dorn Bottle, Plankton Net	**Staff initials:** PDS/JMW

Station ID: WH5	**Time On Station** (local): 1619	**Time Off Station** (local): 1740	
Latitude 42° 21' 57.9"	**Longitude** 87° 49' 17.5	All coordinates in: NAD83 UTM Zone 16N (meters)	**Pictures:** 196, 197, 198, 199
Water depth (ft): 19	**Waypoint number:** WH5	**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted/Sample ID: MAG-118/1/1653 ~~495102~~ 495127 165003	**Number of grabs collected/Sample ID:** 3/MAG-122/ ~~154~~ 1740 10,10,10	**Number of water samples conducted/Sample ID:** 6 SAP MAG-119: 1714 Diatoms-MAG-120: 1715 Rotifers MAG-121 1718	
End Flowmeter /Time: ~~495098~~ 495115 ~~495103~~ ~~495099~~ / ~~144856~~ ~~144230~~ ~~164~~ 164130 ~~163930~~ ~~495103~~/~~163346~~	**TVS/PSD Sample ID:** MAG-123/ 17:30		
Start Flowmeter /Time: ~~495048~~/~~162647~~			

Comments / Observations: Sunny, 0-5 Kts, seas < 1ft

Station ID: WH4	**Time On Station** (local): 1747	**Time Off Station** (local): 1816	
Latitude 42° 21' 41.4"	**Longitude** 87° 49' 21.1"	All coordinates in: NAD83 UTM Zone 16N (meters)	**Pictures:** 200, 201, 202, 203
Water depth (ft): 13.8	**Waypoint number:** WH4	**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted/Sample ID: ~~MAG-118/1/~~	**Number of grabs collected/Sample ID:** MAG-124/1815 10,10,10	**Number of water samples conducted/Sample ID:**	
End Flowmeter /Time: /	**TVS/PSD Sample ID:** MAG-125/18:05		
Start Flowmeter /Time: /			

Comments / Observations: Sunny, 0-5 Kts; seas < 1FT

Pictures - N, E, S, W
SAP - Soft Algae Phytoplankton
PDP - Plankton Depth Profile

All times CDT
(Central Daylight Time)

Battelle Project No. 100012578	Date: 9-July-12	Recorder: PDS/RSC
Vessel: *Battelle Pontoon*	**Equipment used:** Grab, Van Dorn Bottle, Plankton Net	**Staff initials:** PDS/RSC

Station ID: BH3	Time On Station (local): 1640	~~Sample Time (local):~~ TIMEOFF 1727

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	DGPS Accuracy Estimate (ft):
41° 38' ~~35.4~~ 36.8"	87° 09' 26.5"		

Water depth (ft): 30.2	Waypoint number: BH3	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted: 1/MAG-011	Number of grabs collected:	
Number of ~~tows~~ conducted: WaterSamples: 10	Sample ID:	

Comments / Observations: S-16:49:12 491078 E-16:49:01 491323 MAG-011
5-10KtsN, Sunny; TOW
PDP: 1655 Start / End 1720; Pictures: 91, 92, 93, 94
SAP-MAG012; Diatoms-MAG-013, Zoo Rotifers MAG014

Station ID:	Time On Station (local):	Sample Time (local):

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude

Water depth (ft):	Waypoint number:	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected:	

Number of tows conducted:

Comments / Observations:

Station ID:	Time On Station (local):	Sample Time (local):

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude

Water depth (ft):	Waypoint number:	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected:	

Number of tows conducted:

Comments / Observations:

Waukegan AoC Benthos and Plankton BUI's
June 2012

ttelle Project No. 100012578	Date: 10-July-12	Recorder: PDS/RSC
sel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/RSC

1340- Dredgin off stern 100m Ended 1358

tation ID: North Harbor	Time On Station (local): 1203	~~Sample Time (local):~~ Time Off: 1449	
atitude 42° 21' 58.3"	Longitude 87° 49' 17.0	All coordinates in: NAD83 UTM Zone 16N (meters)	DGPS Accuracy Estimate (ft):
Water depth (ft): 18.7	Waypoint number: WH5	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted: 1-MAG-015	Number of grabs collected: 3; MAG-019 S-1330 E-1351		
Number of ~~tows conducted:~~ Water Samples: 6	~~Sample ID:~~ Sunny, Weather: 10-15 Kts North	TOC Grab-1357	

TOC/PSD MAG-02 Grab ~~1-7.8cm~~ 2-10cm 3-10cm 1-10cm

mments / Observations: TOW: S-491420, 12:43:58 E-491594, 12:44:23 MAG-015, Pictures 101, 102, 103, 104

PDP- S-1258 E-1312, Deepest cast contained a small mat of vegetation, SAP-MAG-016, Diatoms-MAG-017, MAG-018-Rotifer

Sheet Pile being driven + weld 100m south of station

tation ID: Inner Harbor	Time On Station (local): 1513	~~Sample~~ Time (local): off:	
atitude 42° 21' 49.6"	Longitude 87° 49' 22.1"	All coordinates in: NAD83 UTM Zone 16N (meters)	~~Latitude~~ Pictures 105, 106, 107, 108
ater depth (ft): 21.3	Waypoint number: WH3	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted: 1/MAG-021 S-491600 15:18:25 E-1518:54 491754	Number of grabs collected: ~~ATTEMPTS:~~ Start: 1555 End: 1641 MAG-025		
~~Number of tows conducted:~~ # of Water Samples: 7	Start: 1530 End: 1543	SAP-MAG-022 Diatoms MAG-023	Rotifer-MAG-024

mments / Observations: Sunny, 10-15 Kts North; TOC/PSD-MAG-026 1653

Grab ATTEMPTS: 4/12 Kept less than full ① 4cm, ~~② 10cm ③~~ Grabs, due to extremely rock bottom ② 3.5 ③ 4.5

tion ID:	Time On Station (local):	Sample Time (local):	
titude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude
ater depth (ft):	Waypoint number:	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler	
Number of tows conducted:	Number of grabs collected:		
Number of tows conducted:			
mments / Observations:			

Battelle Project No. 100012578	**Date:** 11-July-12	**Recorder:** PDS/RSC
Vessel: *Battelle Pontoon*	**Equipment used:** Grab, Van Dorn Bottle, Plankton Net	**Staff initials:** PDS/RSC

Station ID: Inner Harbor DUP	**Time On Station** (local): 1415		**Sample Time** (local): off
Latitude N 42° 21' 50.8	**Longitude** W 87° 49' 24.8"	All coordinates in: NAD83 UTM Zone 16N (meters)	**DGPS Accuracy Estimate (ft):**
Water depth (ft): 23.5	**Waypoint number:** WH3DUP		**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted: 3 Kept / MAG-037 1438	**Number of grabs collected:** ~~S-1517 E-1554~~ * 1605		
Number of tows conducted: 8 water samples S-1442 E-1507	**Sample ID:** Pictures 115, 116, 117, 118		
Comments / Observations: Sunny S-10KTS East; TOW ~~S-49100, 142051~~ ~~S-49100, 142533~~ ~~E-49122, 142615~~ S-49200, 143138; TOW E-49231, 143219; SAP-MAG-038 1510, Diatoms-MAG-039 1511			
Rotifer-MAG-040 1515; Benthos MAG-041 1654; TOC/PSD-MAG-042 1610			

Station ID:	**Time On Station** (local):		**Sample Time** (local):
Latitude	**Longitude**	All coordinates in: NAD83 UTM Zone 16N (meters)	**Latitude**
Water depth (ft):	**Waypoint number:**		**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	**Number of grabs collected:**		
Number of tows conducted:			
Comments / Observations:			

Station ID:	**Time On Station** (local):		**Sample Time** (local):
Latitude	**Longitude**	All coordinates in: NAD83 UTM Zone 16N (meters)	**Latitude**
Water depth (ft):	**Waypoint number:**		**Samples collected (circle all that apply):** Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	**Number of grabs collected:**		
Number of tows conducted:			
Comments / Observations:			

*Grabs collected at 1654: 12 collected / 3 kept

Waukegan AoC Benthos and Plankton BUI's

June 2012

Battelle Project No. 100012578	Date: 11-July-12	Recorder: PDS/RSC
Vessel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/RSC

Station ID: Outer Harbor | **Time On Station** (local): 735 | **~~Sample Time~~** (local): Time off: 0919

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	DGPS Accuracy Estimate (ft):
N 42° 21' 44.8"	W 87° 48' 43.2"		

Water depth (ft):	Waypoint number:	Samples collected (circle all that apply):
16.5	WH1	Plankton Tow; Plankton Depth Profile; Benthos Grab; Sediment Grab; Artificial Substrate Sampler
Number of tows conducted: 1/MAG-027	Number of grabs collected: 4 S-8:22 E0850 (kept 3)	
Number of ~~tows conducted~~: water samples: 6	Sample ID: Pictures: 103, 104, 105, 106	

Comments / Observations: Sunny 5-10KtsW; TOW: S-491750; 073845 E-491807; 073726 MAG-027; TOC/PSD-MAG-032 time 0855

POP: S2 7:54 E-~~8:48~~ SA E: 8:10 SAP-MAG-028, Diatoms-MAG-029

Rotifer-MAG-030; Benthos Grab-MAG-031 0908 ① 6cm ② 7.5cm ③ 6.5cm

Station ID: Entrance channel | **Time On Station** (local): 0925 | **~~Sample~~ Time** (local): off: 1115

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	~~Latitude~~ Pictures
N 42° 21' 39.9"	W 87° 49' 09.0"		107, 108, 109 110

Water depth (ft):	Waypoint number:	Samples collected (circle all that apply):
20.2	WH2	Plankton Tow; Plankton Depth Profile; Benthos Grab; Sediment Grab; Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected: ③ 10cm S-0931 ① 10cm E-0945 ② 10cm 11:05	
Number of tows conducted: Pictures		

Comments / Observations: Sunny, 0-5KtsNE; Benthos-MAG-033, TOC/PSD-MAG-034 0950

Station ID: Marina | **Time On Station** (local): 1115 | **~~Sample~~ Time** (local): Off: 1235

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	~~Latitude~~ Pictures
N 42° 21' 42.0"	~~N~~ W 87 49' 21.7"		111, 112, 113, 114

Water depth (ft):	Waypoint number:	Samples collected (circle all that apply):
13.4	WH4	Plankton Tow; Plankton Depth Profile; Benthos Grab; Sediment Grab; Artificial Substrate Sampler *
Number of tows conducted:	Number of grabs collected: 3 S-1117 E-1130	
Number of tows conducted:		

Comments / Observations: Sunny 5-10kts East, Benthos-MAG-035, TOC/PSD-MAG-036

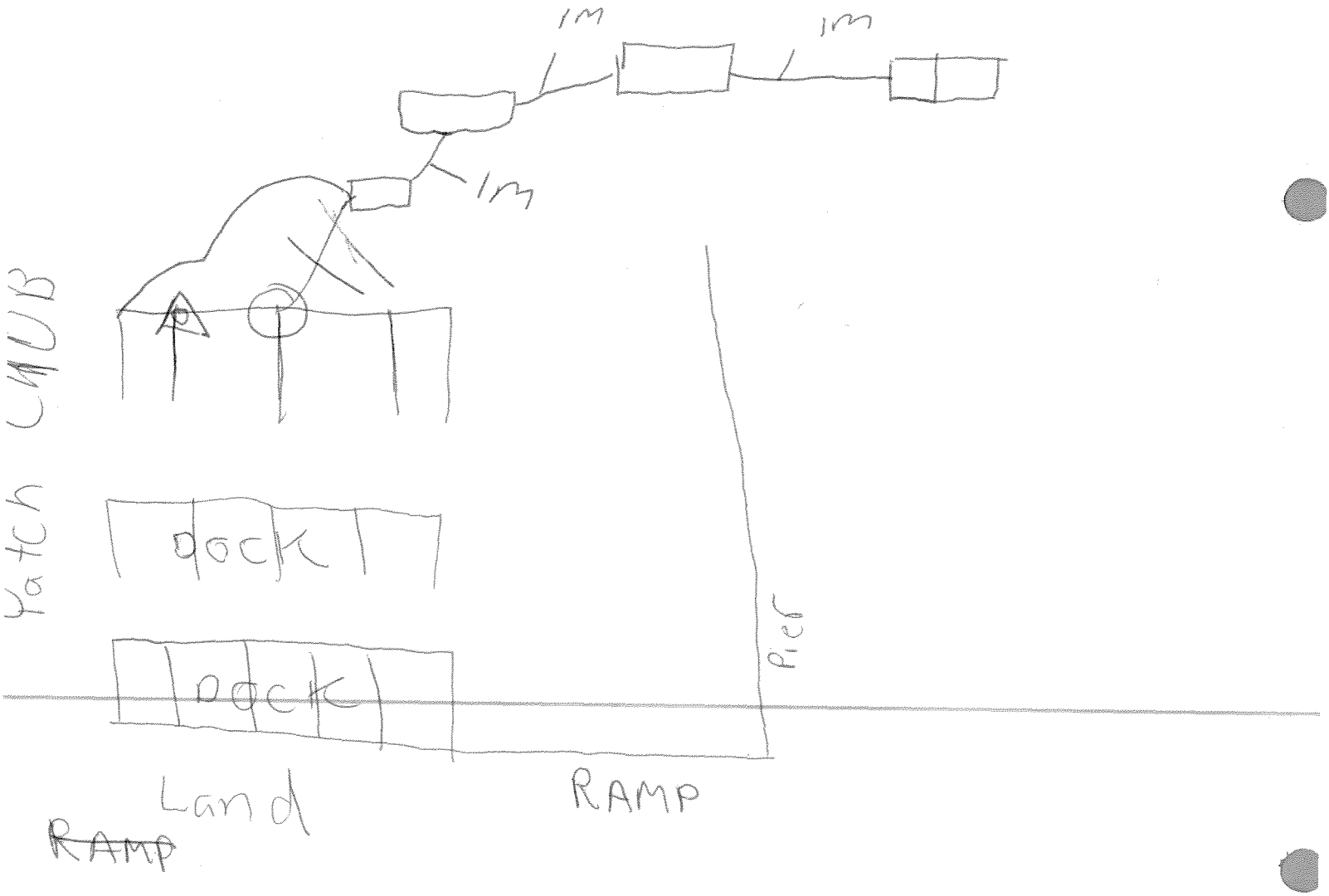
① 10cm ② 10cm ③ 10cm

Benthos - 1230

TOC/PSD - 1135

* ~~R~~ See Reverse side

Artifical Substrate Sampler
Deployed 11-July-12
off Dock ~~O~~ H



NO wake sign

Waukegan AoC Benthos and Plankton BUI's

June 2012

Battelle Project No. 100012578 | Date: 12-July-12 | Recorder: PDS/RSC

Vessel: *Battelle Pontoon* | Equipment used: Grab, Van Dorn Bottle, Plankton Net | Staff initials: PDS/RSC

Station ID: BH5 | **Time On Station** (local): 1017 | **Sample Time** (local): off 1245

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	DGPS Accuracy Estimate (ft):
N 41° 38' 36.5"	W 87° 08' 57.7"		

Water depth (ft): 31.2 | **Waypoint number**: BH5

Samples collected (circle all that apply): (Plankton Tow) (Plankton Depth Profile) Benthos Grab Sediment Grab Artificial Substrate Sampler

Number of tows conducted: 1 / MAG-043 | **Number of grabs collected:** S 1139 E 1209

Number of tows conducted: water samples 10 | **Sample ID:** Pictures 124, 125, 126, 127

Comments / Observations: Sunny, 15 KTS; Tow S-492250, 10:30:25 E-492470, 10:31:13; PDP S-1047 E-1126

SAP-MAG-044 1128, Diatoms MAG-045 1129, Rotifer-046 1130

Grabs: ① 10cm ② 10cm ③ 10cm Benthos MAG-060 1240 TOC/PSD-MAG-061 1143

Station ID: BH1DUP | **Time On Station** (local): 130 | **Sample Time** (local): off: 1458

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	~~Latitude~~
N 41° 37' 58.2"	W 87° 09' 37.4"		

Water depth (ft): 32.6 | **Waypoint number**: BH1DUP

Samples collected (circle all that apply): Plankton Tow Plankton Depth Profile (Benthos Grab) (Sediment Grab) Artificial Substrate Sampler

Number of tows conducted: | **Number of grabs collected:** 3 S-1335 E 1400

~~Number of tows conducted:~~ Notes: very hard clay bottom

Comments / Observations: Sunny 10-15 KTS North Grab ① 9cm ② 9cm ③ 10cm

Benthos-MAG-~~047~~ 061 1458 TOC/PSD-MAG-~~048~~ 063 1401

Station ID: BH3 | **Time On Station** (local): 1513 | **Sample Time** (local): off:

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude
N 41° 38' 35.6"	W 87° 09' 26.3"		

Water depth (ft): 31.3 | **Waypoint number**: BH3

Samples collected (circle all that apply): Plankton Tow Plankton Depth Profile (Benthos Grab) (Sediment Grab) Artificial Substrate Sampler

Number of tows conducted: | **Number of grabs collected:** 3 S-1516 E

~~Number of tows conducted:~~ Notes ① 10cm ② 10cm ③ 10cm

Comments / Observations: 5-10 KTS North, Sunny 1544

Benthos-~~MAG-BH3~~ TOC/PSD-MAG-050

MAG-~~049~~ 062

1650

Battelle Project No. 100012578	Date: 13-July-12	Recorder: PDS/RSC
Vessel: *Battelle Pontoon*	Equipment used: Grab, Van Dorn Bottle, Plankton Net	Staff initials: PDS/RSC

Station ID: BH2	Time On Station (local): 0830	Sample Time (local): off: 0940

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	DGPS Accuracy Estimate (ft):
N41° 38' 21.5"	W 87° 09' 37.0"		

Water depth (ft): 28.4	Waypoint number: BH2	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected: 3 S0834 E0850	
Number of tows conducted:	Sample ID:	

Comments / Observations:
Sunny 5-10Kts South; Pictures 129, 130, 131, 132
Benthos-MAG-051 (1) 10cm (2) 10cm (3) 10cm; 0934
TOC/Grain TOC/PSD-MAG-052; 0900

Station ID: BH4 *	Time On Station (local): 0950	Sample Time (local): Time Off

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude
N41° 38' 42.4"	W 87° 08' 59.5"		(X) moved

Water depth (ft): 32.7	Waypoint number: BH4	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected: 3 S-1053 E-	
Number of tows conducted: Grabs: (1) (2) (3)		

Comments / Observations:
Sunny 5-10Kts south; Pictures: 133, 134, 135, 136
Benthos-MAG-052, TOC-MAG-053, PSD-MAG-054 5

Station ID: BH4	Time On Station (local): 1102	Sample Time (local): off:

Latitude	Longitude	All coordinates in: NAD83 UTM Zone 16N (meters)	Latitude
N41° 38' 39.7" 41.7"	W 87° 08' 54.2" 56.3"		X1

Water depth (ft): 31.2	Waypoint number: BH4	Samples collected (circle all that apply): Plankton Tow, Plankton Depth Profile, Benthos Grab, Sediment Grab, Artificial Substrate Sampler
Number of tows conducted:	Number of grabs collected: 3 S-1102 E-	
Number of tows conducted: Pictures: 145, 146, 147, 148		

Comments / Observations:
Sunny 5-10Kts South, Benthos MAG-053 (1) (2) 2cm (3)
TOC-MAG-054 1120 PSD-MAG-055 1121

* had to leave station for 1hr due very large vessel entering Port, (X) moved station due →

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Ship To: Company: EnviroScience, Inc.
Address: 3781 Darrow Rd. Stow, OH 44224
Attn: Nicole Jordan
Phone: 800 940 4025

Ship From: Battelle
397 Washington Street
Duxbury, MA 02332
Attn:
Phone: 781-952-5200

Project Number:
Project Name: Waukegan AoC
Samplers: PDS/JMW

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-070		130812	0908	BH1	Water	Large-Cell Zooplankton	1	Plastic Bottle	Formalin
MAG-076		130812	1118	BH1DUP	Water	Large-Cell Zooplankton	1		
MAG-084		130812	1408	BH3	Water	Large-Cell Zooplankton	1		
MAG-092		130812	1429	BH5	Water	Large-Cell Zooplankton	1		
MAG-098		140812	1110	WH1			1		
MAG-106		140812	1331	WH3			1		
MAG-112		140812	1456	WH3DUP			1		
MAG-118		140812	1653	WH5			1		
MAG-071		130812	0959	BH1	Water	Soft-Algae Phytoplankton	1		
MAG-078		130812	1146	BH1DUP			1		
MAG-085		130812	1431	BH3			1		
MAG-093		130812	1650	BH5			1		

Relinquished by: [signature]	**Date/Time:** 15-Aug-12/1030	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.
[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

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Ship To: Company: EnviroScience, Inc.
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Attn: Nicole Jordan
Phone: 800 940 4025

Ship From: Battelle
397 Washington Street
Duxbury, MA 02332
Attn:
Phone: 781-952-5200

Project Number:
Project Name: Waukegan AoC
Samplers: PDS/JMW

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-099		MAug12	1122	WH1		Soft-Algae Phytoplankton	1	Plastic Bottle	Formalin
MAG-107		140812	1344	WH3		↓	1	↓	↓
MAG-113		140812	1518	WH3DUP			1		
MAG-119		140812	1714	WH5			1		

Relinquished by: Paul Schlaf	**Date/Time:** 15-Aug-12 1630	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

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Ship To: Company: Enviroscience, Inc.
Address: 3781 Darrow Rd.
Stow, ~~Rd~~ OH 44224
Attn: Nicole Jordan
Phone: 800 940 4025

Ship From: Battelle
397 Washington Street
Duxbury, MA 02332
Attn:
Phone: 781-952-5200

Project Number:
Project Name: Waukegan Harbor AoC
Samplers: PDS/JMW

Field Sample ID		Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-101			14Aug12	1131	WH1	Water	Rotifer	1	Plastic Bottle	Formalin
MAG-109			140812	1348	WH3			1		
MAG-115			140812	1523	WH3DUP			1		
MAG-121			140812	1718	WH5			1		
MAG-073			130812	1000	BH1			1		
MAG-079			130812	1149	BH1DUP			1		
MAG-086			130812	1436	BH3			1		
MAG-095			130812	1657	BH5			1		
MAG-~~099~~	100 PDS 22-[illegible]		140812	1125	WH1		Diatoms	1		
MAG-108			140812	1345	WH3			1		
MAG-114			140812	1519	WH3DUP			1		
MAG-120			140812	1715	WH5			1		
								1		

Relinquished by: [signature]	**Date/Time:** 15-Aug-12 1030	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**

Comments:

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Address: 3781 Darrow Rd.
Stow, OH 44224
Attn: Nicole Jordon
Phone: 800 940 4025

Ship From: Battelle
397 Washington Street
Duxbury, MA 02332
Attn:
Phone: 781-952-5200

Project Number:

Project Name: Waukegan Harbor AoC

Samplers: PDS/JMW

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-072		130812	1000	BH11	water	Diatoms	1	Plastic Bottle	Formalin
MAG-087		130812	1433	BH3	↓	↓	1	↓	↓
MAG-094		130812	1654	BH5	↓	↓	1	↓	↓
MAG-077		130812	1149	BH1DUP	↓	↓	1	↓	↓

Relinquished by:	**Date/Time:** 15-Aug-12 1030	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.

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Ship To: Company:	EnviroScience, Inc.	*Ship From:*	Battelle
Address:	3781 Darrow Rd. Stow, OH 44224		397 Washington Street Duxbury, MA 02332
Attn:	Nicole Jordan	Attn:	
Phone:	800-940-4025	Phone:	781-952-5200
Project Number:	**Project Name:** Waukegan Harbor AOC	**Samplers:**	

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-102		140812	1159	WH1	Water	Benthos Community	1	Plastic Bottle	Formaldehyde
MAG-104		140812	1259	WH2			1		
MAG-110		140812	1444	WH3			1		
MAG-116		140812	1554	WH3Dup			1		
MAG-124		140812	1815	WH4			1		
MAG-122		140812	1740	WH5			1		
MAG-074		130812	1028	BH1			1		
MAG-080		130812	1252	BH1Dup			1		
MAG-082		130812	1340	BH2			1		
MAG-088		130812	1513	BH3			1		
MAG-090		130812	1558	BH4			1		
MAG-096		130812	1727	BH5			1		
							1		

Relinquished by: Paul	**Date/Time:** 15-Aug-12 1030	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.

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[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

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Page 1 of 1

Ship To: Company:	ALS Environmental	*Ship From:*	Battelle
Address:	1317 S. 13th Ave Kelso, WA 18626		397 Washington Street Duxbury, MA 02332
Attn:	Howard Holmes / Lisa Domenighini	Attn:	
Phone:	360-577-7222	Phone:	781-952-5200
Project Number:	**Project Name:** Waukegan Harbor AOC	**Samplers:**	PDS / JMW

Field Sample ID		Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-075			130812	1035	BH1	Sediment	TVS / PSD	1	160 ml Glass jar	C
MAG-081			130812	1219	BH1 DUP			1		
MAG-083			130812	1325	BH2			1		
MAG-089			130812	1452	BH3			1		
MAG-091			130812	1545	BH4			1		
MAG-097			130812	1710	BH5			1		
~~MAG-101 / 82~~			~~140812~~	~~1159~~	~~WH1~~			1		
MAG-105			140812	1225	WH2			1		
MAG-111			140812	1412	WH3			1		
MAG-117			140812	1540	WH3DUP			1		
MAG-125			140812	1805	WH4			1		
MAG-123			140812	1730	WH5			1		
MAG-103			140812	1141	WH1			1		

Relinquished by: Paul Schuff	**Date/Time:** 15-Aug-12 1030	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.

[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

Battelle
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Ship To: Company: ALS/Environmental
Address: 1317 S. 13th Ave
Kelso, Washington 98626
Attn: Howard Holmes
Phone: 360-577-7222

Ship From: Battelle
397 Washington Street
Duxbury, MA 02332
Attn:
Phone: 781-952-5200

Page 1 of 1

Project Number:

Project Name: Waukegan Harbor AOC

Samplers: PDS/RSC

Field Sample ID		Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-020			100712	1357	North Harbor	Sediment	TOC/PSD	1	8oz [illegible]	4°C ICE
MAG-026			100712	1653	Inner Harbor			1		
MAG-032			110712	[illegible]53	Outer Harbor			1		
MAG-036			110712	1135	Marina			1		
MAG-006			[illegible]10712	1400	BH1			1		
MAG-048			120712	1143	BH5			1		
MAG-063			120712	1404	BH1DUP			1		
MAG-050			120712	1544	BH3			1		
MAG-052			130712	[illegible]100	BH2			1		
MAG-042			110712	1610	Inner Harbor Dup			1		
MAG-054			130712	1204	BH4		TOC	1	4oz [illegible]	
MAG-055			130712	1205	BH4		PSD	1		
MAG-034			110712	[illegible]	Entrance Channel		TOC/PSD	1	8oz Glass Jar	

Relinquished by: [signature]	**Date/Time:** 13-July-12 1545	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.
[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

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Ship To: Company: Envi Science, Inc.
Address: 5781 Darrow Rd. Stow, OH 44224
Attn: Nicole Jordan
Phone: 800 940 4025

Ship From: Battelle
397 Washington Street
Duxbury, MA 02332
Attn:
Phone: 781-952-5200

Project Number: **Project Name:** Waukegan Harbor AOC **Samplers:** RDS/RSC

Field Sample ID		Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-037			110712	432	Inner Harbor	water	Large C-II Zooplankton	1	500 mL Nalgene	Formalin
MAG-011			~~090712~~ 100712	1649	BH3			1		
MAG-015			100712	1244	North Harbor			1		
MAG-021			100712	1518	Inner Harbor			1		
~~MAG-027~~			~~110712~~	~~0810~~	~~Outer Harbor~~			1		
MAG-001			100712	1231	BH1			1		
MAG-043			120712	1031	BH5			1		
MAG-007			090712	1743	BH7			1		
MAG-027			110712	0731	Outer Harbor			1		
MAG-039			110712	1511	Inner Harbor		Diatoms	1	1L Nalgene	
MAG-013			090712	1720	BH3			1		
MAG-017			100712	1512	North Harbor			1		
MAG-023			100712	1543	Inner Harbor			1		

Relinquished by:		**Date/Time:** 1640	**Received by:**	**Date/Time:**	
Relinquished by:		**Date/Time:**	**Received by:**	**Date/Time:**	
Relinquished by:		**Date/Time:**	**Received by:**	**Date/Time:**	
Comments:					

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

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Attn: Nicole Jordan
Phone: 800 940 4025

Ship From: Battelle
397 Washington Street
Duxbury, MA 02332
Attn:
Phone: 781-952-5200

Project Number:
Project Name: Waukegan AoC
Samplers: PDS/RSC

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-029		110712	0810	outer Harbor	water	Diatoms	1		
MAG-003		110712	1350	B111	↓	↓	1	↓	↓
MAG-045		110712	1129	B115			1		
MAG-007		110712	1614	B111Rep			1		

Relinquished by:	**Date/Time:** 13-July-12 1640	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.
[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

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Project Number: **Project Name:** Waukegan Harbor AOC **Samplers:** Paul Schacht / Robert Carr

Field Sample ID		Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-004			010712	1350	BH1	water	Rotifer Zooplankton	1	Lab Bottle	Formalin
MAG-010			010712	1414	BH1Dup	water		1		
MAG-046			020712	1130	BH5	water		1		
MAG-040			020712	1515	Inner Harbor Dup	water		1		
MAG-014			020712	1730	BH3	water		1		
MAG-018			100712	1312	North Harbor	water		1		
MAG-030			020712	0910	[illegible]	water		1		
MAG-024			020712	1415	Inner Harbor	water		1		
MAG-002			010712	1350	BH1		Soft Algae Phyto	1		
MAG-008			010712	1414	BH1Dup			1		
MAG-044			020712	1136	BH5			1		
MAG-038			020712	1510	Inner Harbor Dup			1		
MAG-012			010712	1726	BH3			1		

POC22-0CC-12

Relinquished by: [signature]	**Date/Time:** 13-July-12 1630	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

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Attn:
Phone: 781-952-5200

Project Number: **Project Name:** Waukegan Harbor AOC **Samplers:** POS/RSC

Field Sample ID		Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-016			100712	1312	North Harbor	Water	Soft Algae Phytoplankton	1	1L Nalgene Bottle	Formalin
MAG-028			110712	0810	Outer Harbor	↓		1	↓	
MAG-022			100712	1543	Inner Harbor	↓		1	↓	

Relinquished by:	**Date/Time:** 1307 Jul-12 1630	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

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Attn:
Phone: 781-952-5200

Project Number:

Project Name: Waukegan Harbor AOC

Samplers: PDS/RSC

Field Sample ID		Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Matrix	Analysis[1]	No. of Containers	Container Type	Preservative[2]
MAG-041			110712	1654	Inner Harbor Dup	water	Benthos Community	1	1 L [illegible]	immediate
MAG-019			100712	1351	North Harbor			1		
MAG-025			100712	1641	Inner Harbor			1		
MAG-035			110712	1230	Mouth			1		
MAG-033			110712	1105	Entire channel			1		
MAG-031			110712	0908	Outer Harbor			1		
MAG-005			090712	1518	BH1			1		
MAG-060			120712	1240	BH5			1		
MAG-061			~~01~~ 120712	1458	BH1Dup			1		
MAG-062			120712	1650	BH3			1		
MAG-064			130712	1245	BH4			1		
~~MAG-063~~ MAG-0150	PDS 15-Oct-12		130712	~~0930~~ PDS 22-Oct-12	BH2			1		

Relinquished by: Paul Schlaf	**Date/Time:** 13-July-12 1635	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Relinquished by:	**Date/Time:**	**Received by:**	**Date/Time:**
Comments:			

[1] If a sample consists of multiple containers for varying analysis, list analysis on separate lines.

White – **Original** Yellow – **Lab Copy** Pink – **Field Copy**

[2] Preservation Codes: F = Frozen, C = Chilled, if preserving with acid note specific acid used (i.e HCl, HNO_3).

APPENDIX B

SITE PHOTOS

Outer Harbor-July

North

East

South

West

Entrance Channel-July

North

East

South

West

Marina-July

North

East

South

West

Inner Harbor-July

North

East

South

West

Inner Harbor Dup-July

North

East

South

West

North Harbor-July

North

East

South

West

BH1-July

North

East

South

West

BH1 Dup-July

North

East

South

West

BH2-July

North

East

South

West

BH3-July

North

East

South

West

BH4-July

North

East

South

West

BH5-July

North

East

South

West

Outer Harbor-August

North

East

South

West

Entrance Channel-August

North

East

South

West

Marina-August

North

East

South

West

Inner Harbor-August

North

East

South

West

Inner Harbor Dup-August

North

East

South

West

North Harbor-August

North

East

South

West

BH1-August

North

East

South

West

BH1 Dup-August

North

East

South

West

BH2-August

North

East

South

West

BH3-August

North

East

South

West

BH4-August

North

East

South

West

BH5-August

North

East

South

West

APPENDIX C

PLANKTON DATA

Appendix C: Rotifera Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units	Comments
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Copepoda	Copepod Nauplii	Calanoid		#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid		#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Rotifera	Rotifera	Asplanchna sp.	3	#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Rotifera	Rotifera	Filinia sp.		#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Rotifera	Rotifera	Kellicotia sp.		#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Rotifera	Rotifera	Keratella sp.	9	#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-004	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.16022222	Rotifer	Rotifera	Rotifera	Polyarthra sp.	2	#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Copepoda	Copepod Nauplii	Calanoid	1	#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid		#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Rotifera	Rotifera	Asplanchna sp.	3	#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Rotifera	Rotifera	Filinia sp.		#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Rotifera	Rotifera	Kellicotia sp.	2	#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Rotifera	Rotifera	Keratella sp.	10	#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-010	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Rotifer	Rotifera	Rotifera	Polyarthra sp.	5	#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Copepoda	Copepod Nauplii	Calanoid		#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	1	#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Rotifera	Rotifera	Asplanchna sp.		#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Rotifera	Rotifera	Filinia sp.		#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Rotifera	Rotifera	Kellicotia sp.		#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Rotifera	Rotifera	Keratella sp.	11	#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-014	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Rotifer	Rotifera	Rotifera	Polyarthra sp.	6	#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Copepoda	Copepod Nauplii	Calanoid	2	#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	2	#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Rotifera	Rotifera	Asplanchna sp.		#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Rotifera	Rotifera	Filinia sp.		#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Rotifera	Rotifera	Kellicotia sp.		#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Rotifera	Rotifera	Keratella sp.	2	#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-018	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Rotifer	Rotifera	Rotifera	Polyarthra sp.	1	#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Copepoda	Copepod Nauplii	Calanoid	3	#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	2	#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Rotifera	Rotifera	Asplanchna sp.		#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Rotifera	Rotifera	Filinia sp.		#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Rotifera	Rotifera	Kellicotia sp.		#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Rotifera	Rotifera	Keratella sp.	3	#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-024	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Rotifer	Rotifera	Rotifera	Polyarthra sp.	1	#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Copepoda	Copepod Nauplii	Calanoid	2	#/L	

Appendix C: Rotifera Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units	Comments
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	2	#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Rotifera	Rotifera	Asplanchna sp.		#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Rotifera	Rotifera	Filinia sp.		#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Rotifera	Rotifera	Kellicotia sp.		#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Rotifera	Rotifera	Keratella sp.	3	#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-030	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Rotifer	Rotifera	Rotifera	Polyarthra sp.	7	#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Copepoda	Copepod Nauplii	Calanoid		#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	1	#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Rotifera	Rotifera	Asplanchna sp.		#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Rotifera	Rotifera	Filinia sp.		#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Rotifera	Rotifera	Kellicotia sp.		#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Rotifera	Rotifera	Keratella sp.		#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-040	Waukegan	Inner Harbor Dup	11-Jul-12	3:15:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Rotifer	Rotifera	Rotifera	Polyarthra sp.	3	#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Copepoda	Copepod Nauplii	Calanoid	2	#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	1	#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Rotifera	Rotifera	Asplanchna sp.	2	#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Rotifera	Rotifera	Brachionus sp.		#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Rotifera	Rotifera	Filinia sp.	2	#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Rotifera	Rotifera	Kellicotia sp.		#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Rotifera	Rotifera	Keratella sp.	26	#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Rotifera	Rotifera	Pleosoma sp.		#/L	
MAG-046	Burns	BH5	12-Jul-12	11:30:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Rotifer	Rotifera	Rotifera	Polyarthra sp.	25	#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Copepoda	Copepod Nauplii	Calanoid	2	#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid		#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Rotifera	Rotifera	Asplanchna		#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Rotifera	Rotifera	Filinia	1	#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Rotifera	Rotifera	Keratella	31	#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Rotifera	Rotifera	Pleosoma		#/L	
MAG-073	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Rotifer	Rotifera	Rotifera	Polyarthra	18	#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Copepoda	Copepod Nauplii	Calanoid	2	#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid		#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Rotifera	Rotifera	Asplanchna	6	#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Rotifera	Rotifera	Filinia		#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Rotifera	Rotifera	Keratella	26	#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Rotifera	Rotifera	Pleosoma	1	#/L	
MAG-079	Burns	BH1 Dup	13-Aug-12	11:49:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Rotifer	Rotifera	Rotifera	Polyarthra	84	#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Copepoda	Copepod Nauplii	Calanoid	4	#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid		#/L	

Appendix C: Rotifera Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units	Comments
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Rotifera	Rotifera	Asplanchna		#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Rotifera	Rotifera	Filinia		#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Rotifera	Rotifera	Keratella	36	#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Rotifera	Rotifera	Pleosoma	1	#/L	
MAG-086	Burns	BH3	13-Aug-12	2:36:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Rotifer	Rotifera	Rotifera	Polyarthra	91	#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Copepoda	Copepod Nauplii	Calanoid	3	#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	1	#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Rotifera	Rotifera	Asplanchna	1	#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Rotifera	Rotifera	Filinia		#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Rotifera	Rotifera	Keratella	14	#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Rotifera	Rotifera	Pleosoma		#/L	
MAG-095	Burns	BH5	13-Aug-12	4:57:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Rotifer	Rotifera	Rotifera	Polyarthra	20	#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Copepoda	Copepod Nauplii	Calanoid	1	#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	1	#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Rotifera	Rotifera	Asplanchna	1	#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Rotifera	Rotifera	Filinia	1	#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Rotifera	Rotifera	Keratella	43	#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Rotifera	Rotifera	Pleosoma		#/L	
MAG-101	Waukegan	Outer Harbor	14-Aug-12	11:31:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Rotifer	Rotifera	Rotifera	Polyarthra	50	#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Copepoda	Copepod Nauplii	Calanoid	12	#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	4	#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Rotifera	Rotifera	Asplanchna	4	#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Rotifera	Rotifera	Filinia	1	#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Rotifera	Rotifera	Keratella	4	#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Rotifera	Rotifera	Pleosoma		#/L	
MAG-109	Waukegan	Inner Harbor	14-Aug-12	1:48:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Rotifer	Rotifera	Rotifera	Polyarthra	23	#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Copepoda	Copepod Nauplii	Calanoid	9	#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	6	#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Rotifera	Rotifera	Asplanchna	4	#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Rotifera	Rotifera	Filinia		#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Rotifera	Rotifera	Keratella	3	#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Rotifera	Rotifera	Pleosoma		#/L	
MAG-115	Waukegan	Inner Harbor Dup	14-Aug-12	3:23:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Rotifer	Rotifera	Rotifera	Polyarthra	86	#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Copepoda	Copepod Nauplii	Calanoid		#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Copepoda	Copepod Nauplii	Cyclopoid	3	#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Rotifera	Rotifera	Asplanchna	4	#/L	

Appendix C: Rotifera Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units	Comments
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Rotifera	Rotifera	Brachionus		#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Rotifera	Rotifera	Filinia		#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Rotifera	Rotifera	Kellicotia		#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Rotifera	Rotifera	Keratella	2	#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Rotifera	Rotifera	Pleosoma		#/L	
MAG-121	Waukegan	North Harbor	14-Aug-12	5:18:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Rotifer	Rotifera	Rotifera	Polyarthra	4	#/L	

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	12435	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	8	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	33	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Leptodora kindti	8	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus	16	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	130	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Calanoida	Epischura lacustris	16	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Calanoida	Eurytemora affinis		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis	98	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites	81	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	33	#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus		#/m^3
MAG-001	Burns	BH1	9-Jul-12	12:31:00 PM	486654.80	4609042.34	41.633	-87.16022222	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	65	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	5590	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris	4	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	19	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus		#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva	16	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	8	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Leptodora kindti	16	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus	33	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	114	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Calanoida	Epischura lacustris	4	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Calanoida	Eurytemora affinis		#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	49	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis	4	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis	33	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis		#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites	16	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	114	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	8	#/m^3
MAG-007	Burns	BH1 Dup	9-Jul-12	3:43:00 PM	486638.63	4609051.62	41.6330833	-87.16041667	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	155	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	3048	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi		#/m^3

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	8	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Leptodora kindti	4	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Calanoida	Epischura lacustris	16	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Calanoida	Eurytemora affinis		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis	8	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	16	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	24	#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus		#/m^3
MAG-011	Burns	BH3	9-Jul-12	4:49:00 PM	486895.25	4610213.80	41.6435556	-87.15736111	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	24	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	598	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	4	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Leptodora kindti		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus	4	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	4	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Calanoida	Epischura lacustris	48	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	91	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	9	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	35	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites	130	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	260	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis	4	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax	52	#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus		#/m^3
MAG-015	Waukegan	North Harbor	10-Jul-12	12:44:00 PM	432365.72	4690762.38	42.3661944	-87.82138889	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	22	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	579	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris	4	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi		#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus	4	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei		#/m^3

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Leptodora kindti		#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus	15	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	11	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Calanoida	Epischura lacustris	59	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	137	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi	4	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	15	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	148	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites	45	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	842	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis	7	#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus		#/m^3
MAG-021	Waukegan	Inner Harbor	10-Jul-12	3:18:00 PM	432246.47	4690495.17	42.3637778	-87.82280556	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	7	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	1906	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus	10	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	5	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Leptodora kindti		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus	10	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	182	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Calanoida	Epischura lacustris	10	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	10	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	5	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis	15	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	10	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites	172	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	5	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax	10	#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus		#/m^3
MAG-027	Waukegan	Outer Harbor	11-Jul-12	7:39:00 AM	433134.84	4690338.56	42.3624444	-87.812	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	40	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	575	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Leptodora kindti		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus	20	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	2	#/m^3

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Calanoida	Epischura lacustris	139	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	10	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi	3	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	17	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis	17	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	992	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites	773	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	2	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax	79	#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus		#/m^3
MAG-037	Waukegan	Inner Harbor Dup	11-Jul-12	2:32:00 PM	432185.07	4690532.78	42.3641111	-87.82355556	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	3	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	20109	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	169	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Chydorus sphaericus	38	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva	10	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	19	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Leptodora kindti	38	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus	172	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	38	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Calanoida	Epischura lacustris	153	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	29	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi	19	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	230	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis	19	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	19	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Cyclopoida	Cyclops copepodites	19	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	460	#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus		#/m^3
MAG-043	Burns	BH5	12-Jul-12	10:31:00 AM	487561.46	4610203.36	41.6434722	-87.14936111	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	19	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	1898	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	64	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Chydorus sp.		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	259	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Leptodora kindti	163	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	5	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Calanoida	Epischura lacustris	5	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	5	#/m^3

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	10	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	43	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	10	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	10	#/m^3
MAG-070	Burns	BH1	13-Aug-12	9:08:00 AM	486643.25	4609051.61	41.6330833	-87.16036111	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	38	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	1663	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	50	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Chydorus sp.		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva	3	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	111	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Leptodora kindti	101	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	20	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Calanoida	Epischura lacustris	5	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	5	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	20	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	10	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	5	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis	5	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	10	#/m^3
MAG-076	Burns	BH1 Dup	13-Aug-12	11:18:00 AM	486633.96	4609030.04	41.6328889	-87.16047222	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	30	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	834	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	1	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Chydorus sp.		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	64	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.	5	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Leptodora kindti	29	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	33	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Calanoida	Epischura lacustris	12	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Calanoida	Eurytemora affinis		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi	4	#/m^3

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	97	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	102	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	24	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	14	#/m^3
MAG-084	Burns	BH3	13-Aug-12	2:08:00 PM	486897.51	4610182.95	41.6432778	-87.15733333	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	102	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	717	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	12	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Chydorus sp.	10	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	62	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.	5	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Leptodora kindti	22	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	59	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Calanoida	Epischura lacustris	181	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	15	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi	5	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	270	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	5	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	158	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	20	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis	2	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	20	#/m^3
MAG-092	Burns	BH5	13-Aug-12	2:29:00 PM	487545.30	4610224.98	41.6436667	-87.14955556	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	171	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	10718	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	4	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Chydorus sp.		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Leptodora kindti	10	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	59	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Calanoida	Epischura lacustris	79	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	39	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	20	#/m^3

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	59	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	20	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	137	#/m^3
MAG-098	Waukegan	Outer Harbor	14-Aug-12	11:10:00 AM	433125.46	4690313.98	42.3622222	-87.81211111	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	59	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	48099	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	5	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Chydorus sp.		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Leptodora kindti	58	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Calanoida	Epischura lacustris		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	13776	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	233	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	233	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	5487	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	700	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	117	#/m^3
MAG-106	Waukegan	Inner Harbor	14-Aug-12	1:31:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	117	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	12065	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	5	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Chydorus sp.		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei	26	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Leptodora kindti	26	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites	26	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Calanoida	Epischura lacustris		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	1511	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3

Appendix C: Zooplankton
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	Species	Result	Units
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	78	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	1746	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	52	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	13	#/m^3
MAG-112	Waukegan	Inner Harbor Dup	14-Aug-12	2:56:00 PM	432196.57	4690538.84	42.3641667	-87.82341667	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	78	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Bosmina longirostris	59326	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Camptocercus rectirostris		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Cercopagis pengoi	4	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Chydorus sp.		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Daphnia retrocurva		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Diaphanosoma birgei		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Ilyocryptus sp.		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Leptodora kindti	272	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Cladocera	Cladocera	Polyphemus pediculus		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Calanoida	Diaptomus copepodites		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Calanoida	Epischura lacustris		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Calanoida	Eurytemora affinis	2721	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Calanoida	Leptodiaptomus ashlandi		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Calanoida	Leptodiaptomus minutus	136	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Calanoida	Leptodiaptomus sicilis		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Calanoida	Skistodiaptomus oregonensis		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Cyclopoida	Acanthocyclops vernalis	34	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Cyclopoida	Cyclopoid copepodites	2857	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Cyclopoida	Diacyclops thomasi	136	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Cyclopoida	Eucyclops agilis	136	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Cyclopoida	Mesocyclops edax		#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Cyclopoida	Tropocyclops prasinus mexicanus	136	#/m^3
MAG-118	Waukegan	North Harbor	14-Aug-12	4:53:00 PM	432354.17	4690750.15	42.3660833	-87.82152778	Zooplankton	Copepoda	Harpactacoida	Canthocamptus robertcokeri	272	#/m^3

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	56.07	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	5.34	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus sp.	10.68	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Rhizosoleniaceae	Urosolenia eriensis (Smith) Round et Crawford in Round, Crawford et Mann	0.02	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	1.71	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	1.71	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	2.85	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium peragalli (Brun et Héribaud) Round et Bukhtiyarova	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia amphibia Grunow	1.14	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	3.99	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	1.14	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	49.02	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma vulgaris Bory	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	7.41	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	1.14	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula gregaria Donkin	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria fenestrata (Lyngbye) Kützing	0.57	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	1.14	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon divergens Imhof	37.38	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sociale var. americana Bachmann	16.02	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	130.82	Cells/mL
MAG-003	Burns	BH1	9-Jul-12	1:50:00 PM	486654.80	4609042.34	41.633	-87.1602222	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.56	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	44.10	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chlorophyta	Chlorophyceae	Chlorellales	Chlorellaceae	Ankistrodesmus falcatus (Corda) Ralfs	8.34	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Rhizosoleniaceae	Urosolenia eriensis (Smith) Round et Crawford in Round, Crawford et Mann	4.77	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	2.16	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.72	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	7.93	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium rostratum (Østrup) Lange-Bertalot	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	5.04	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium rivulare Potapova et Ponader	0.72	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.72	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora ovalis (Kützing) Kützing	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	0.72	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	2.16	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	72.07	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	0.72	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	7.21	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	5.77	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema truncatum Ehrenberg	0.72	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Eolimna minima (Grunow) Lange-Bertalot	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula platystoma Ehrenberg	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	2.16	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	1.44	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	0.72	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon divergens Imhof	97.74	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sertularia Ehrenberg	11.92	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sociale var. americana Bachmann	47.68	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	344.46	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.12	Cells/mL
MAG-009	Burns	BH1 Dup	9-Jul-12	4:14:00 PM	486638.63	4609051.62	41.6330833	-87.1604167	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium sp.	3.58	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	57.82	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chlorophyta	Chlorophyceae	Chlorellales	Chlorellaceae	Ankistrodesmus falcatus (Corda) Ralfs	7.01	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus ecornis (Ralfs) Chodat	3.50	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	7.01	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chlorophyta	Chlorophyceae	Volvocales	Chlamydomonadaceae	Chlamydomonas sp.	0.88	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira ambigua (Grunow in Van Heurck) Simonsen	0.55	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Rhizosoleniaceae	Urosolenia eriensis (Smith) Round et Crawford in Round, Crawford et Mann	6.13	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella atomus Hustedt	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	2.77	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	1.38	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	1.66	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	11.61	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata radiosa (Lemmermann) Håkansson	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2.21	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	0.28	Cells/mL

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium frequentissimum (Lange-Bertalot in Krammer and Lange-Bertalot) Lange-Bertalot	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Platessa conspicua (Mayer) Lange-Bertalot in Krammer and Lange-Bertalot	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium eutrophilum (Lange-Bertalot in Lange-Bertalot and Metzeltin) Lange-Bertalot	0.83	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	3.87	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium rivulare Potapova et Ponader	2.77	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia lacuum Lange-Bertalot	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	0.55	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora ovalis (Kützing) Kützing	0.55	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	1.11	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	1.11	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	0.55	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis elginensis (Gregory) Cox	0.83	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	54.75	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma vulgaris Bory	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	24.06	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	0.55	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	2.49	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphoneis herculeana (Ehrenberg) Cleve	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema subclavatum (Grunow in Van Heurck) Grunow	0.55	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Cymbopleura naviculiformis (Auerswald) Krammer	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	1.94	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cari Ehrenberg	0.83	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rhynchocephala Kützing	1.11	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	0.55	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Neidiaceae	Neidium densestriatum (Østrup) Krammer in Krammer and Lange-Bertalot	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pleurosigmataceae	Gyrosigma spencerii (Smith) Griffith et Henfrey	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella angusta Kützing	0.28	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon divergens Imhof	12.26	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sociale var. americana Bachmann	6.13	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Kephyrion sp.	5.26	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	183.96	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Cyanophyta	Myxophyceae	Nostocales	Nostocaceae	Anabaena sp.	4.38	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Phormidiaceae	Planktothrix sp.	32.41	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.18	Cells/mL
MAG-013	Burns	BH3	9-Jul-12	5:20:00 PM	486895.25	4610213.80	41.6435556	-87.1573611	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium sp.	7.01	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	14.11	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira muzzanensis (Meister) Krammer	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira sp. 1 ?	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Melosiraceae	Melosira varians Agardh	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	1.23	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	0.53	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella schumanni (Grunow) Håkansson	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii fo. tenuis (Hustedt) Håkansson et Stoermer	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	0.53	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	4.92	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis neodiminuta Krammer	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	2.28	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	1.76	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia gracilis Hantzsch in Rabenhorst	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia heufleriana Grunow	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia inconspicua Grunow	0.53	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia liebethruthii Rabenhorst	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	1.41	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	2.46	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.88	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Ctenophora pulchella (Ralfs ex Kützing) Williams et Round	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	5.27	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	1.23	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	0.35	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella leptostauron (Ehrenberg) Williams et Round	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra rumpens Kützing	0.88	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Tabularia fasciculata (Agardh) Williams et Round	0.53	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema angustatum (Kützing) Rabenhorst	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema olivaceum (Lyngbye) Kützing	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema parvulum (Kützing) Kützing	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema pumilum var. elegans Reichardt et Lange-Bertalot in Reichardt	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema truncatum Ehrenberg	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Eolimna minima (Grunow) Lange-Bertalot	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	3.51	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta sp. 1 ?	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	1.05	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula platystoma Ehrenberg	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	0.53	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rhynchocephala Kützing	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	0.35	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Neidiaceae	Neidium densestriatum (Østrup) Krammer in Krammer and Lange-Bertalot	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pinnulariaceae	Caloneis silicula (Ehrenberg) Cleve	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pleurosigmataceae	Gyrosigma spencerii (Smith) Griffith et Henfrey	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	0.53	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora seminulum (Grunow) Mann	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Stauroneidaceae	Craticula cuspidata (Kützing) Mann in Round, Crawford and Mann	0.18	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria fenestrata (Lyngbye) Kützing	0.70	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	3.51	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sertularia Ehrenberg	3.34	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sociale var. americana Bachmann	4.83	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Phormidiaceae	Phormidium sp.	28.87	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	14.11	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.09	Cells/mL
MAG-017	Waukegan	North Harbor	10-Jul-12	1:12:00 PM	432365.72	4690762.38	42.3661944	-87.8213889	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium sp.	8.17	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	5.40	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	4.32	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira valida (Grunow in Van Heurck) Krammer	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Melosiraceae	Melosira varians Agardh	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	4.10	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	0.82	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii fo. tenuis (Hustedt) Håkansson et Stoermer	1.84	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	0.82	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	1.23	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	1.02	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.82	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	12.30	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata radiosa (Lemmermann) Håkansson	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	1.84	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	1.64	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	2.87	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium rivulare Potapova et Ponader	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia heufleriana Grunow	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia liebethruthii Rabenhorst	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	5.33	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema minutum (Hilse in Rabenhorst) Mann in Round, Crawford and Mann	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema prostratum (Berkeley) Ralfs	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	0.82	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Eunotiaceae	Eunotia bilunaris (Ehrenberg) Souza in Souza and Moreira-Filho	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma vulgaris Bory	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	5.74	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria mesolepta Rabenhorst	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	3.07	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	1.84	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	1.23	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra rumpens Kützing	1.64	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Tabularia fasciculata (Agardh) Williams et Round	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema mexicanum Grunow in Van Heurck	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema olivaceoides Hustedt	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema pumilum var. elegans Reichardt et Lange-Bertalot in Reichardt	0.82	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Reimeria sinuata (Gregory) Kociolek et Stoermer	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Adlafia bryophila (Petersen) Moser, Lange-Bertalot et Metzeltin	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	6.76	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula platystoma Ehrenberg	1.23	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	0.61	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	1.23	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula sp. 1 ?	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	1.02	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Encyonopsis microcephala (Grunow) Krammer	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Nupela neglecta Ponader, Lowe et Potapova in Potapova et al.	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora seminulum (Grunow) Mann	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	0.20	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria fenestrata (Lyngbye) Kützing	0.41	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	2.25	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Oscillatoriaceae	Oscillatoria sp.	5.04	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Phormidiaceae	Phormidium sp.	7.92	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	0.36	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.17	Cells/mL
MAG-023	Waukegan	Inner Harbor	10-Jul-12	3:43:00 PM	432246.47	4690495.17	42.3637778	-87.8228056	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium inconspicuum Lemmermann	0.72	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	25.56	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus spinosus Chodat	0.96	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chlorophyta	Chlorophyceae	Zygnematales	Zygnemataceae	Mougeotia sp.	0.03	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Rhizosoleniaceae	Urosolenia eriensis (Smith) Round et Crawford in Round, Crawford et Mann	0.02	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	7.05	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	3.02	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	2.52	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	62.91	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata radiosa (Lemmermann) Håkansson	2.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	4.03	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	4.53	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium rostratum (Østrup) Lange-Bertalot	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia liebethruthii Rabenhorst	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	1.51	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Berkeleyaceae	Parlibellus crucicula (Smith) Witkowski, Lange-Bertalot et Metzeltin	1.51	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora ovalis (Kützing) Kützing	1.51	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	4.53	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis elginensis (Gregory) Cox	3.02	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Entomoneidaceae	Entomoneis alata (Ehrenberg) Ehrenberg	3.02	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria mesolepta Rabenhorst	1.51	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	5.03	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	8.05	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella leptostauron (Ehrenberg) Williams et Round	1.51	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	2.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Tabularia fasciculata (Agardh) Williams et Round	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphoneis herculeana (Ehrenberg) Cleve	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema angustatum (Kützing) Rabenhorst	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema olivaceoides Hustedt	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema olivaceum (Lyngbye) Kützing	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Reimeria uniseriata Sala, Guerrero et Ferrario	1.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	16.10	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	2.52	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.50	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula platystoma Ehrenberg	4.53	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	1.51	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	1.51	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula sp. 1 ?	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	4.03	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pinnulariaceae	Caloneis silicula (Ehrenberg) Cleve	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pleurosigmataceae	Gyrosigma spencerii (Smith) Griffith et Henfrey	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	2.01	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	3.02	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora seminulum (Grunow) Mann	0.50	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Kephyrion sp.	54.02	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Pseudanabaenaceae	Pseudanabaena sp.	170.26	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.02	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium inconspicuum Lemmermann	2.89	Cells/mL
MAG-029	Waukegan	Outer Harbor	11-Jul-12	8:10:00 AM	433134.84	4690338.56	42.3624444	-87.812	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium sp.	0.48	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	80.11	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	5.62	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chlorophyta	Chlorophyceae	Zygnematales	Zygnemataceae	Mougeotia sp.	3.51	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira ambigua (Grunow in Van Heurck) Simonsen	0.35	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira muzzanensis (Meister) Krammer	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira valida (Grunow in Van Heurck) Krammer	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Melosiraceae	Melosira varians Agardh	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella atomus Hustedt	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	4.04	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	0.88	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii fo. tenuis (Hustedt) Håkansson et Stoermer	1.05	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	0.70	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.53	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	11.16	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	0.35	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	1.67	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.35	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	2.72	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium rivulare Potapova et Ponader	0.44	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.35	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia capitellata Hustedt in A. Schmidt	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	0.35	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia gracilis Hantzsch in Rabenhorst	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia heufleriana Grunow	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia sociabilis Hustedt	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia subtilis (Kützing) Grunow in Cleve and Grunow	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Berkeleyaceae	Parlibellus crucicula (Smith) Witkowski, Lange-Bertalot et Metzeltin	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.44	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	2.64	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Cymbella turgidula Grunow in Schmidt	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.53	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Entomoneidaceae	Entomoneis alata (Ehrenberg) Ehrenberg	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Eunotiaceae	Eunotia bilunaris (Ehrenberg) Souza in Souza and Moreira-Filho	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.97	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Ctenophora pulchella (Ralfs ex Kützing) Williams et Round	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	1.14	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma vulgaris Bory	0.35	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	2.81	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria mesolepta Rabenhorst	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	1.76	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. binodis (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	0.44	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella leptostauron (Ehrenberg) Williams et Round	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	1.05	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra rumpens Kützing	0.79	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Tabularia fasciculata (Agardh) Williams et Round	0.44	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema parvulum (Kützing) Kützing	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	0.35	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	2.64	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.35	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.53	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula libonensis Schoeman	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula platystoma Ehrenberg	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	0.26	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reinhardtii (Grunow) Grunow	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula veneta Kützing	0.35	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Neidiaceae	Neidium densestriatum (Østrup) Krammer in Krammer and Lange-Bertalot	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pinnulariaceae	Caloneis bacillum (Grunow) Cleve	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.53	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora seminulum (Grunow) Mann	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Stauroneidaceae	Craticula accomoda (Hustedt) Mann in Round, Crawford and Mann	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Stauroneidaceae	Craticula cuspidata (Kützing) Mann in Round, Crawford and Mann	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Cymatopleura solea var. apiculata (Smith) Ralfs in Pritchard	0.18	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria fenestrata (Lyngbye) Kützing	0.09	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	1.76	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (strain IV) sensu Koppen (Roth) Kützing	0.44	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sociale var. americana Bachmann	3.51	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Oscillatoriaceae	Oscillatoria sp.	126.49	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Phormidiaceae	Phormidium sp.	8.43	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	5.62	Cells/mL
MAG-039	Waukegan	Inner Harbor Dup	11-Jul-12	3:11:00 PM	432185.07	4690532.78	42.3641111	-87.8235556	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.16	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	70.23	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	7.20	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus sp.	4.80	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Rhizosoleniaceae	Urosolenia eriensis (Smith) Round et Crawford in Round, Crawford et Mann	7.20	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	2.03	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	0.76	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.76	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	15.24	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata radiosa (Lemmermann) Håkansson	0.76	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium oestrupii (Cleve-Euler) Edlund in Edlund, Soninkhishig, Williams and Stoermer	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	1.27	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	1.02	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	0.76	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis parma Cleve	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	59.96	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	0.76	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella leptostauron (Ehrenberg) Williams et Round	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	4.83	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra rumpens Kützing	1.02	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula platystoma Ehrenberg	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rhynchocephala Kützing	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula sp. 1 ?	0.51	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pleurosigmataceae	Gyrosigma spencerii (Smith) Griffith et Henfrey	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora laevissima (Kützing) Mann	0.25	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon divergens Imhof	7.20	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon sociale var. americana Bachmann	1.80	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	196.88	Cells/mL
MAG-045	Burns	BH5	12-Jul-12	11:29:00 AM	487561.46	4610203.36	41.6434722	-87.1493611	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Pseudanabaenaceae	Pseudanabaena sp.	14.41	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	58.12	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chlorophyta	Chlorophyceae	Chlorellales	Chlorellaceae	Ankistrodesmus falcatus (Corda) Ralfs	6.71	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Hydrodictyaceae	Pediastrum boryanum (Turpin) Meneghini	0.82	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Coelastrum microporum Nägeli	0.82	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus acutus Meyen	8.94	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	53.65	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chlorophyta	Chlorophyceae	Zygnematales	Zygnemataceae	Mougeotia sp.	8.94	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Rhizosoleniaceae	Urosolenia eriensis (Smith) Round et Crawford in Round, Crawford et Mann	20.12	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	9.94	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	5.26	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	1.75	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	2.34	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	227.53	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata radiosa (Lemmermann) Håkansson	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis neodiminuta Krammer	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium rostratum (Østrup) Lange-Bertalot	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	1.75	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia compressa var. vexans (Grunow) Lange-Bertalot in Lange-Bertalot and Krammer	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	2.92	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	4.09	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia liebethruthii Rabenhorst	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia microcephala Grunow	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	1.75	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	4.68	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	2.34	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	32.76	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	2.92	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	8.19	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	4.68	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	6.43	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	3.51	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra ulna var. ramesi (Héribaud) Hustedt	2.34	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Eolimna minima (Grunow) Lange-Bertalot	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	4.09	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula canalis Patrick	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula lanceolata (Agardh) Kützing	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	1.17	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Neidiaceae	Neidium binodeforme Krammer in Krammer and Lange-Bertalot	1.17	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pinnulariaceae	Caloneis bacillum (Grunow) Cleve	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	2.34	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Cymatopleura solea var. apiculata (Smith) Ralfs in Pritchard	0.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	1667.58	Cells/mL
MAG-072	Burns	BH1	13-Aug-12	10:00:00 AM	486643.25	4609051.61	41.6330833	-87.1603611	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	2.24	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	70.77	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus acutus Meyen	3.45	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus bicaudatus (Hansgirg) Chodat	5.18	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	37.98	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira ambigua (Grunow in Van Heurck) Simonsen	0.80	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	3.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella meduanae Germain	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	0.80	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.60	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	73.58	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata radiosa (Lemmermann) Håkansson	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	1.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium pyrenaicum (Hustedt) Kobayashi	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.80	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	0.60	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	1.60	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia microcephala Grunow	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia pusilla Grunow	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis elginensis (Gregory) Cox	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	9.80	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	1.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	4.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	3.60	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	1.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	0.80	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	0.40	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema pumilum var. elegans Reichardt et Lange-Bertalot in Reichardt	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	3.80	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	1.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.60	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Fallacia lenzii (Hustedt) Lange-Bertalot in Werum and Lange-Bertalot	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora laevissima (Kützing) Mann	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.80	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora seminulum (Grunow) Mann	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	0.40	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (strain IV) sensu Koppen (Roth) Kützing	0.20	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	113.07	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Pseudanabaenaceae	Pseudanabaena sp.	208.87	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	1.73	Cells/mL
MAG-077	Burns	BH1 Dup	13-Aug-12	11:47:00 AM	486633.96	4609030.04	41.6328889	-87.1604722	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium inconspicuum Lemmermann	5.18	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	25.30	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Chlorellales	Chlorellaceae	Ankistrodesmus falcatus (Corda) Ralfs	0.79	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Hydrodictyaceae	Pediastrum boryanum (Turpin) Meneghini	0.82	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Micractiniaceae	Golenkinia radiata Wille	0.79	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Actinastrum hantzschii Lagerheim	6.32	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	33.20	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus sp.	6.32	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus spinosus Chodat	3.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Volvocales	Chlamydomonadaceae	Chlamydomonas sp.	2.37	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chlorophyta	Chlorophyceae	Zygnematales	Zygnemataceae	Mougeotia sp.	1.58	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira italica (Ehrenberg) Simonsen	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	2.51	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella meneghiniana Kützing	0.47	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	0.31	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.47	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	0.47	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	51.27	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis neodiminuta Krammer	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.16	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium frequentissimum (Lange-Bertalot in Krammer and Lange-Bertalot) Lange-Bertalot	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	0.47	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.94	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.94	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	1.57	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia gracilis Hantzsch in Rabenhorst	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia lacuum Lange-Bertalot	0.78	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.63	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.31	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia sp. 1 ?	0.31	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	1.10	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Berkeleyaceae	Parlibellus crucicula (Smith) Witkowski, Lange-Bertalot et Metzeltin	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora ovalis (Kützing) Kützing	0.31	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	1.72	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	12.23	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	2.20	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	2.20	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	2.51	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	1.72	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	0.63	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella leptostauron (Ehrenberg) Williams et Round	0.63	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella martyi (Héribaud) Morales et Manoylov	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	0.63	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Cymbopleura naviculiformis (Auerswald) Krammer	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	0.94	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.63	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.63	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.94	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	0.31	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.31	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Encyonopsis microcephala (Grunow) Krammer	0.16	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Fallacia pygmaea (Kützing) Stickle et Mann in Round, Crawford and Mann	0.31	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.47	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	671.18	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Pseudanabaenaceae	Pseudanabaena sp.	96.45	Cells/mL
MAG-087	Burns	BH3	13-Aug-12	2:33:00 PM	486897.51	4610182.95	41.6432778	-87.1573333	Diatoms	Pyrrhophyta	Dinophyceae	Blastodiniales	Ceratiaceae	Ceratium hirundinella (Möller) Dujardin	0.03	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	13.94	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus acuminatus (Lagerheim) Chodat	3.49	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	26.14	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chlorophyta	Chlorophyceae	Desmidiales	Desmidiaceae	Cosmarium sp.	0.58	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chlorophyta	Chlorophyceae	Zygnematales	Zygnemataceae	Mougeotia sp.	2.32	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira pusilla (Meister) Tuji et Houki	0.60	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	4.56	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	2.58	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.79	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	66.49	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata radiosa (Lemmermann) Håkansson	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	1.59	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia lacuum Lange-Bertalot	0.60	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia liebethruthii Rabenhorst	0.79	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia microcephala Grunow	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora ovalis (Kützing) Kützing	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	1.98	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	0.79	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis elginensis (Gregory) Cox	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Diploneidaceae	Diploneis marginestriata Hustedt	3.77	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	1.79	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	2.18	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria mesolepta Rabenhorst	0.60	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	3.77	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	3.77	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	1.59	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Pseudostaurosira parasitica (Smith) Morales	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	1.79	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	1.19	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	1.59	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	1.79	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula canalis Patrick	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula capitatoradiata Germain	0.79	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	1.19	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	3.57	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	0.60	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.40	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Encyonopsis microcephala (Grunow) Krammer	0.60	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pinnulariaceae	Caloneis silicula (Ehrenberg) Cleve	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pleurosigmataceae	Gyrosigma acuminatum (Kützing) Rabenhorst	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.60	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella angusta Kützing	0.20	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon divergens Imhof	5.81	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Cyanophyta	Myxophyceae	(undetermined)	(undetermined)	Unknown Cyanophyte Pseudanabaenaceae	316.00	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Cyanophyta	Myxophyceae	Chroococcales	Merismopediaceae	Merismopedia tenuissima Lemmermann	9.29	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	2.90	Cells/mL
MAG-094	Burns	BH5	13-Aug-12	4:54:00 PM	487545.30	4610224.98	41.6436667	-87.1495556	Diatoms	Pyrrhophyta	Dinophyceae	Peridiniales	Peridiniaceae	Peridinium sp.	0.58	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	27.69	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	2.71	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella meneghiniana Kützing	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	1.16	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.77	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	36.35	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis neodiminuta Krammer	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	8.90	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	0.58	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Platessa conspicua (Mayer) Lange-Bertalot in Krammer and Lange-Bertalot	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Psammothidium bioretii (Germain) Bukhtiyarova et Round	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium eutrophilum (Lange-Bertalot in Lange-Bertalot and Metzeltin) Lange-Bertalot	0.77	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	3.67	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Bacillaria paradoxa Gmelin	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	1.93	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	0.58	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	1.16	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia heufleriana Grunow	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia liebethruthii Rabenhorst	0.77	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.58	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.58	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia solita Hustedt	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora ovalis (Kützing) Kützing	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	2.51	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	6.57	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema silesiacum (Bleisch in Rabenhorst) Mann in Round, Crawford and Mann	1.16	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Entomoneidaceae	Entomoneis alata (Ehrenberg) Ehrenberg	0.77	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	0.58	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	1.16	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	2.32	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	1.93	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	3.48	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	4.45	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula gregaria Donkin	0.77	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.97	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula platystoma Ehrenberg	0.58	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	1.16	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula sp. 1 ?	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula veneta Kützing	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Encyonopsis microcephala (Grunow) Krammer	2.71	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	1.35	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Stauroneidaceae	Craticula molestiformis (Hustedt) Mayama	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella angusta Kützing	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	0.39	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (strain IV) sensu Koppen (Roth) Kützing	0.19	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Kephyrion sp.	1.60	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Cryptophyta	(Undetermined)	(Undetermined)	(Undetermined)	Unknown Cryptophyte alga	1.60	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Cyanophyta	Myxophyceae	Oscillatoriales	Phormidiaceae	Phormidium sp.	11.72	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Cyanophyta	Myxophyceae	Oscillatoriales	Pseudanabaenaceae	Pseudanabaena sp.	38.34	Cells/mL
MAG-099	Waukegan	Outer Harbor	14-Aug-12	11:22:00 AM	433125.46	4690313.98	42.3622222	-87.8121111	Phytoplankton	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	3.20	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	12.50	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Hydrodictyaceae	Pediastrum duplex Meyen	0.22	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	5.56	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus sp.	1.85	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus spinosus Chodat	2.78	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Aulacoseiraceae	Aulacoseira valida (Grunow in Van Heurck) Krammer	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella atomus Hustedt	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	0.50	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii fo. tenuis (Hustedt) Håkansson et Stoermer	0.36	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	0.65	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.50	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	0.65	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	6.89	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis neodiminuta Krammer	0.22	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	1.58	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	0.43	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.29	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Planothidium rostratum (Østrup) Lange-Bertalot	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium altergracillima (Lange-Bertalot) Round et Bukhtiyarova	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium exiguum (Grunow in Cleve and Grunow) Czarnecki	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	3.52	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium rivulare Potapova et Ponader	0.36	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia capitellata Hustedt in A. Schmidt	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	0.65	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	0.72	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia gracilis Hantzsch in Rabenhorst	0.22	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia lacuum Lange-Bertalot	0.57	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.50	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia paleacea Grunow in Van Heurck	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.57	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia solita Hustedt	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	0.57	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	1.51	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	0.36	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema minutum (Hilse in Rabenhorst) Mann in Round, Crawford and Mann	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis elginensis (Gregory) Cox	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Entomoneidaceae	Entomoneis alata (Ehrenberg) Ehrenberg	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Entomoneidaceae	Entomoneis paludosa (Smith) Reimer in Patrick and Reimer	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.29	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Ctenophora pulchella (Ralfs ex Kützing) Williams et Round	0.43	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	0.50	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma vulgaris Bory	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.65	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria mesolepta Rabenhorst	0.72	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	1.22	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	1.22	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Pseudostaurosira brevistriata (Grunow in Van Heurck) Williams et Round	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosira construens var. venter (Ehrenberg) Hamilton in Hamilton, Poulin, Charles and Angell	0.43	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	0.72	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra rumpens Kützing	2.73	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Tabularia fasciculata (Agardh) Williams et Round	0.29	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema parvulum (Kützing) Kützing	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema pumilum var. elegans Reichardt et Lange-Bertalot in Reichardt	0.29	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Reimeria uniseriata Sala, Guerrero et Ferrario	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Eolimna minima (Grunow) Lange-Bertalot	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	1.36	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	1.15	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.65	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.72	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula gregaria Donkin	0.29	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.29	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula radiosa Kützing	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	0.57	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.22	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula sp. 1 ?	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula trivialis Lange-Bertalot	0.14	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Encyonopsis microcephala (Grunow) Krammer	0.50	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	0.43	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Fallacia lenzii (Hustedt) Lange-Bertalot in Werum and Lange-Bertalot	0.14	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Fallacia tenera (Hustedt in Schmidt et al.) Mann in Round, Crawford and Mann	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.72	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Cymatopleura solea var. apiculata (Smith) Ralfs in Pritchard	0.07	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	0.36	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	1.22	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon bavaricum Imhof	3.24	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Pseudanabaenaceae	Pseudanabaena sp.	3.24	Cells/mL
MAG-108	Waukegan	Inner Harbor	14-Aug-12	1:45:00 PM	432260.17	4690491.95	42.36375	-87.8226389	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	0.13	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	19.64	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus denticulatus Kirchner	7.31	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Scenedesmaceae	Scenedesmus quadricauda (Turpin) Brébisson	12.79	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Melosiraceae	Melosira varians Agardh	1.20	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella ocellata Pantocsek	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii fo. tenuis (Hustedt) Håkansson et Stoermer	0.68	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	0.68	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	1.20	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	15.21	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	2.56	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Karayevia clevei (Grunow in Cleve and Grunow) Bukhtiyarova	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	7.35	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia capitellata Hustedt in A. Schmidt	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia compressa var. vexans (Grunow) Lange-Bertalot in Lange-Bertalot and Krammer	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	1.88	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	1.03	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia gracilis Hantzsch in Rabenhorst	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia heufleriana Grunow	0.68	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia inconspicua Grunow	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia lacuum Lange-Bertalot	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia liebethruthii Rabenhorst	0.68	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia pura Hustedt	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia sociabilis Hustedt	0.34	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia solita Hustedt	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia subtilis (Kützing) Grunow in Cleve and Grunow	0.68	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Tryblionella hungarica (Grunow) Frenguelli	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Brachysiraceae	Brachysira microcephala (Kützing) Compère	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora ovalis (Kützing) Kützing	0.85	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora pediculus (Kützing) Grunow in A. Schmidt	1.71	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	1.03	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema minutum (Hilse in Rabenhorst) Mann in Round, Crawford and Mann	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Ctenophora pulchella (Ralfs ex Kützing) Williams et Round	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	1.88	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	3.59	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria mesolepta Rabenhorst	2.05	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	3.08	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	1.20	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra rumpens Kützing	2.05	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Ulnaria ulna (Nitzsch) Compére	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema drutelingense Reichardt	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	2.39	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	0.68	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	0.68	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula antonii Lange-Bertalot in U. Rumrich, Lange-Bertalot and M. Rumrich	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptocephala Kützing	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.85	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula oppugnata Hustedt	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	1.71	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula sp. 1 ?	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula veneta Kützing	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Neidiaceae	Neidium binodeforme Krammer in Krammer and Lange-Bertalot	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Encyonopsis microcephala (Grunow) Krammer	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pinnulariaceae	Caloneis bacillum (Grunow) Cleve	0.34	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	0.51	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia sp.	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	0.17	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Cymatopleura solea var. apiculata (Smith) Ralfs in Pritchard	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	1.71	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria fenestrata (Lyngbye) Kützing	0.17	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	0.85	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon divergens Imhof	3.20	Cells/mL
MAG-114	Waukegan	Inner Harbor Dup	14-Aug-12	3:19:00 PM	432196.57	4690538.84	42.3641667	-87.8234167	Diatoms	Euglenophyta	Euglenophyceae	Euglenales	Euglenaceae	Euglena sp.	0.16	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	(Undetermined)	(Undetermined)	(Undetermined)	(Undetermined)	Unknown alga flagellate (<5µ)	39.57	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chlorophyta	Chlorophyceae	Chlorococcales	Hydrodictyaceae	Pediastrum boryanum (Turpin) Meneghini	0.77	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Cyclotella distinguenda var. unipunctata (Hustedt) Håkansson et Carter	2.67	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii fo. tenuis (Hustedt) Håkansson et Stoermer	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus hantzschii Grunow in Cleve and Grunow	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus medius Håkansson	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Stephanodiscaceae	Stephanodiscus parvus Stoermer et Håkansson	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Discostella pseudostelligera (Hustedt) Houk et Klee	3.11	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Centrales	Thalassiosiraceae	Puncticulata comta (Ehrenberg) Håkansson	24.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis pediculus Ehrenberg	2.22	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula Ehrenberg	5.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthaceae	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium minutissimum (Kützing) Czarnecki	12.00	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium pyrenaicum (Hustedt) Kobayashi	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Achnanthidiaceae	Achnanthidium rivulare Potapova et Ponader	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia angustatula Lange-Bertalot in Lange-Bertalot and Krammer	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia archibaldii Lange-Bertalot	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia compressa var. vexans (Grunow) Lange-Bertalot in Lange-Bertalot and Krammer	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia dissipata (Kützing) Grunow	3.56	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia filiformis (Smith) Van Heurck	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia frustulum (Kützing) Grunow in Cleve and Grunow	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia gracilis Hantzsch in Rabenhorst	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia microcephala Grunow	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea (Kützing) Smith	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia palea var. debilis (Kützing) Grunow in Cleve and Grunow	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia recta Hantzsch ex Rabenhorst	3.56	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Bacillariaceae	Nitzschia sociabilis Hustedt	2.67	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Berkeleyaceae	Parlibellus crucicula (Smith) Witkowski, Lange-Bertalot et Metzeltin	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora copulata (Kützing) Schoeman et Archibald	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Catenulaceae	Amphora inariensis Krammer	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Encyonema auerswaldii Rabenhorst	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis clementis (Grunow) Cox	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Cymbellaceae	Placoneis elginensis (Gregory) Cox	1.78	Cells/mL

Appendix C: Phytoplankton and Diatoms
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	Phylum	Class	Order	Family	Taxon Name	Cell Density	UNIT
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Entomoneidaceae	Entomoneis paludosa (Smith) Reimer in Patrick and Reimer	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Eunotiaceae	Eunotia bilunaris (Ehrenberg) Souza in Souza and Moreira-Filho	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Asterionella formosa Hassall	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma moniliformis Kützing	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Diatoma vulgaris Bory	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria capucina var. gracilis (Østrup) Hustedt	8.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria crotonensis Kitton	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria mesolepta Rabenhorst	3.11	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria sepes Ehrenberg	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria tenera (Smith) Lange-Bertalot	3.56	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Fragilaria vaucheriae (Kützing) Petersen	8.00	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Staurosirella pinnata (Ehrenberg) Williams et Round	2.67	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Synedra rumpens Kützing	7.56	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Fragilariaceae	Tabularia fasciculata (Agardh) Williams et Round	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Gomphonemataceae	Gomphonema minutum (Agardh) Agardh	3.56	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Geissleria decussis (Østrup) Lange-Bertalot et Metzeltin	4.00	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Hippodonta lueneburgensis (Grunow) Lange-Bertalot, Metzeltin et Witkowski	4.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula cryptotenella Lange-Bertalot in Krammer and Lange-Bertalot	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula gregaria Donkin	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula recens (Lange-Bertalot) Lange-Bertalot in Krammer and Lange-Bertalot	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula reichardtiana Lange-Bertalot in Lange-Bertalot and Krammer	3.56	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula rostellata Kützing	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula tripunctata (Müller) Bory	2.67	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Naviculaceae	Navicula veneta Kützing	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Encyonopsis microcephala (Grunow) Krammer	1.33	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Not Designated	Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt in Lange-Bertalot) Lange-Bertalot	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Pleurosigmataceae	Gyrosigma acuminatum (Kützing) Rabenhorst	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Rhoicospheniaceae	Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	2.67	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Sellaphoraceae	Sellaphora pupula (Kützing) Meresckowsky	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella angusta Kützing	0.89	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella brebissonii Krammer et Lange-Bertalot	0.44	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Surirellaceae	Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	1.78	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	Tabellaria flocculosa (Roth) Kützing	6.22	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Chrysophyta	Chrysophyceae	Chromulinales	Dinobryaceae	Dinobryon divergens Imhof	27.32	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Phormidiaceae	Phormidium sp.	32.98	Cells/mL
MAG-120	Waukegan	North Harbor	14-Aug-12	5:15:00 PM	432354.17	4690750.15	42.3660833	-87.8215278	Diatoms	Cyanophyta	Myxophyceae	Oscillatoriales	Pseudanabaenaceae	Pseudanabaena sp.	79.15	Cells/mL

APPENDIX D

BENTHIC COMMUNITY DATA

Appendix D: Benthos Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	GENUS	SPECIES	Number of Organisms	Percent Sample Sorted	Comments
MAG-005	Burns	BH1	9-Jul-12	3:18:00 PM	486654.80	4609042.34	41.633	-87.16022222	Benthos	DIPTERA	Chironominae	Chironomus	NA	1	100	
MAG-005	Burns	BH1	9-Jul-12	3:18:00 PM	486654.80	4609042.34	41.633	-87.16022222	Benthos	DIPTERA	Chironominae	Nanocladius	NA	1	100	
MAG-005	Burns	BH1	9-Jul-12	3:18:00 PM	486654.80	4609042.34	41.633	-87.16022222	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	1	100	
MAG-005	Burns	BH1	9-Jul-12	3:18:00 PM	486654.80	4609042.34	41.633	-87.16022222	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	1	100	
MAG-005	Burns	BH1	9-Jul-12	3:18:00 PM	486654.80	4609042.34	41.633	-87.16022222	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	2	100	
MAG-005	Burns	BH1	9-Jul-12	3:18:00 PM	486654.80	4609042.34	41.633	-87.16022222	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	8	100	
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	DIPTERA	Chironominae	Chironomus	NA	15	28.57	Chironomus mentum deformity=13.3%
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	DIPTERA	Chironominae	Cladopelma	NA	2	28.57	
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	DIPTERA	Tanypodinae	Procladius	NA	9	28.57	Procladius ligula deformity=22.2%
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	4	28.57	
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	OLIGOCHAETA	Tubificinae	Ilyodrilus	templetoni	4	28.57	
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	14	28.57	
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	OLIGOCHAETA	Tubificinae	Quistadrilus	multisetosus	9	28.57	
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	188	28.57	
MAG-019	Waukegan	North Harbor	10-Jul-12	1:51:00 PM	432365.72	4690762.38	42.36619444	-87.82138889	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	8	28.57	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	BIVALVIA	Sphaeriidae	Pisidium	NA	14	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	DIPTERA	Chironominae	Chironomus	NA	8	100	Chironomus mentum deformity = 12.5%
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	DIPTERA	Chironominae	Cladopelma	NA	3	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	DIPTERA	Chironominae	Dicrotendipes	neomodestus	2	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	DIPTERA	Tanypodinae	Procladius	NA	22	100	Procladius ligula deformity = 4.5%
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	14	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pigueti	6	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pluriseta	6	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Ilyodrilus	templetoni	8	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	4	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Quistadrilus	multisetosus	3	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	53	100	
MAG-025	Waukegan	Inner Harbor	10-Jul-12	4:41:00 PM	432246.47	4690495.17	42.36377778	-87.82280556	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	14	100	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Ceratopogonidae	Probezzia	NA	1	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Chironominae	Chironomus	NA	37	62.86	Chironomus mentum deformity = 35.1%
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	1	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Chironominae	Micropsectra	NA	1	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Chironominae	Paracladopelma	NA	1	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Chironominae	Stictochironomus	NA	2	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Chironominae	Tanytarsus	NA	3	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Orthocladiinae	Cricotopus	NA	1	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Orthocladiinae	Orthocladius	obumbratus	1	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	DIPTERA	Prodiamesinae	Monodiamesa	tuberculata	8	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	35	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	45	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	2	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	5	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	2	62.86	
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	100	62.86	

Appendix D: Benthos Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	GENUS	SPECIES	Number of Organisms	Percent Sample Sorted	Comments
MAG-031	Waukegan	Outer Harbor	11-Jul-12	9:08:00 AM	433134.84	4690338.56	42.36244444	-87.812	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	3	62.86	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	DIPTERA	Chironominae	Chironomus	NA	7	8.57	Chironomus mentum deformity=42.8%
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	DIPTERA	Chironominae	Cladopelma	NA	1	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	DIPTERA	Chironominae	Nanocladius	NA	1	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	1	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	5	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	17	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	2	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	9	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	3	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Quistadrilus	multisetosus	8	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Tubifex	tubifex	1	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	142	8.57	
MAG-033	Waukegan	Entrance Channel	11-Jul-12	11:05:00 AM	432543.24	4690193.09	42.36108333	-87.81916667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	66	8.57	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	BIVALVIA	Sphaeriidae	Pisidium	NA	1	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	DIPTERA	Chironominae	Cladopelma	NA	5	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	1	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	DIPTERA	Tanypodinae	Procladius	NA	1	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Naidinae	Dero	digitata	1	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	4	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pluriseta	3	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Ilyodrilus	templetoni	3	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	4	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	19	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	7	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	177	22.86	
MAG-035	Waukegan	Marina	11-Jul-12	12:30:00 PM	432253.35	4690260.67	42.36166667	-87.82269444	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	24	22.86	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	DIPTERA	Chironominae	Chironomus	NA	4	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	DIPTERA	Chironominae	Cladopelma	NA	6	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	1	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	DIPTERA	Chironominae	Paratanytarsus	NA	1	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	1	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	DIPTERA	Tanypodinae	Procladius	NA	32	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Naidinae	Vejdovskyella	comata	1	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pigueti	2	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pluriseta	5	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Ilyodrilus	templetoni	5	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	1	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	17	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	3	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	1	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Quistadrilus	multisetosus	4	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	142	100	
MAG-041	Waukegan	Inner Harbor Dup	11-Jul-12	4:54:00 PM	432185.07	4690532.78	42.36411111	-87.82355556	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	4	100	
MAG-060	Burns	BH5	12-Jul-12	12:40:00 PM	487561.46	4610203.36	41.64347222	-87.14936111	Benthos	DIPTERA	Chironominae	Stictochironomus	NA	1	100	
MAG-060	Burns	BH5	12-Jul-12	12:40:00 PM	487561.46	4610203.36	41.64347222	-87.14936111	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	2	100	
MAG-060	Burns	BH5	12-Jul-12	12:40:00 PM	487561.46	4610203.36	41.64347222	-87.14936111	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pigueti	1	100	

Appendix D: Benthos Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	GENUS	SPECIES	Number of Organisms	Percent Sample Sorted	Comments
MAG-060	Burns	BH5	12-Jul-12	12:40:00 PM	487561.46	4610203.36	41.64347222	-87.14936111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	4	100	
MAG-060	Burns	BH5	12-Jul-12	12:40:00 PM	487561.46	4610203.36	41.64347222	-87.14936111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	1	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	DIPTERA	Chironominae	Chironomus	NA	2	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	DIPTERA	Chironominae	Microchironomus	NA	2	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	DIPTERA	Tanypodinae	Procladius	NA	2	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	2	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	2	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	3	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	23	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	35	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	58	100	
MAG-061	Burns	BH1 Dup	12-Jul-12	2:58:00 PM	486638.63	4609051.62	41.63308333	-87.16041667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	6	100	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	DIPTERA	Chironominae	Chironomus	NA	17	87.63	Chironomus mentum deformity=23.5%
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	DIPTERA	Chironominae	Nanocladius	NA	1	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	5	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	DIPTERA	Tanypodinae	Procladius	NA	1	87.63	Procladius ligula deformity=20%
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	3	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	6	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	37	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	1	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	14	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	23	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	108	87.63	
MAG-062	Burns	BH3	12-Jul-12	4:50:00 PM	486895.25	4610213.80	41.64355556	-87.15736111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	6	87.63	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	DIPTERA	Chironominae	Chironomus	NA	1	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	DIPTERA	Tanypodinae	Procladius	NA	1	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	NEMATODA	Nematoda	Nematoda	NA	1	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	OLIGOCHAETA	Naidinae	Paranais	litoralis	1	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	3	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	41	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	14	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	35	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	118	34.29	
MAG-064	Burns	BH4	13-Jul-12	12:45:00 PM	487597.97	4609913.41	41.64086111	-87.14891667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	27	34.29	
MAG-074	Burns	BH1	13-Aug-12	10:28:00 AM	486643.25	4609051.61	41.63308333	-87.16036111	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	1	100	
MAG-080	Burns	BH1 Dup	13-Aug-12	12:52:00 PM	486633.96	4609030.04	41.63288889	-87.16047222	Benthos	BIVALVIA	Dreissenidae	Dreissena	bugensis	1	100	
MAG-080	Burns	BH1 Dup	13-Aug-12	12:52:00 PM	486633.96	4609030.04	41.63288889	-87.16047222	Benthos	DIPTERA	Tanypodinae	Procladius	NA	2	100	
MAG-080	Burns	BH1 Dup	13-Aug-12	12:52:00 PM	486633.96	4609030.04	41.63288889	-87.16047222	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	1	100	
MAG-080	Burns	BH1 Dup	13-Aug-12	12:52:00 PM	486633.96	4609030.04	41.63288889	-87.16047222	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	1	100	
MAG-080	Burns	BH1 Dup	13-Aug-12	12:52:00 PM	486633.96	4609030.04	41.63288889	-87.16047222	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	6	100	
MAG-082	Burns	BH2	13-Aug-12	1:40:00 PM	486656.05	4609711.55	41.63902778	-87.16022222	Benthos	DIPTERA	Tanypodinae	Procladius	NA	1	100	
MAG-082	Burns	BH2	13-Aug-12	1:40:00 PM	486656.05	4609711.55	41.63902778	-87.16022222	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	1	100	
MAG-082	Burns	BH2	13-Aug-12	1:40:00 PM	486656.05	4609711.55	41.63902778	-87.16022222	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	1	100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	BIVALVIA	Sphaeriidae	Pisidium	NA	1	100	

Appendix D: Benthos Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	GENUS	SPECIES	Number of Organisms	Percent Sample Sorted	Comments
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	DIPTERA	Chironominae	Chironomus	NA	10	100	Chironomus mentum deformity = 40.0%
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	1	100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	2	100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	10	100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus		100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	13	100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	16	100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	50	100	
MAG-088	Burns	BH3	13-Aug-12	3:13:00 PM	486897.51	4610182.95	41.64327778	-87.15733333	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	1	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	BIVALVIA	Dreissenidae	Dreissena	bugensis	6	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	DIPTERA	Chironominae	Chironomus	NA	9	100	Chironomus mentum deformity=66.7%
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	1	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	2	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	DIPTERA	Tanypodinae	Coelotanypus	NA	1	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	DIPTERA	Tanypodinae	Procladius	NA	2	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	42	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	10	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	6	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	6	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	84	100	
MAG-090	Burns	BH4	13-Aug-12	3:58:00 PM	487591.03	4609913.42	41.64086111	-87.149	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	3	100	
MAG-096	Burns	BH5	13-Aug-12	5:27:00 PM	487545.30	4610224.98	41.64366667	-87.14955556	Benthos	DIPTERA	Chironominae	Chironomus	NA	1	100	
MAG-096	Burns	BH5	13-Aug-12	5:27:00 PM	487545.30	4610224.98	41.64366667	-87.14955556	Benthos	DIPTERA	Tanypodinae	Procladius	NA	2	100	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	DIPTERA	Chironominae	Polypedilum	scalaenum grp.	1	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	DIPTERA	Prodiamesinae	Monodiamesa	tuberculata	1	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	23	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	44	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	2	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	14	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	6	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	175	15	
MAG-102	Waukegan	Outer Harbor	14-Aug-12	11:59:00 AM	433125.46	4690313.98	42.36222222	-87.81211111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	6	15	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	BIVALVIA	Sphaeriidae	Pisidium	NA	1	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	DIPTERA	Chironominae	Chironomus	NA	1	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	5	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	DIPTERA	Tanypodinae	Procladius	NA	7	35	Procladius ligula deformity=28.6%
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	13	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	75	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	6	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	11	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	1	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	137	35	
MAG-104	Waukegan	Entrance Channel	14-Aug-12	12:59:00 PM	432568.60	4690214.44	42.36127778	-87.81886111	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	16	35	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	BIVALVIA	Sphaeriidae	Sphaerium	NA	1	45	

Appendix D: Benthos Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	GENUS	SPECIES	Number of Organisms	Percent Sample Sorted	Comments
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	DIPTERA	Chironominae	Chironomus	NA	19	45	Chironomus mentum deformity=42.1%
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	DIPTERA	Chironominae	Cladopelma	NA	7	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	1	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	1	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	DIPTERA	Tanypodinae	Procladius	NA	13	45	Procladius ligula deformity=30.8%
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	2	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pigueti	2	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pluriseta	3	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Chaetogaster	NA	1	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Dero	digitata	2	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Ilyodrilus	templetoni	2	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	3	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	40	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	4	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Ophidonais	serpentina	7	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	1	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	2	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Quistadrilus	multisetosus	32	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	102	45	
MAG-110	Waukegan	Inner Harbor	14-Aug-12	2:44:00 PM	432260.17	4690491.95	42.36375	-87.82263889	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	21	45	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	BIVALVIA	Sphaeriidae	Pisidium	NA	1	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	DIPTERA	Chironominae	Chironomus	NA	9	100	Chironomus mentum deformity=33.3%
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	DIPTERA	Chironominae	Cladopelma	NA	16	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	6	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	15	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	DIPTERA	Tanypodinae	Procladius	NA	47	100	Procladius ligula deformity=14.9%
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	DIPTERA	Tanypodinae	Tanypus	NA	2	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	3	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pluriseta	1	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Dero	digitata	2	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Ilyodrilus	templetoni	2	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	2	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	47	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	5	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	1	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Quistadrilus	multisetosus	2	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	48	100	
MAG-116	Waukegan	Inner Harbor Dup	14-Aug-12	3:54:00 PM	432196.57	4690538.84	42.36416667	-87.82341667	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	7	100	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	AMPHIPODA	Gammaridae	Crangonyx	NA	3	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	BIVALVIA	Dreisseniidae	Dreissena	NA	10	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	BIVALVIA	Sphaeriidae	Pisidium	NA	2	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	COPEPODA	NA	NA	NA	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	DIPTERA	Chironominae	Chironomus	NA	6	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	DIPTERA	Chironominae	Cladopelma	NA	12	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	4	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	DIPTERA	Chironominae	Parachironomus	abortivus	1	27.3	

Appendix D: Benthos Data
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

Sample ID	Site	Station	Date	Time	Easting	Northing	Latitude	Longitude	Analysis	GROUP	FAMILY/SUBFAMILY	GENUS	SPECIES	Number of Organisms	Percent Sample Sorted	Comments
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	7	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	DIPTERA	Tanypodinae	Ablabesmyia	peleenis	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	DIPTERA	Tanypodinae	Procladius	NA	5	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	GASTROPODA	NA	NA	NA	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	LEPIDOPTERA	Crambidae	Acentria	NA	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	4	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Bothrioneurum	veydovskyanum	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Ilyodrilus	templetoni	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	39	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	6	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	1	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Quistadrilus	multisetosus	23	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	105	27.3	
MAG-122	Waukegan	North Harbor	14-Aug-12	5:40:00 PM	432354.17	4690750.15	42.36608333	-87.82152778	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	1	27.3	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	BIVALVIA	Sphaeriidae	Pisidium	NA	2	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	DIPTERA	Chironominae	Chironomus	NA	4	25	Chironomus with deformed mentum = 100%
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	DIPTERA	Chironominae	Cladopelma	NA	3	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	2	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	1	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	DIPTERA	Tanypodinae	Procladius	NA	3	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	3	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	pluriseta	6	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Dero	digitata	4	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	8	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	56	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	5	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	1	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	1	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	168	25	
MAG-124	Waukegan	Marina	14-Aug-12	6:15:00 PM	432266.90	4690242.03	42.3615	-87.82252778	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	12	25	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	DIPTERA	Chironominae	Cryptochironomus	NA	1	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	DIPTERA	Chironominae	Polypedilum	halterale grp.	1	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	DIPTERA	Chironominae	Polypedilum	pupae	2	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Aulodrilus	limnobius	5	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	cervix	3	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	hoffmeisteri	21	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Limnodrilus	udekemianus	7	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	moldaviensis	13	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Potamothrix	vejdovskyi	9	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	bifid chaetae	104	100	
MAG-150	Burns	BH2	13-Jul-12	9:34:00 AM	486651.48	4609742.40	41.63930556	-87.16027778	Benthos	OLIGOCHAETA	Tubificinae	Tubificinae	hair+pectinate chaetae	3	100	

APPENDIX E

BENTHIC SEDIMENT DATA

Appendix E
Sediment EDD – Data Provider Contact Information

Appendix E: EPA R5 Data Provider v2 Final
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

data_provider	data_contact_person	data_contact_address1	data_contact_address2	data_contact_city	data_contact_state	data_contact_zipcode	data_contact_email	data_contact_phone
BATD	Paul Sokoloff	Battelle Duxbury	397 Washington St	Duxbury	MA	02332	sokoloffp@battelle.org	781-952-5367

Appendix E

Sediment EDD - Subfacility data

Appendix E: EPA R5 Subfacility v2 Final
Benthos and Plankton within Waukegan AOC: Task Order 08: EPA Contract Number EP-R5-11-07

subfacility_code	subfacility_name	subfacility_task_code	subfacility_desc1	subfacility_desc2	contact_name	address1	address2	city	state	zipcode	phone_number	alt_phone_number	fax_number	email_address
01	Waukegan Harbor				William Bolen	77 West Jackson Boulevard		Chicago	IL	60604	312-353-6316			bolen.bill@epa.gov

Appendix E

Sediment EDD – Station Location Data

data_provider	facility_id	sys_loc_code	x_coord	y_coord	surf_elev	elev_unit	coord_sys_desc	observation_date	alt_x_coord	alt_y_coord	coord_type_code	identifier	horz_collect_method_code	horz_accuracy_value	horz_accuracy_unit	horz_datum_code	elev_collect_method_code	elev_accuracy_value	elev_accuracy_unit	elev_datum_code	source_scale	subcontractor_name_code	verification_code	reference_point	geometric_type_code	rank	loc_name	loc_desc	loc_type	loc_purpose	primary_subfacility_code	within_facility_yn	loc_county_code	loc_district_code	loc_state_code	loc_major_basin	loc_minor_basin	remark	total_depth	depth_to_bedrock	depth_to_top_of_screen	depth_to_bottom_of_screen	top_casing_elev	datum_value	datum_unit	step_or_linear	datum_collection_method_code	datum_desc	datum_start_date
BATD	01	BH1	486654.80	4609042.34			NAD 83, UTM ZONE 16N	7/9/2012	41 37 58.8	87 09 36.8	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 31.4											
BATD	01	BH1	486643.25	4609051.61			NAD 83, UTM ZONE 16N	8/13/2012	41 37 59.1	87 09 37.3	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 31.1											
BATD	01	BH1 Dup	486638.63	4609051.62			NAD 83, UTM ZONE 16N	7/12/2012	41 37 58.2	87 09 37.4	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 30.3											
BATD	01	BH1 Dup	486633.96	4609030.04			NAD 83, UTM ZONE 16N	8/13/2012	41 37 58.4	87 09 37.7	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 29.8											
BATD	01	BH2	486651.48	4609742.40			NAD 83, UTM ZONE 16N	7/13/2012	41 38 21.5	87 09 37.0	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 28.4											
BATD	01	BH2	486656.05	4609711.55			NAD 83, UTM ZONE 16N	8/13/2012	41 38 20.5	87 09 36.8	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 28.5											
BATD	01	BH3	486895.25	4610213.80			NAD 83, UTM ZONE 16N	7/12/2012	41 38 35.6	87 09 26.3	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 31.3											
BATD	01	BH3	486897.51	4610182.95			NAD 83, UTM ZONE 16N	8/13/2012	41 38 35.8	87 09 26.4	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 31.4											
BATD	01	BH4	487597.97	4609913.41			NAD 83, UTM ZONE 16N	7/13/2012	41 38 27.1	87 08 56.1	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 34.2											
BATD	01	BH4	487597.97	4609913.41			NAD 83, UTM ZONE 16N	7/13/2012	41 38 27.1	87 08 56.1	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 34.2											
BATD	01	BH4	487591.03	4609913.42			NAD 83, UTM ZONE 16N	8/13/2012	41 38 27.1	87 08 56.4	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 31.3											
BATD	01	BH5	487561.46	4610203.36			NAD 83, UTM ZONE 16N	7/12/2012	41 38 36.5	87 08 57.7	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 31.2											
BATD	01	BH5	487545.30	4610224.98			NAD 83, UTM ZONE 16N	8/13/2012	41 38 37.2	87 08 58.4	Lat Long		G5	5	4	2						BATD					Burns	Burns	Sed		01	Y			IL	4060200		Water Depth in Ft - 30.3											
BATD	01	Entrance Channel	432543.24	4690193.09			NAD 83, UTM ZONE 16N	7/11/2012	42 21 39.9	87 49 09.0	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 20.2											
BATD	01	Entrance Channel	432568.60	4690214.44			NAD 83, UTM ZONE 16N	8/14/2012	42 21 40.6	87 49 07.9	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 18.3											
BATD	01	Inner Harbor	432246.47	4690495.17			NAD 83, UTM ZONE 16N	7/10/2012	42 21 49.6	87 49 22.1	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 21.3											
BATD	01	Inner Harbor	432260.17	4690491.95			NAD 83, UTM ZONE 16N	8/14/2012	42 21 49.5	87 49 21.5	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 21.6											
BATD	01	Inner Harbor Dup	432185.07	4690532.78			NAD 83, UTM ZONE 16N	7/11/2012	42 21 50.8	87 49 24.8	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 23.5											
BATD	01	Inner Harbor Dup	432196.57	4690538.84			NAD 83, UTM ZONE 16N	8/14/2012	42 21 51.0	87 49 24.3	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 23.8											
BATD	01	Marina	432253.35	4690260.67			NAD 83, UTM ZONE 16N	7/11/2012	42 21 42.0	87 49 21.7	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 13.4											
BATD	01	Marina	432266.90	4690242.03			NAD 83, UTM ZONE 16N	8/14/2012	42 21 41.4	87 49 21.1	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 13.8											
BATD	01	North Harbor	432365.72	4690762.38			NAD 83, UTM ZONE 16N	7/10/2012	42 21 58.3	87 49 17.0	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 18.7											
BATD	01	North Harbor	432354.17	4690750.15			NAD 83, UTM ZONE 16N	8/14/2012	42 21 57.9	87 49 17.5	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 19.0											
BATD	01	Outer Harbor	433134.84	4690338.56			NAD 83, UTM ZONE 16N	7/11/2012	42 24 44.8	87 48 43.2	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 16.5											
BATD	01	Outer Harbor	433125.46	4690313.98			NAD 83, UTM ZONE 16N	8/14/2012	42 21 44.0	87 48 43.6	Lat Long		G5	5	4	2						BATD					Waukegan	Waukegan	Sed		01	Y			IL	4060200		Water Depth in Ft - 16.9											

Appendix E

Sediment EDD – Sample Collection Data

SDG_FILE	data_provider	sys_sample_code	sample_name	sample_matrix_code	sample_type_code	sample_source	parent_sample_code	sample_delivery_group	sample_date	sys_loc_code	start_depth	end_depth	depth_unit	chain_of_custody	sent_to_lab_date	sample_receipt_date	sampler	sampling_company_code	sampling_reason	sampling_technique	task_code	collection_quarter	composite_yn	composite_desc	sample_class	custom_field_1	task_phase	custom_field_3	comment
K1206838	BATD	MAG-006	MAG-006	SE	N	FIELD		K1206838	7/9/2012	BH1	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-020	MAG-020	SE	N	FIELD		K1206838	7/10/2012	North Harbor	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	K1206838-001DUP	K1206838-001DUP	SE	LR	LAB	MAG-020	K1206838	7/10/2012	North Harbor	0	10	CM					BATD		Grab	20120813		N				20120813		
K1206838	BATD	K1206838-001DUP1	K1206838-001DUP1	SE	LR	LAB	MAG-020	K1206838	7/10/2012	North Harbor	0	10	CM					BATD		Grab	20120813		N				20120813		
K1206838	BATD	MAG-026	MAG-026	SE	N	FIELD		K1206838	7/10/2012	Inner Harbor	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-032	MAG-032	SE	N	FIELD		K1206838	7/11/2012	Outer Harbor	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-034	MAG-034	SE	N	FIELD		K1206838	7/11/2012	Entrance Channel	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	K1206838-013dup	K1206838-013dup	SE	LR	LAB	MAG-034	K1206838	7/11/2012	Entrance Channel	0	10	CM					BATD		Grab	20120813		N				20120813		
K1206838	BATD	K1206838-013DUP2	K1206838-013DUP2	SE	LR	LAB	MAG-034	K1206838	7/11/2012	Entrance Channel	0	10	CM					BATD		Grab	20120813		N				20120813		
K1206838	BATD	MAG-036	MAG-036	SE	N	FIELD		K1206838	7/11/2012	Marina	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-042	MAG-042	SE	N	FIELD		K1206838	7/11/2012	Inner Harbor Dup	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-048	MAG-048	SE	N	FIELD		K1206838	7/12/2012	BH5	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-050	MAG-050	SE	N	FIELD		K1206838	7/12/2012	BH3	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-052	MAG-052	SE	N	FIELD		K1206838	7/13/2012	BH2	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-054	MAG-054	SE	N	FIELD		K1206838	7/13/2012	BH4	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-055	MAG-055	SE	N	FIELD		K1206838	7/13/2012	BH4	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	MAG-063	MAG-063	SE	N	FIELD		K1206838	7/12/2012	BH1 Dup	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1206838	BATD	K1206838-MB	K1206838-MB	SE	MB	LAB		K1206838	7/18/2012									BATD		Grab	20120813		N				20120813		
K1208114	BATD	MAG-075	MAG-075	SE	N	FIELD		K1208114	8/13/2012	BH1	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	K1208114-001DUP	K1208114-001DUP	SE	LR	LAB	MAG-075	K1208114	8/13/2012	BH1	0	10	CM					BATD		Grab	20120813		N				20120813		
K1208114	BATD	K1208114-001DUP1	K1208114-001DUP1	SE	LR	LAB	MAG-075	K1208114	8/13/2012	BH1	0	10	CM					BATD		Grab	20120813		N				20120813		
K1208114	BATD	MAG-081	MAG-081	SE	N	FIELD		K1208114	8/13/2012	BH1 Dup	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment

SDG_FILE	data_provider	sys_sample_code	sample_name	sample_matrix_code	sample_type_code	sample_source	parent_sample_code	sample_delivery_group	sample_date	sys_loc_code	start_depth	end_depth	depth_unit	chain_of_custody	sent_to_lab_date	sample_receipt_date	sampler	sampling_company_code	sampling_reason	sampling_technique	task_code	collection_quarter	composite_yn	composite_desc	sample_class	custom_field_1	task_phase	custom_field_3	comment
K1208114	BATD	MAG-083	MAG-083	SE	N	FIELD		K1208114	8/13/2012	BH2	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	MAG-089	MAG-089	SE	N	FIELD		K1208114	8/13/2012	BH3	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	MAG-091	MAG-091	SE	N	FIELD		K1208114	8/13/2012	BH4	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	MAG-097	MAG-097	SE	N	FIELD		K1208114	8/13/2012	BH5	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	MAG-103	MAG-103	SE	N	FIELD		K1208114	8/14/2012	Outer Harbor	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	K1208114-012DUP	K1208114-012DUP	SE	LR	LAB	MAG-103	K1208114	8/14/2012	Outer Harbor	0	10	CM					BATD		Grab	20120813		N				20120813		
K1208114	BATD	MAG-105	MAG-105	SE	N	FIELD		K1208114	8/14/2012	Entrance Channel	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	K1208114-007DUP	K1208114-007DUP	SE	LR	LAB	MAG-105	K1208114	8/14/2012	Entrance Channel	0	10	CM					BATD		Grab	20120813		N				20120813		
K1208114	BATD	K1208114-007DUP2	K1208114-007DUP2	SE	LR	LAB	MAG-105	K1208114	8/14/2012	Entrance Channel	0	10	CM					BATD		Grab	20120813		N				20120813		
K1208114	BATD	MAG-111	MAG-111	SE	N	FIELD		K1208114	8/14/2012	Inner Harbor	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	MAG-117	MAG-117	SE	N	FIELD		K1208114	8/14/2012	Inner Harbor Dup	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	MAG-123	MAG-123	SE	N	FIELD		K1208114	8/14/2012	North Harbor	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	MAG-125	MAG-125	SE	N	FIELD		K1208114	8/14/2012	Marina	0	10	CM					BATD		Grab	20120813		N				20120813	Not collected to refusal	Grab sample of benthic sediment
K1208114	BATD	K1208114-MB	K1208114-MB	SE	MB	LAB		K1208114	8/17/2012									BATD		Grab	20120813		N				20120813		

Appendix E

Sediment EDD – Analytical Result Data

| SDG_FILE | sys_sample_code | lab_anl_method_name | analysis_date | total_or_dissolved | column_number | test_type | lab_matrix_code | analysis_location | basis | container_id | dilution_factor | prep_method | prep_date | leachate_method | leachate_date | lab_name_code | qc_level | lab_sample_id | percent_moisture | subsample_amount | subsample_amount_u | analyst_name | instrument_id | comment | preservative | final_volume | final_volume_unit | cas_rn | chemical_name | result_value | result_error_delta | result_type_code | reportable_result | detect_flag | lab_qualifiers | validator_qualifiers | interpreted_qualifiers | organic_yn | method_detection_lin | reporting_detection_lir | quantitation_limit | result_unit | detection_limit_unit | tic_retention_time | result_comment | qc_original_conc | qc_spike_added | qc_spike_measured | qc_spike_recovery | qc_dup_original_conc | qc_dup_spike_added | qc_dup_spike_measure | qc_dup_spike_recover | qc_rpd | qc_spike_lcl | qc_spike_ucl | qc_rpd_cl | qc_spike_status | qc_dup_spike_status | qc_rpd_status |
|---|---|---

SDG_FILE	sys_sample_code	lab_anl_method_name	analysis_date	total_or_dissolved	column_number	test_type	lab_matrix_code	analysis_location	basis	container_id	dilution_factor	prep_method	prep_date	leachate_method	leachate_date	lab_name_code	qc_level	lab_sample_id	percent_moisture	subsample_amount	subsample_amount_u	analyst_name	instrument_id	comment	preservative	final_volume	final_volume_unit	cas_rn	chemical_name	result_value	result_error_delta	result_type_code	reportable_result	detect_flag	lab_qualifiers	validator_qualifiers	interpreted_qualifiers	organic_yn	method_detection_lin	reporting_detection_lir	quantitation_limit	result_unit	detection_limit_unit	tic_retention_time	result_comment	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measure	qc_dup_spike_recover	qc_rpd	qc_spike_lcl	qc_spike_ucl	qc_rpd_cl	qc_spike_status	qc_dup_spike_status	qc_rpd_status
K1208114	K1208114-MB	160.4 Modified	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-MB											TVS	Solids, Total Volatile	0.01		TRG	YES	N	U			N	0.01	0.01		percent	percent																	
K1208114	K1208114-001DUP1	160.4 Modified	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001DUP1											TVS	Solids, Total Volatile	2.78		TRG	YES	Y				N	0.01	0.01		percent	percent			2.69			2.78			-3.34572491						
K1208114	K1208114-007DUP2	160.4 Modified	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-007DUP2											TVS	Solids, Total Volatile	4.59		TRG	YES	Y	*			N	0.01	0.01		percent	percent			5.94			4.59			22.72727273						
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											FGravel	Gravel, Fine	0		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											VCSand	Sand, Very Coarse	0.17		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											CSand	Sand, Coarse	0.85		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											MSand	Sand, Medium	11.12		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											FSand	Sand, Fine	53.58		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											VFSand	Sand, Very Fine	2.17		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											Silt	Silt	15.44		TRG	YES	Y				N				percent																
K1208114	MAG-075	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-001											Clay	Clay	15.61		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											FGravel	Gravel, Fine	0.16		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											VCSand	Sand, Very Coarse	0.42		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											CSand	Sand, Coarse	1.24		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											MSand	Sand, Medium	10.15		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											FSand	Sand, Fine	52.59		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											VFSand	Sand, Very Fine	2.08		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											Silt	Silt	18.00		TRG	YES	Y				N				percent																
K1208114	MAG-081	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-002											Clay	Clay	15.62		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											FGravel	Gravel, Fine	0.04		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											VCSand	Sand, Very Coarse	0.14		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											CSand	Sand, Coarse	0.73		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											MSand	Sand, Medium	4.38		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											FSand	Sand, Fine	38.30		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											VFSand	Sand, Very Fine	2.02		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											Silt	Silt	32.03		TRG	YES	Y				N				percent																
K1208114	MAG-083	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-003											Clay	Clay	23.16		TRG	YES	Y				N				percent																
K1208114	MAG-089	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-004											MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																

| SDG_FILE | sys_sample_code | lab_anl_method_name | analysis_date | total_or_dissolved | column_number | test_type | lab_matrix_code | analysis_location | basis | container_id | dilution_factor | prep_method | prep_date | leachate_method | leachate_date | lab_name_code | qc_level | lab_sample_id | percent_moisture | subsample_amount | subsample_amount_u | analyst_name | instrument_id | comment | preservative | final_volume | final_volume_unit | cas_rn | chemical_name | result_value | result_error_delta | result_type_code | reportable_result | detect_flag | lab_qualifiers | validator_qualifiers | interpreted_qualifiers | organic_yn | method_detection_lin | reporting_detection_lir | quantitation_limit | result_unit | detection_limit_unit | tic_retention_time | result_comment | qc_original_conc | qc_spike_added | qc_spike_measured | qc_spike_recovery | qc_dup_original_conc | qc_dup_spike_added | qc_dup_spike_measure | qc_dup_spike_recover | qc_rpd | qc_spike_lcl | qc_spike_ucl | qc_rpd_cl | qc_spike_status | qc_dup_spike_status | qc_rpd_status |
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| SDG_FILE | sys_sample_code | lab_anl_method_name | analysis_date | total_or_dissolved | column_number | test_type | lab_matrix_code | analysis_location | basis | container_id | dilution_factor | prep_method | prep_date | leachate_method | leachate_date | lab_name_code | qc_level | lab_sample_id | percent_moisture | subsample_amount | subsample_amount_u | analyst_name | instrument_id | comment | preservative | final_volume | final_volume_unit | cas_rn | chemical_name | result_value | result_error_delta | result_type_code | reportable_result | detect_flag | lab_qualifiers | validator_qualifiers | interpreted_qualifiers | organic_yn | method_detection_lin | reporting_detection_lir | quantitation_limit | result_unit | detection_limit_unit | tic_retention_time | result_comment | qc_original_conc | qc_spike_added | qc_spike_measured | qc_spike_recovery | qc_dup_original_conc | qc_dup_spike_added | qc_dup_spike_measure | qc_dup_spike_recover | qc_rpd | qc_spike_lcl | qc_spike_ucl | qc_rpd_cl | qc_spike_status | qc_dup_spike_status | qc_rpd_status |
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SDG_FILE	sys_sample_code	lab_anl_method_name	analysis_date	total_or_dissolved	column_number	test_type	lab_matrix_code	analysis_location	basis	container_id	dilution_factor	prep_method	prep_date	leachate_method	leachate_date	lab_name_code	qc_level	lab_sample_id	percent_moisture	subsample_amount	subsample_amount_ur	analyst_name	instrument_id	comment	preservative	final_volume	final_volume_unit	cas_rn	chemical_name	result_value	result_error_delta	result_type_code	reportable_result	detect_flag	lab_qualifiers	validator_qualifiers	interpreted_qualifiers	organic_yn	method_detection_lin	reporting_detection_lir	quantitation_limit	result_unit	detection_limit_unit	tic_retention_time	result_comment	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measure	qc_dup_spike_recover	qc_rpd	qc_spike_lcl	qc_spike_ucl	qc_rpd_cl	qc_spike_status	qc_dup_spike_status	qc_rpd_status
K1208114	MAG-123	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-011											VCSand	Sand, Very Coarse	0.08		TRG	YES	Y				N				percent																		
K1208114	MAG-123	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-011											CSand	Sand, Coarse	0.44		TRG	YES	Y				N				percent																		
K1208114	MAG-123	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-011											MSand	Sand, Medium	1.98		TRG	YES	Y				N				percent																		
K1208114	MAG-123	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-011											FSand	Sand, Fine	21.47		TRG	YES	Y				N				percent																		
K1208114	MAG-123	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-011											VFSand	Sand, Very Fine	6.61		TRG	YES	Y				N				percent																		
K1208114	MAG-123	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-011											Silt	Silt	54.19		TRG	YES	Y				N				percent																		
K1208114	MAG-123	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-011											Clay	Clay	15.40		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											FGravel	Gravel, Fine	0		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											VCSand	Sand, Very Coarse	0.06		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											CSand	Sand, Coarse	0.11		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											MSand	Sand, Medium	0.25		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											FSand	Sand, Fine	12.13		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											VFSand	Sand, Very Fine	6.29		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											Silt	Silt	76.07		TRG	YES	Y				N				percent																		
K1208114	MAG-103	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012											Clay	Clay	4.38		TRG	YES	Y				N				percent																		
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent			0			0			0									
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											FGravel	Gravel, Fine	0		TRG	YES	Y				N				percent			0			0			0									
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											VCSand	Sand, Very Coarse	0.06		TRG	YES	Y				N				percent			0.06			0.06			0									
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											CSand	Sand, Coarse	0.09		TRG	YES	Y				N				percent			0.11			0.09			18.18181818								
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											MSand	Sand, Medium	0.24		TRG	YES	Y				N				percent			0.25			0.24			4								
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											FSand	Sand, Fine	11.53		TRG	YES	Y				N				percent			12.13			11.53			4.94641385								
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											VFSand	Sand, Very Fine	6.99		TRG	YES	Y				N				percent			6.29			6.99			-11.1287758								
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											Silt	Silt	73.85		TRG	YES	Y				N				percent			76.07			73.85			2.918364664								
K1208114	K1208114-012DUP	ASTM D422	08/17/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1208114-012DUP											Clay	Clay	4.29		TRG	YES	Y				N				percent			4.38			4.29			2.054794521								
K1206838	MAG-020	160.3M	07/18/2012	T		Initial	SE	LB	Wet		1	NONE				CASK	QUANT	K1206838-001											TSOLIDS	Total Solids	44		TRG	YES	Y				N				percent																		
K1206838	MAG-026	160.3M	07/18/2012	T		Initial	SE	LB	Wet		1	NONE				CASK	QUANT	K1206838-002											TSOLIDS	Total Solids	35.5		TRG	YES	Y				N				percent																		
K1206838	MAG-032	160.3M	07/18/2012	T		Initial	SE	LB	Wet		1	NONE				CASK	QUANT	K1206838-003											TSOLIDS	Total Solids	70.7		TRG	YES	Y				N				percent																		
K1206838	MAG-036	160.3M	07/18/2012	T		Initial	SE	LB	Wet		1	NONE				CASK	QUANT	K1206838-004											TSOLIDS	Total Solids	40.8		TRG	YES	Y				N				percent																		
K1206838	MAG-006	160.3M	07/18/2012	T		Initial	SE	LB	Wet		1	NONE				CASK	QUANT	K1206838-005											TSOLIDS	Total Solids	67.5		TRG	YES	Y				N				percent																		
K1206838	MAG-048	160.3M	07/18/2012	T		Initial	SE	LB	Wet		1	NONE				CASK	QUANT	K1206838-006											TSOLIDS	Total Solids	67.8		TRG	YES	Y				N				percent																		
K1206838	MAG-063	160.3M	07/18/2012	T		Initial	SE	LB	Wet		1	NONE				CASK	QUANT	K1206838-007											TSOLIDS	Total Solids	81.3		TRG	YES	Y				N				percent																		

| SDG_FILE | sys_sample_code | lab_anl_method_name | analysis_date | total_or_dissolved | column_number | test_type | lab_matrix_code | analysis_location | basis | container_id | dilution_factor | prep_method | prep_date | leachate_method | leachate_date | lab_name_code | qc_level | lab_sample_id | percent_moisture | subsample_amount | subsample_amount_u | analyst_name | instrument_id | comment | preservative | final_volume | final_volume_unit | cas_rn | chemical_name | result_value | result_error_delta | result_type_code | reportable_result | detect_flag | lab_qualifiers | validator_qualifiers | interpreted_qualifiers | organic_yn | method_detection_lin | reporting_detection_lir | quantitation_limit | result_unit | detection_limit_unit | tic_retention_time | result_comment | qc_original_conc | qc_spike_added | qc_spike_measured | qc_spike_recovery | qc_dup_original_conc | qc_dup_spike_added | qc_dup_spike_measure | qc_dup_spike_recover | qc_rpd | qc_spike_lcl | qc_spike_ucl | qc_rpd_cl | qc_spike_status | qc_dup_spike_status | qc_rpd_status |
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SDG_FILE	sys_sample_code	lab_anl_method_name	analysis_date	total_or_dissolved	column_number	test_type	lab_matrix_code	analysis_location	basis	container_id	dilution_factor	prep_method	prep_date	leachate_method	leachate_date	lab_name_code	qc_level	lab_sample_id	percent_moisture	subsample_amount	subsample_amount_u	analyst_name	instrument_id	comment	preservative	final_volume	final_volume_unit	cas_rn	chemical_name	result_value	result_error_delta	result_type_code	reportable_result	detect_flag	lab_qualifiers	validator_qualifiers	interpreted_qualifiers	organic_yn	method_detection_lin	reporting_detection_lir	quantitation_limit	result_unit	detection_limit_unit	tic_retention_time	result_comment	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measure	qc_dup_spike_recover	qc_rpd	qc_spike_lcl	qc_spike_ucl	qc_rpd_cl	qc_spike_status	qc_dup_spike_status	qc_rpd_status
K1206838	MAG-032	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-003										VFSand	Sand, Very Fine	7.20		TRG	YES	Y				N				percent																		
K1206838	MAG-032	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-003										Silt	Silt	67.42		TRG	YES	Y				N				percent																		
K1206838	MAG-032	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-003										Clay	Clay	5.10		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										FGravel	Gravel, Fine	0.08		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										VCSand	Sand, Very Coarse	0.08		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										CSand	Sand, Coarse	0.24		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										MSand	Sand, Medium	0.48		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										FSand	Sand, Fine	3.12		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										VFSand	Sand, Very Fine	2.78		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										Silt	Silt	80.28		TRG	YES	Y				N				percent																		
K1206838	MAG-036	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004										Clay	Clay	11.39		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										FGravel	Gravel, Fine	0		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										VCSand	Sand, Very Coarse	0.13		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										CSand	Sand, Coarse	0.52		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										MSand	Sand, Medium	2.20		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										FSand	Sand, Fine	56.74		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										VFSand	Sand, Very Fine	2.39		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										Silt	Silt	17.34		TRG	YES	Y				N				percent																		
K1206838	MAG-006	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005										Clay	Clay	13.92		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										MGravel	Gravel, Medium	0		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										FGravel	Gravel, Fine	1.60		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										VCSand	Sand, Very Coarse	1.96		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										CSand	Sand, Coarse	3.13		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										MSand	Sand, Medium	2.56		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										FSand	Sand, Fine	7.88		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										VFSand	Sand, Very Fine	1.85		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										Silt	Silt	23.62		TRG	YES	Y				N				percent																		
K1206838	MAG-048	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006										Clay	Clay	58.67		TRG	YES	Y				N				percent																		
K1206838	MAG-063	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-007										MGravel	Gravel, Medium	0.73		TRG	YES	Y				N				percent																		
K1206838	MAG-063	ASTM D422	07/16/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-007										FGravel	Gravel, Fine	0.61		TRG	YES	Y				N				percent																		

| SDG_FILE | sys_sample_code | lab_anl_method_name | analysis_date | total_or_dissolved | column_number | test_type | lab_matrix_code | analysis_location | basis | container_id | dilution_factor | prep_method | prep_date | leachate_method | leachate_date | lab_name_code | qc_level | lab_sample_id | percent_moisture | subsample_amount | subsample_amount_u | analyst_name | instrument_id | comment | preservative | final_volume | final_volume_unit | cas_rn | chemical_name | result_value | result_error_delta | result_type_code | reportable_result | detect_flag | lab_qualifiers | validator_qualifiers | interpreted_qualifiers | organic_yn | method_detection_lin | reporting_detection_lir | quantitation_limit | result_unit | detection_limit_unit | tic_retention_time | result_comment | qc_original_conc | qc_spike_added | qc_spike_measured | qc_spike_recovery | qc_dup_original_conc | qc_dup_spike_added | qc_dup_spike_measure | qc_dup_spike_recover | qc_rpd | qc_spike_lcl | qc_spike_ucl | qc_rpd_cl | qc_spike_status | qc_dup_spike_status | qc_rpd_status |
|---|---|---

| SDG_FILE | sys_sample_code | lab_anl_method_name | analysis_date | total_or_dissolved | column_number | test_type | lab_matrix_code | analysis_location | basis | container_id | dilution_factor | prep_method | prep_date | leachate_method | leachate_date | lab_name_code | qc_level | lab_sample_id | percent_moisture | subsample_amount | subsample_amount_u | analyst_name | instrument_id | comment | preservative | final_volume | final_volume_unit | cas_rn | chemical_name | result_value | result_error_delta | result_type_code | reportable_result | detect_flag | lab_qualifiers | validator_qualifiers | interpreted_qualifiers | organic_yn | method_detection_lin | reporting_detection_lir | quantitation_limit | result_unit | detection_limit_unit | tic_retention_time | result_comment | qc_original_conc | qc_spike_added | qc_spike_measured | qc_spike_recovery | qc_dup_original_conc | qc_dup_spike_added | qc_dup_spike_measure | qc_dup_spike_recover | qc_rpd | qc_spike_lcl | qc_spike_ucl | qc_rpd_cl | qc_spike_status | qc_dup_spike_status | qc_rpd_status |
|---|---|---

SDG_FILE	sys_sample_code	lab_anl_method_name	analysis_date	total_or_dissolved	column_number	test_type	lab_matrix_code	analysis_location	basis	container_id	dilution_factor	prep_method	prep_date	leachate_method	leachate_date	lab_name_code	qc_level	lab_sample_id	percent_moisture	subsample_amount	subsample_amount_u	analyst_name	instrument_id	comment	preservative	final_volume	final_volume_unit	cas_rn	chemical_name	result_value	result_error_delta	result_type_code	reportable_result	detect_flag	lab_qualifiers	validator_qualifiers	interpreted_qualifiers	organic_yn	method_detection_lin	reporting_detection_lir	quantitation_limit	result_unit	detection_limit_unit	tic_retention_time	result_comment	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measure	qc_dup_spike_recover	qc_rpd	qc_spike_lcl	qc_spike_ucl	qc_rpd_cl	qc_spike_status	qc_dup_spike_status	qc_rpd_status
K1206838	MAG-032	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-003											TVS	Solids, Total Volatile	4.2		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-036	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-004											TVS	Solids, Total Volatile	6.79		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-006	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-005											TVS	Solids, Total Volatile	2.21		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-048	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-006											TVS	Solids, Total Volatile	5.34		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-063	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-007											TVS	Solids, Total Volatile	3.15		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-050	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-008											TVS	Solids, Total Volatile	5.41		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-052	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-009											TVS	Solids, Total Volatile	4.66		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-042	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-010											TVS	Solids, Total Volatile	7.54		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-054	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-011											TVS	Solids, Total Volatile	4.54		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	MAG-034	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-013											TVS	Solids, Total Volatile	4.48		TRG	YES	Y				N	0.01	0.01		percent	percent																	
K1206838	K1206838-MB	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-MB											TVS	Solids, Total Volatile	0.01		TRG	YES	N	U			N	0.01	0.01		percent	percent																	
K1206838	K1206838-001DUP1	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-001DUP1											TVS	Solids, Total Volatile	9.03		TRG	YES	Y				N	0.01	0.01		percent	percent			10.2			9.03			11.47058824							
K1206838	K1206838-013DUP2	160.4 Modified	07/18/2012	T		Initial	SE	LB	Dry		1	NONE				CASK	QUANT	K1206838-013DUP2											TVS	Solids, Total Volatile	4.87		TRG	YES	Y				N	0.01	0.01		percent	percent			4.87			4.87			0						

Appendix E

Sediment EDD – Analytical Batch Data

SDG_FILE	sys_sample_code	lab_anl_method_name	analysis_date	total_or_dissolved	column_number	test_type	test_batch_type	test_batch_id
K1206838	MAG-006	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-006	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-006	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-020	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-020	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-020	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	K1206838-001DUP	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	K1206838-001DUP1	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-026	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-026	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-026	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-032	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-032	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-032	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-034	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-034	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-034	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	K1206838-013dup	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	K1206838-013DUP	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	K1206838-013DUP2	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-036	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-036	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-036	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-042	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-042	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-042	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-048	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-048	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-048	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-050	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-050	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-050	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-052	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838

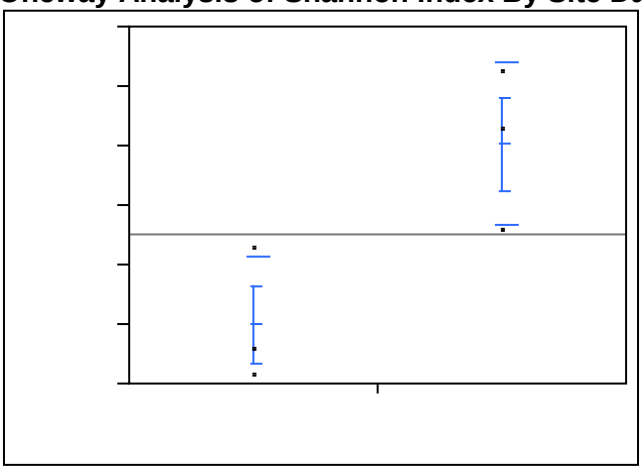
SDG_FILE	sys_sample_code	lab_anl_method_name	analysis_date	total_or_dissolved	column_number	test_type	test_batch_type	test_batch_id
K1206838	MAG-052	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-052	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-054	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-054	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-055	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-055	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-063	ASTM D422	7/16/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-063	160.3M	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	MAG-063	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1206838	K1206838-MB	160.4 Modified	7/18/2012	T		Initial	ANALYSIS	K1206838
K1208114	MAG-075	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-075	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-075	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	K1208114-001DUP	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	K1208114-001DUP1	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-081	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-081	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-081	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-083	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-083	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-083	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-089	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-089	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-089	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-091	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-091	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-091	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-097	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-097	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-097	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-103	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-103	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-103	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114

SDG_FILE	sys_sample_code	lab_anl_method_name	analysis_date	total_or_dissolved	column_number	test_type	test_batch_type	test_batch_id
K1208114	K1208114-012DUP	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-105	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-105	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-105	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	K1208114-007DUP	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	K1208114-007DUP2	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-111	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-111	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-111	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-117	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-117	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-117	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-123	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-123	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-123	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-125	160.3M	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-125	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	MAG-125	ASTM D422	8/17/2012	T		Initial	ANALYSIS	K1208114
K1208114	K1208114-MB	160.4 Modified	8/17/2012	T		Initial	ANALYSIS	K1208114

APPENDIX F

STATISTICAL OUTPUTS

Oneway Analysis of Shannon Index By Site Date=July, Community Segment=All



Means and Std Deviations

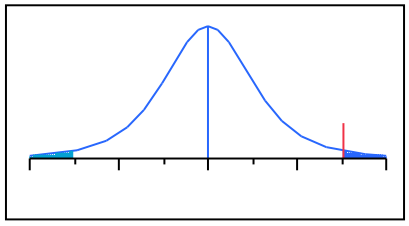
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	1.99667	0.285365	0.16476	1.2878	2.7056
Waukegan	3	2.75667	0.339460	0.19599	1.9134	3.5999

t Test

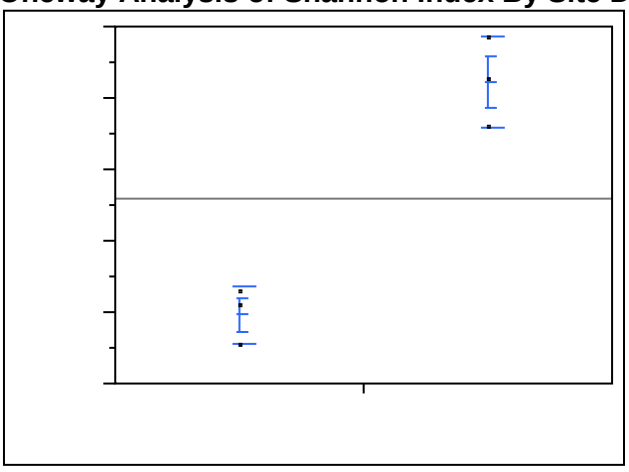
Waukegan-Burns

Assuming unequal variances

Difference	0.76000	t Ratio	2.968307
Std Err Dif	0.25604	DF	3.88524
Upper CL Dif	1.47923	Prob > |t|	0.0427*
Lower CL Dif	0.04077	Prob > t	0.0214*
Confidence	0.95	Prob < t	0.9786



Oneway Analysis of Shannon Index By Site Date=Aug, Community Segment=All



Means and Std Deviations

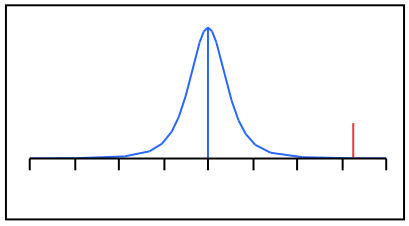
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	1.48000	0.196977	0.11372	0.9907	1.9693
Waukegan	3	3.11000	0.315119	0.18193	2.3272	3.8928

t Test

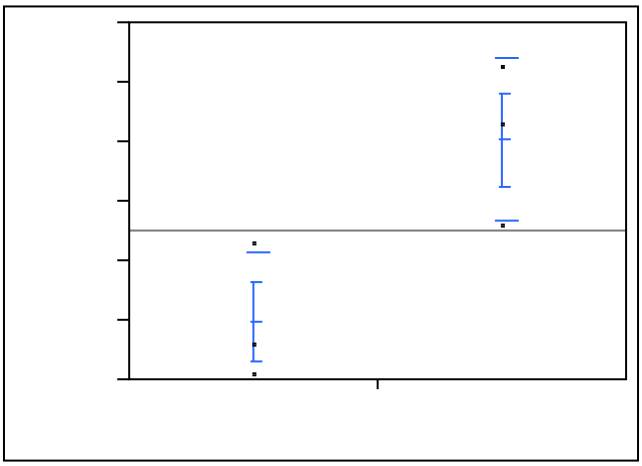
Waukegan-Burns

Assuming unequal variances

Difference	1.63000	t Ratio	7.597162
Std Err Dif	0.21455	DF	3.355926
Upper CL Dif	2.27361	Prob > |t|	0.0032*
Lower CL Dif	0.98639	Prob > t	0.0016*
Confidence	0.95	Prob < t	0.9984



Oneway Analysis of Shannon Index By Site Date=July, Community Segment=Phyto and Diatoms



Means and Std Deviations

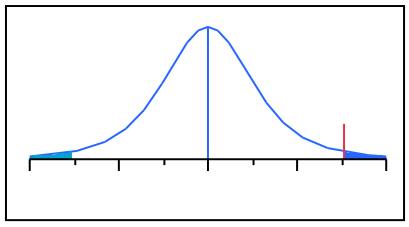
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	1.99333	0.289194	0.16697	1.2749	2.7117
Waukegan	3	2.75667	0.339460	0.19599	1.9134	3.5999

t Test

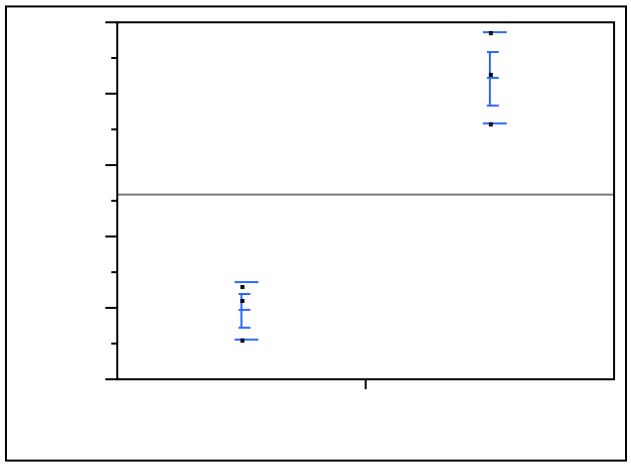
Waukegan-Burns

Assuming unequal variances

Difference	0.76333	t Ratio	2.964789
Std Err Dif	0.25747	DF	3.90149
Upper CL Dif	1.48535	Prob > |t|	0.0427*
Lower CL Dif	0.04132	Prob > t	0.0213*
Confidence	0.95	Prob < t	0.9787



Oneway Analysis of Shannon Index By Site Date=Aug, Community Segment=Phyto and Diatoms



Means and Std Deviations

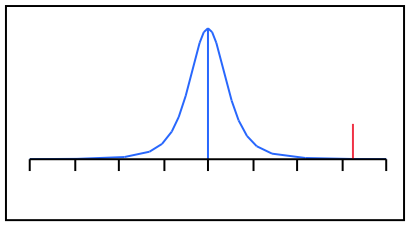
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	1.48000	0.196977	0.11372	0.9907	1.9693
Waukegan	3	3.10667	0.320208	0.18487	2.3112	3.9021

t Test

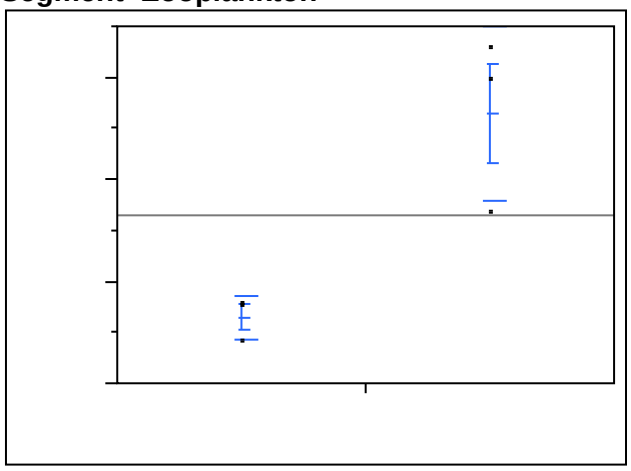
Waukegan-Burns

Assuming unequal variances

Difference	1.62667	t Ratio	7.4944
Std Err Dif	0.21705	DF	3.324054
Upper CL Dif	2.28084	Prob > |t|	0.0034*
Lower CL Dif	0.97249	Prob > t	0.0017*
Confidence	0.95	Prob < t	0.9983



Oneway Analysis of Shannon Index By Site Date=July, Community Segment=Zooplankton



Means and Std Deviations

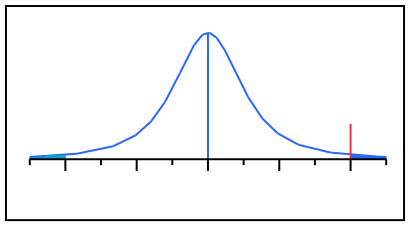
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	0.32333	0.106927	0.06173	0.05771	0.5890
Waukegan	3	1.32333	0.425245	0.24552	0.26697	2.3797

t Test

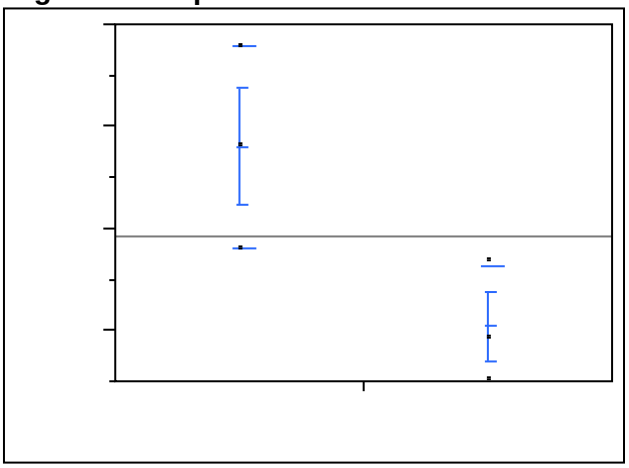
Waukegan-Burns

Assuming unequal variances

Difference	1.00000	t Ratio	3.950105
Std Err Dif	0.25316	DF	2.251896
Upper CL Dif	1.98043	Prob > |t|	0.0480*
Lower CL Dif	0.01957	Prob > t	0.0240*
Confidence	0.95	Prob < t	0.9760



Oneway Analysis of Shannon Index By Site Date=Aug, Community Segment=Zooplankton



Means and Std Deviations

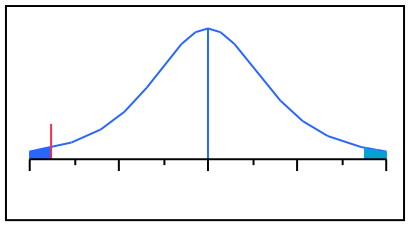
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	1.40000	0.495076	0.28583	0.1702	2.6298
Waukegan	3	0.52000	0.294618	0.17010	-0.2119	1.2519

t Test

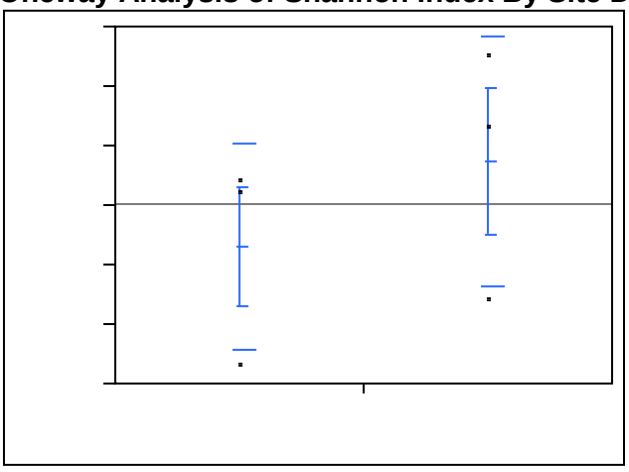
Waukegan-Burns

Assuming unequal variances

Difference	-0.8800	t Ratio	-2.64569
Std Err Dif	0.3326	DF	3.258703
Upper CL Dif	0.1325	Prob > |t|	0.0708
Lower CL Dif	-1.8925	Prob > t	0.9646
Confidence	0.95	Prob < t	0.0354*



Oneway Analysis of Shannon Index By Site Date=July, Community Segment=Rotifers



Means and Std Deviations

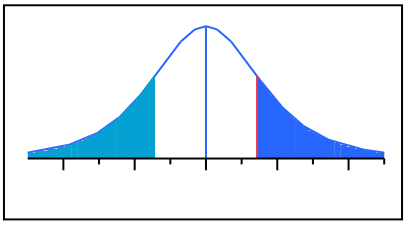
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	1.03000	0.173494	0.10017	0.59902	1.4610
Waukegan	3	1.17333	0.210792	0.12170	0.64970	1.6970

t Test

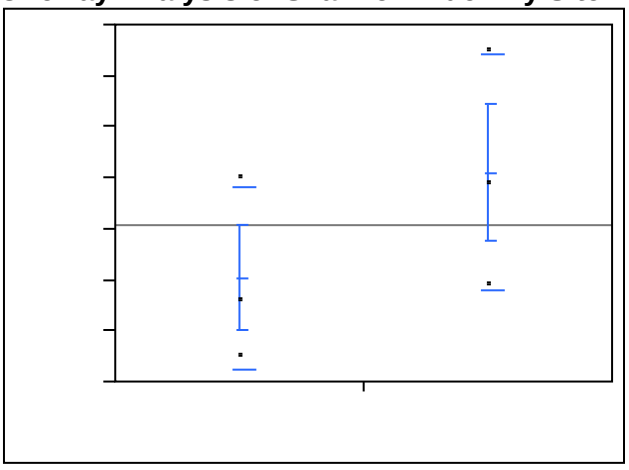
Waukegan-Burns

Assuming unequal variances

Difference	0.14333	t Ratio	0.909353
Std Err Dif	0.15762	DF	3.857347
Upper CL Dif	0.58742	Prob > |t|	0.4164
Lower CL Dif	-0.30075	Prob > t	0.2082
Confidence	0.95	Prob < t	0.7918



Oneway Analysis of Shannon Index By Site Date=Aug, Community Segment=Rotifers



Means and Std Deviations

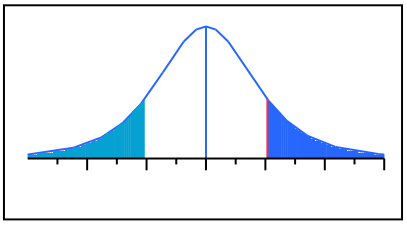
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	3	0.90333	0.178979	0.10333	0.45873	1.3479
Waukegan	3	1.11000	0.230651	0.13317	0.53703	1.6830

t Test

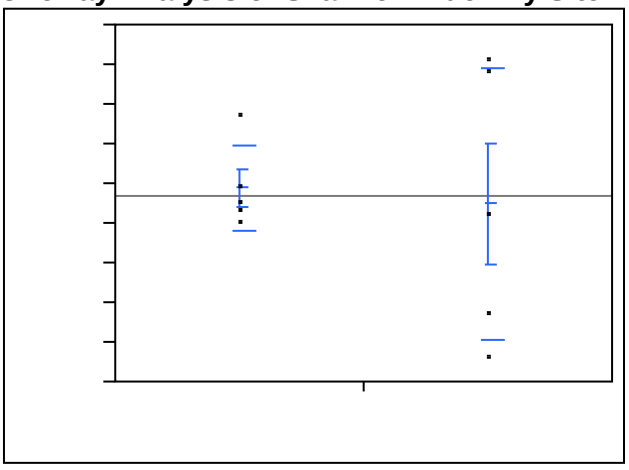
Waukegan-Burns

Assuming unequal variances

Difference	0.20667	t Ratio	1.226101
Std Err Dif	0.16856	DF	3.767643
Upper CL Dif	0.68626	Prob > |t|	0.2912
Lower CL Dif	-0.27292	Prob > t	0.1456
Confidence	0.95	Prob < t	0.8544



Oneway Analysis of Shannon Index By Site Month=July



Excluded Rows
4

Means and Std Deviations

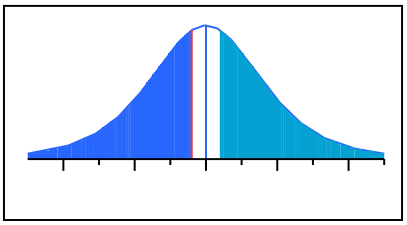
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	5	1.48800	0.106864	0.04779	1.3553	1.6207
Waukegan	5	1.44800	0.342739	0.15328	1.0224	1.8736

t Test

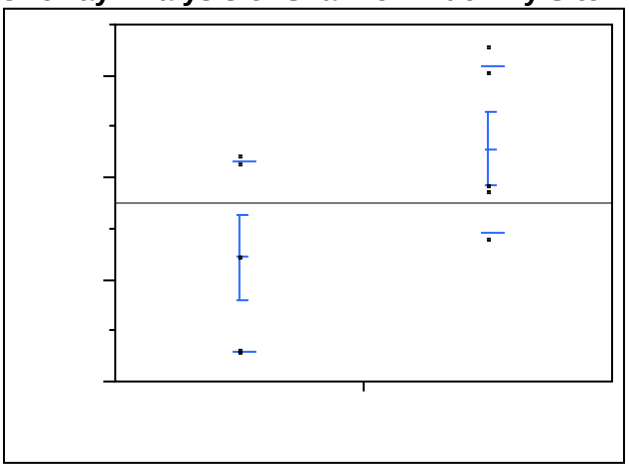
Waukegan-Burns

Assuming unequal variances

Difference	-0.04000	t Ratio	-0.24914
Std Err Dif	0.16056	DF	4.770449
Upper CL Dif	0.37877	Prob > |t|	0.8136
Lower CL Dif	-0.45877	Prob > t	0.5932
Confidence	0.95	Prob < t	0.4068



Oneway Analysis of Shannon Index By Site Month=Aug



Excluded Rows
4

Means and Std Deviations

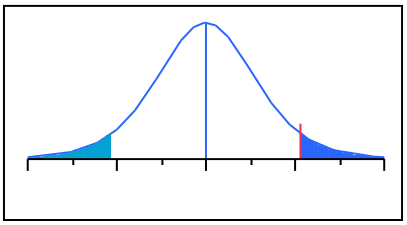
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	5	1.11000	0.467761	0.20919	0.5292	1.6908
Waukegan	5	1.64000	0.407431	0.18221	1.1341	2.1459

t Test

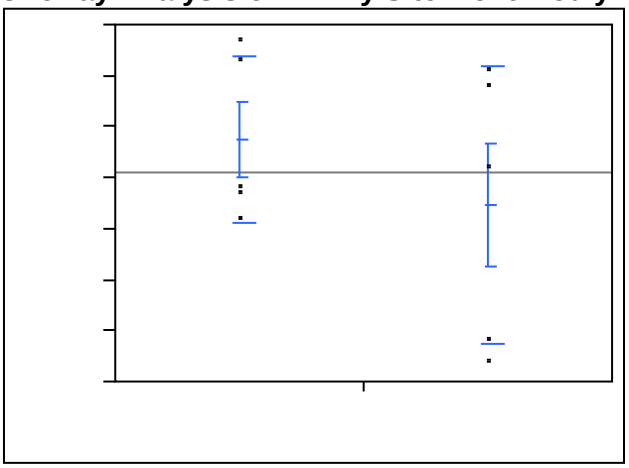
Waukegan-Burns

Assuming unequal variances

Difference	0.5300	t Ratio	1.910484
Std Err Dif	0.2774	DF	7.852162
Upper CL Dif	1.1718	Prob > |t|	0.0932
Lower CL Dif	-0.1118	Prob > t	0.0466*
Confidence	0.95	Prob < t	0.9534



Oneway Analysis of FBI By Site Month=July



Excluded Rows
4

Means and Std Deviations

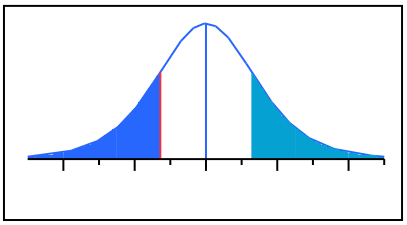
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	5	8.77400	0.162880	0.07284	8.5718	8.9762
Waukegan	5	8.64600	0.271256	0.12131	8.3092	8.9828

t Test

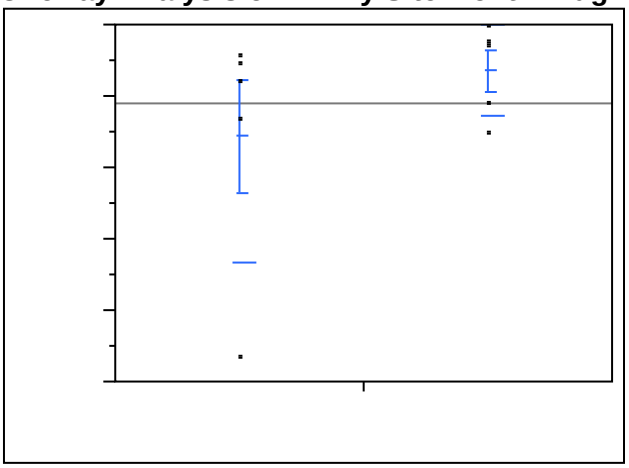
Waukegan-Burns

Assuming unequal variances

Difference	-0.12800	t Ratio	-0.9046
Std Err Dif	0.14150	DF	6.552629
Upper CL Dif	0.21128	Prob > |t|	0.3977
Lower CL Dif	-0.46728	Prob > t	0.8011
Confidence	0.95	Prob < t	0.1989



Oneway Analysis of FBI By Site Month=Aug



Excluded Rows
4

Means and Std Deviations

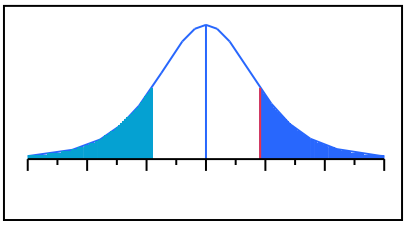
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	5	8.22000	0.883544	0.39513	7.1229	9.3171
Waukegan	5	8.67600	0.318638	0.14250	8.2804	9.0716

t Test

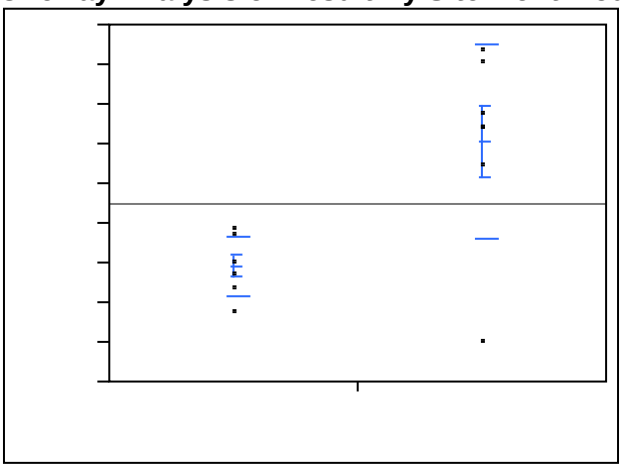
Waukegan-Burns

Assuming unequal variances

Difference	0.4560	t Ratio	1.085604
Std Err Dif	0.4200	DF	5.023159
Upper CL Dif	1.5343	Prob > |t|	0.3270
Lower CL Dif	-0.6223	Prob > t	0.1635
Confidence	0.95	Prob < t	0.8365



Oneway Analysis of Result By Site Month=July, Fraction=Silt



Means and Std Deviations

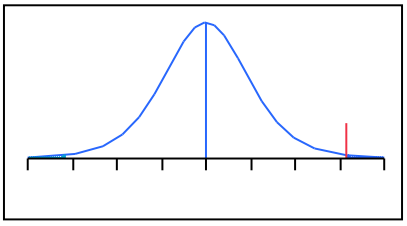
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	7	29.0257	7.3228	2.7678	22.253	35.798
Waukegan	7	60.5200	24.3881	9.2178	37.965	83.075

t Test

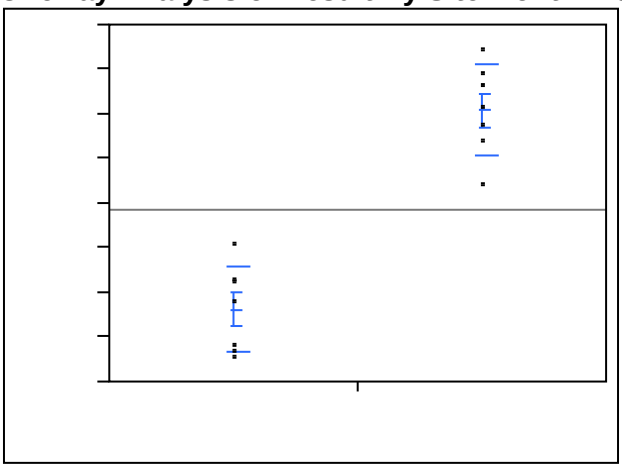
Waukegan-Burns

Assuming unequal variances

Difference	31.4943	t Ratio	3.27234
Std Err Dif	9.6244	DF	7.073159
Upper CL Dif	54.2047	Prob > |t|	0.0134*
Lower CL Dif	8.7838	Prob > t	0.0067*
Confidence	0.95	Prob < t	0.9933



Oneway Analysis of Result By Site Month=Aug, Fraction=Silt



Means and Std Deviations

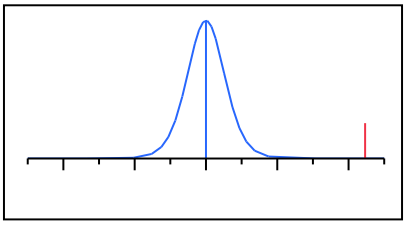
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	7	26.1757	9.6812	3.6591	17.222	35.129
Waukegan	7	70.8171	10.1137	3.8226	61.464	80.171

t Test

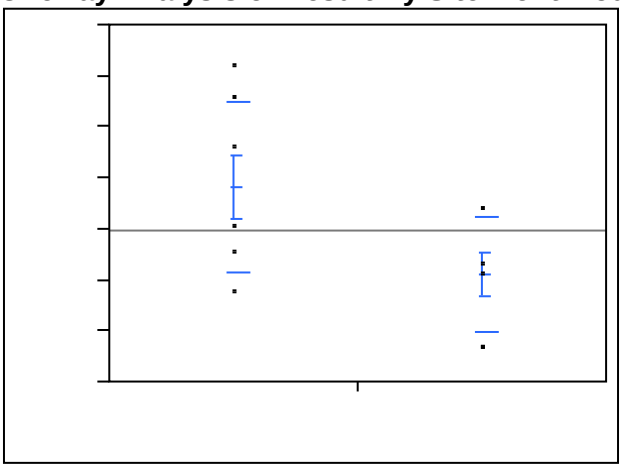
Waukegan-Burns

Assuming unequal variances

Difference	44.6414	t Ratio	8.436182
Std Err Dif	5.2917	DF	11.97715
Upper CL Dif	56.1734	Prob > |t|	<.0001*
Lower CL Dif	33.1094	Prob > t	<.0001*
Confidence	0.95	Prob < t	1.0000



Oneway Analysis of Result By Site Month=July, Fraction=Sand Total



Means and Std Deviations

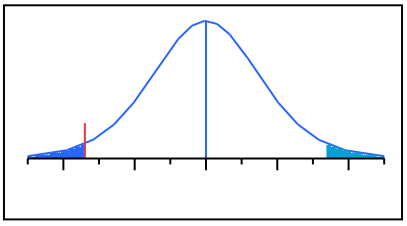
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	7	38.1043	16.6422	6.2901	22.713	53.496
Waukegan	7	21.1157	11.2225	4.2417	10.737	31.495

t Test

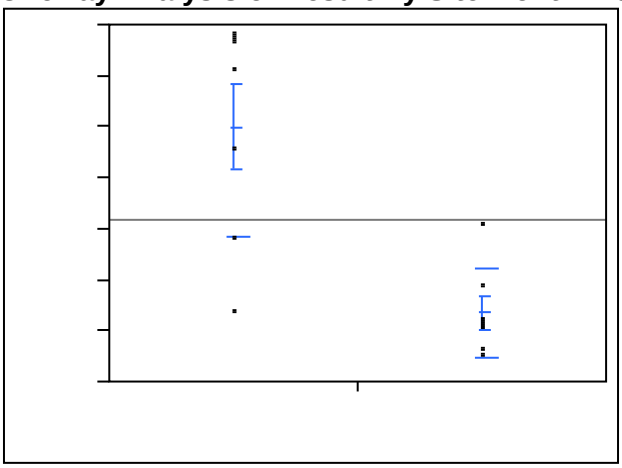
Waukegan-Burns

Assuming unequal variances

Difference	-16.989	t Ratio	-2.23926
Std Err Dif	7.587	DF	10.52182
Upper CL Dif	-0.197	Prob > |t|	0.0478*
Lower CL Dif	-33.780	Prob > t	0.9761
Confidence	0.95	Prob < t	0.0239*



Oneway Analysis of Result By Site Month=Aug, Fraction=Sand Total



Means and Std Deviations

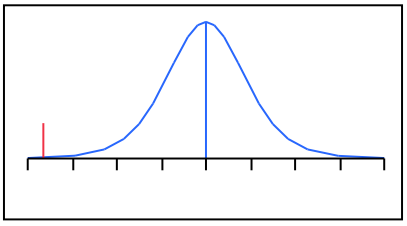
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	7	49.9586	21.7452	8.2189	29.848	70.070
Waukegan	7	13.4643	8.7727	3.3158	5.351	21.578

t Test

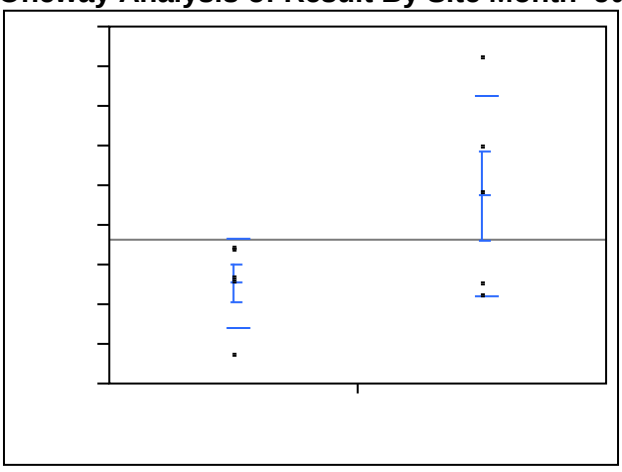
Waukegan-Burns

Assuming unequal variances

Difference	-36.494	t Ratio	-4.1178
Std Err Dif	8.863	DF	7.902677
Upper CL Dif	-16.013	Prob > |t|	0.0034*
Lower CL Dif	-56.975	Prob > t	0.9983
Confidence	0.95	Prob < t	0.0017*



Oneway Analysis of Result By Site Month=July, Fraction=Solids, Total Volatile



Excluded Rows
4

Means and Std Deviations

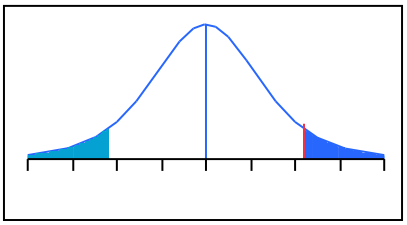
Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	5	4.52600	1.10339	0.4935	3.1560	5.8960
Waukegan	5	6.72600	2.50104	1.1185	3.6206	9.8314

t Test

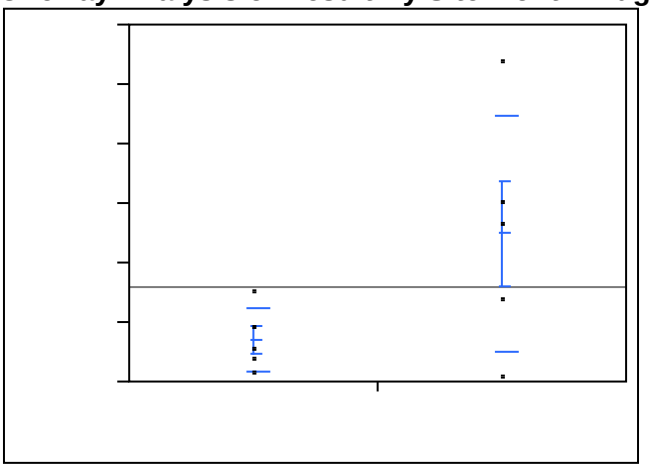
Waukegan-Burns

Assuming unequal variances

Difference	2.2000	t Ratio	1.799575
Std Err Dif	1.2225	DF	5.50025
Upper CL Dif	5.2585	Prob > |t|	0.1265
Lower CL Dif	-0.8585	Prob > t	0.0632
Confidence	0.95	Prob < t	0.9368



Oneway Analysis of Result By Site Month=Aug, Fraction=Solids, Total Volatile



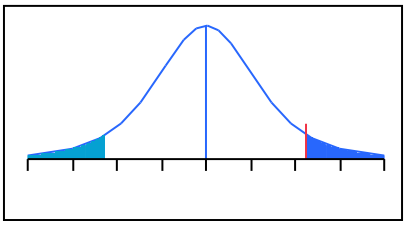
Excluded Rows
4

Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
Burns	5	4.22400	1.32126	0.5909	2.5834	5.865
Waukegan	5	8.71400	4.94429	2.2112	2.5749	14.853

t Test

Waukegan-Burns

Assuming unequal variances

Difference	4.490	t Ratio	1.961776
Std Err Dif	2.289	DF	4.568395
Upper CL Dif	10.545	Prob > |t|	0.1125
Lower CL Dif	-1.565	Prob > t	0.0562
Confidence	0.95	Prob < t	0.9438